

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



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**Document kinds for electrical and instrumentation projects in the process industry**

**Types de documents pour les projets relatifs aux systèmes électriques et aux instruments de fonctionnement dans l'industrie de transformation**



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**Types de documents pour les projets relatifs aux systèmes électriques et aux instruments de fonctionnement dans l'industrie de transformation**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DOCUMENT KINDS FOR ELECTRICAL AND INSTRUMENTATION  
PROJECTS IN THE PROCESS INDUSTRY**

## FOREWORD

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International Standard IEC 62708 has been prepared by IEC technical committee 65: Industrial-process measurement, control and automation.

The text of this standard is based on the following documents:

|             |                  |
|-------------|------------------|
| FDIS        | Report on voting |
| 65/580/FDIS | 65/583/RVD       |

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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## INTRODUCTION

The engineering in the process industry is driven by international cooperation. Due to economic reasons, special know-how, special licence, authorization or simply capacity utilisation the work is split between partners. They will arrange their cooperation for each individual project differently. This requires well defined split of work and responsibilities. Documents are the basis for these definitions since they are the result of any engineering work.

If there is only the name of a document without further description of form and content, it will be likely that each partner develops their own view of the result of their efforts. Therefore, for each project the definition of deliverable documents is a major issue. The name of a document is often used for similar but in detail different documents. This standard will take the most commonly used name from synonymous names as the document kind name, intending to make other alternatives obsolete.

The first aim of this standard is to avoid misunderstandings and erroneous elaboration of documents in order to reduce additional corrective works and expenses for clarification between partners.

The second aim is to provide the convenience of document handling by using the IEC 61355 database. This standard will provide document kind names, document kind classification codes specified by IEC 61355, and some templates.

To cover these aims, we specify individual document kind names, but do not specify which documents are mandatory or optional.

## DOCUMENT KINDS FOR ELECTRICAL AND INSTRUMENTATION PROJECTS IN THE PROCESS INDUSTRY

### 1 Scope

This International Standard defines specific documents and their basic content required for electrical and instrumentation projects in the process industry.

This standard specifies the document kind name and the mandatory content of the document kind.

Documents used in the phases of a project from the concept phase to the mechanical completion are covered (see IEC 62337).

Documents for project management and quality assurance are included.

Documents for commercial project administration are excluded.

Examples of documents are provided for easy reference, understanding and usage.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60617, *Graphical symbols for diagrams*

IEC 60079-10-1, *Explosive atmospheres – Part 10-1: Classification of areas – Explosive gas atmospheres*

IEC 60079-11, *Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"*

IEC 61082-1, *Preparation of documents used in electrotechnology – Part 1: Rules*

IEC 61131-3, *Programmable controllers – Part 3: Programming languages*

IEC 61355 (all parts), *Classification and designation of documents for plants, systems and equipment*

IEC 61355-1:2008, *Classification and designation of documents for plants, systems and equipment – Part 1: Rules and classification tables*

IEC 61511 (all parts), *Functional safety – Safety instrumented systems for the process industry sector*

IEC 61987-10, *Industrial-process measurement and control – Data structures and elements in process equipment catalogues – Part 10: Lists of properties (LOPs) for industrial-process measurement and control for electronic data exchange – Fundamentals*

IEC 62337, *Commissioning of electrical, instrumentation and control systems in the process industry – Specific phases and milestones*

IEC 62381, *Automation systems in the process industry – Factory acceptance test (FAT), site acceptance test (SAT), and site integration test (SIT)*

IEC 62424, *Representation of process control engineering – Requests in P&I diagrams and data exchange between P&ID tools and PCE-CAE tools*

IEC 82079-1, *Preparation of instructions for use – Structuring, content and presentation – Part 1: General principles and detailed requirements*

ISO 10006, *Quality management systems – Guidelines for quality management in projects*

ISO 10628, *Flow diagrams for process plants – General rules*

### **3 Terms, definitions, abbreviated terms and acronyms**

#### **3.1 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.

##### **3.1.1**

##### **activity**

smallest identified item of work in a project

[SOURCE: ISO 10006: 2003, 3.1]

##### **3.1.2**

##### **document**

fixed and structured amount of information intended for human perception that can be managed and interchanged as a unit between users and systems

[SOURCE: IEC 61355-1: 2008, 3.2, modified – notes removed for easy understanding.]

##### **3.1.3**

##### **document kind**

type of document defined with respect to its specified content of information and form of presentation

[SOURCE: IEC 61355-1: 2008, 3.6, modified – note removed for easy understanding.]

##### **3.1.4**

##### **document request**

document which requests to prepare or provide a set of documents

##### **3.1.5**

##### **documentation**

collection of documents related to a given subject

[SOURCE: IEC 61355-1: 2008, 3.5, modified – notes removed for easy understanding.]

##### **3.1.6**

##### **export permission**

authority permission to transport e.g. embargo goods from the country of origin to its intended country of destination

**3.1.7****identifier**

attribute associated with an object to unambiguously distinguish it from other objects within a specified domain

[SOURCE: IEC/ISO 81346-1: 2009, 3.10]

**3.1.8****process industry**

industry that uses chemical reactions, separations, or mixing techniques in order to create new products, modify existing products or treat waste and includes the following types of industries: chemical, petrochemical, waste treatment, paper, cement, etc. It does not include such industries as equipment/machine manufacturing or similar industries. Industries which are subject to special requirements and or validation, etc. are also not included

[SOURCE: IEC 62337: 2012, 3.13]

**3.1.9****project**

sum of commercial, technical and other activities related to a specific object

[SOURCE: IEC 61355-1: 2008, 3.12 modified – definition adapted to comply with the ISO/IEC Directives, Part 2.]

**3.1.10****work package**

subset of a project forming a group of activities having common characteristics such as purpose, theme, object, responsible, time frame, etc.

**3.2 Abbreviated terms and acronyms**

|      |                                                |
|------|------------------------------------------------|
| DCS  | Distributed control system                     |
| DLOP | Device list of properties                      |
| E&I  | Electrical and instrumentation                 |
| ESD  | Emergency shutdown system                      |
| Ex-i | Intrinsic safety "i" according to IEC 60079-11 |
| FAT  | Factory acceptance test                        |
| I/O  | Input/output                                   |
| ID   | Identifier                                     |
| IT   | Information technology                         |
| OLOP | Operating list of properties                   |
| P&ID | Piping and instrumentation diagram             |
| PLC  | Programmable logic controller                  |
| SAT  | Site acceptance test                           |
| SIF  | Safety instrumented function                   |
| SIL  | Safety integrity level                         |
| SIS  | Safety instrumented system                     |
| SIT  | Site integration test                          |
| SRS  | Safety requirement specification               |

## 4 Conformity

### 4.1 Document

Conformance of a document with this international standard may be declared if the following is fulfilled:

The document kind name shall be indicated on the respective document. If the document contains more than one page, the document kind name may be shown on the cover sheet only. The document kind name defined in this standard shall be used.

In addition, a reference to this international standard shall be made in close relation with the usage. A footnote or endnote may be used for this purpose.

Furthermore the final document shall contain all mandatory contents defined in this international standard as a minimum. If data is not or not completely available at the point of time the document is issued, the document may claim conformity with this standard if the missing information is clearly marked as to be given later. A general note declaring the document as being in progress may be used.

### 4.2 Document request

Conformance of a document request with this international standard may be declared if the following is fulfilled:

The document kind name defined in this standard shall be used.

In addition, a reference to this international standard shall be made in close relation with the usage. A footnote or endnote may be used for this purpose.

## 5 Document kinds

Table 1 lists document kinds with their properties listed below.

- "Document kind name" indicates the name of the document kind.
- "Description" is the short description of the kind of information to be provided by the document kind.
- "Mandatory content" indicates mandatory information included in the document kind.
- "DCC" indicates a document kind classification code of the document kinds according to IEC 61355-1. The document kind classification code shown is informative only since IEC 61355 may leave other classifications open to the user.
- "Identifier" is a number which together with the DCC is used within this standard to reference the items.
- "Example" shows where an example can be accessed.



**Table 1 – Document kinds (1 of 12)**

| Document kind name                     | Description                                                                                                                                                                                     | Mandatory content                                                                                                                                                                                                                                                                                 | DCC (informative) | Identifier | Example    |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------|
| List of documents                      | Formal list of content of a document package or a documentation.                                                                                                                                | <ul style="list-style-type: none"> <li>- Drawing / document number</li> <li>- Number of sheets</li> <li>- Revision index</li> <li>- Document designation code</li> <li>- Title of document</li> </ul>                                                                                             | AB                | 001        | Figure B.1 |
| Punch list                             | List of all open tasks.                                                                                                                                                                         | <ul style="list-style-type: none"> <li>- Task ID</li> <li>- Task description</li> <li>- Task owner</li> <li>- Due date</li> <li>- Priority</li> <li>- Status</li> </ul>                                                                                                                           | BB                | 001        | Figure B.2 |
| Work breakdown structure (WBS)         | Structured list of major work packages. It has a tree structure which covers all works required to perform the projects scope and includes all deliverables. The use is described in ISO 10006. | See ISO 10006                                                                                                                                                                                                                                                                                     | BD                | 001        |            |
| Communication plan                     | Binding agreement regarding permitted ways of information and partners including rules for content and frequency. For further details see ISO 10006.                                            | See ISO 10006                                                                                                                                                                                                                                                                                     | BD                | 002        |            |
| Project execution plan                 | Execution plan to confirm the project over all scope.                                                                                                                                           | <ul style="list-style-type: none"> <li>- Scope</li> <li>- Schedule</li> <li>- Documents lists</li> <li>- Organization</li> <li>- Communication plan</li> </ul>                                                                                                                                    | BD                | 003        |            |
| Manpower mobilization plan             | Bar chart schedule with associated personnel resources and qualifications. For further details of resource planning see ISO 10006.                                                              | See ISO 10006<br><ul style="list-style-type: none"> <li>- Name of resource</li> <li>- Resources related to time</li> </ul>                                                                                                                                                                        | BE                | 001        | Figure B.3 |
| Time schedule                          | Representation of start and end dates of activities from work breakdown structure and main milestones according to IEC 62337.                                                                   | <ul style="list-style-type: none"> <li>- Defined activity</li> <li>- Division of activities into sub-activities, if required (e.g. preliminary studies, engineering, manufacturing, testing, dispatch, erection, commissioning, etc.)</li> <li>- Start and end dates for each activity</li> </ul> | BE                | 002        |            |
| Equipment list with export restriction | List of equipment requiring export permission.                                                                                                                                                  | <ul style="list-style-type: none"> <li>- Type of equipment</li> <li>- Reference to applicable export restriction</li> </ul>                                                                                                                                                                       | BF                | 001        |            |

**Table 1 (2 of 12)**

| Document kind name                   | Description                                                                                                                                                                                     | Mandatory content                                                                                                                                                                                        | DCC (informative) | Identifier | Example    |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------|
| Instrument data sheet                | Data sheet with data for an instrument loop required for operation and maintenance. The document is typically used to transfer data between the different phases of the whole life-cycle.       | <ul style="list-style-type: none"> <li>- ID</li> <li>- Function</li> <li>- Description</li> <li>- Measuring range</li> <li>- Location</li> <li>- Process data</li> <li>- Instrument data</li> </ul>      | DA                | 001        | Figure B.4 |
| Identification system                | Coding system for objects within a complex or plant.                                                                                                                                            | <ul style="list-style-type: none"> <li>- Scope of identification system</li> <li>- Coding rules</li> </ul>                                                                                               | DB                | 001        |            |
| Test and maintenance recommendations | List of recommended test and maintenance activities.                                                                                                                                            | <ul style="list-style-type: none"> <li>- Description of recommended activities</li> <li>- Affected objects</li> <li>- Frequency</li> </ul>                                                               | DC                | 001        | Figure B.5 |
| Operating manual                     | Manufacturer's instruction for the intended handling and using of a device or system according to IEC 82079-1.                                                                                  | See IEC 82079-1                                                                                                                                                                                          | DC                | 002        |            |
| Test and maintenance requirements    | List of legally required or necessary test and maintenance works.                                                                                                                               | <ul style="list-style-type: none"> <li>- Description of required activities</li> <li>- Affected objects</li> <li>- Frequency</li> <li>- Designation and title of applicable law or regulation</li> </ul> | DZ                | 001        | Figure B.6 |
| General design requirements          | Mandatory design rules adapted from project specific requirements as well as from relevant legal requirements and regulations.                                                                  | <ul style="list-style-type: none"> <li>- Scope</li> <li>- Description of rules</li> <li>- Designation and title of applicable law or regulation</li> </ul>                                               | EC                | 001        |            |
| Electrical consumer list             | Tabulated list with all electrical consumers.                                                                                                                                                   | <ul style="list-style-type: none"> <li>- Load ID</li> <li>- Load type (i.e. motor, etc.)</li> <li>- Description</li> <li>- Rated power</li> <li>- Rated current</li> <li>- Rated voltage</li> </ul>      | EC                | 002        | Figure B.7 |
| Lighting concept                     | Lighting design guide in compliance with applicable rules and standards paying attention to the safety concept. Typically the concept is further detailed than the general design requirements. | <ul style="list-style-type: none"> <li>- Scope</li> <li>- Designation and title of applicable law or regulation</li> <li>- Design rules for lighting</li> </ul>                                          | EC                | 003        |            |

Table 1 (3 of 12)

| Document kind name                                                | Description                                                                                                                                                                                                                                                                                                                                                                   | Mandatory content                                                                                                                                                                                                | DCC (informative) | Identifier | Example    |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|------------|
| Concept for communication equipment                               | Design guide in compliance with applicable rules and standards for electrical systems such as:<br>- warning system<br>- fire alarm system<br>- alarm and signaling system<br>- general communication systems<br>- IT systems<br>- security systems<br>- video surveillance systems<br>etc.<br>Typically the concept is further detailed than the general design requirements. | <ul style="list-style-type: none"> <li>- Scope</li> <li>- Designation and title of applicable law or regulation</li> <li>- Design rules for communication equipment</li> </ul>                                   | EC                | 004        |            |
| Lightning protection, grounding and equipotential bonding concept | Design guide in compliance with applicable rules and standards for the design of lightning protection, grounding and equipotential bonding taking the local conditions into account. Typically the concept is further detailed than the general design requirements.                                                                                                          | <ul style="list-style-type: none"> <li>- Scope</li> <li>- Designation and title of applicable law or regulation</li> <li>- Design rules for lightning protection, grounding and equipotential bonding</li> </ul> | EC                | 005        |            |
| Cathodic corrosion protection concept                             | Design guide in compliance with applicable rules and standards for the design of a cathodic corrosion protection system taking the local conditions into account. Typically the concept is further detailed than the general design requirements.                                                                                                                             | <ul style="list-style-type: none"> <li>- Scope</li> <li>- Designation and title of applicable law or regulation</li> <li>- Design rules for cathodic corrosion protection</li> </ul>                             | EC                | 006        |            |
| Electrical heat tracing concept                                   | Design guide in compliance with applicable rules and standards for the design of an electrical heat tracing system taking the local conditions into account. Typically the concept is further detailed than the general design requirements.                                                                                                                                  | <ul style="list-style-type: none"> <li>- Scope</li> <li>- Designation and title of applicable law or regulation</li> <li>- Design rules for electrical heat tracing</li> </ul>                                   | EC                | 007        |            |
| Heating circuit list                                              | List of all heating circuits.                                                                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>- ID</li> <li>- Heated equipment</li> <li>- Heating cable type</li> <li>- Maintenance temperature</li> <li>- Starting point</li> <li>- Length</li> <li>- Power</li> </ul> | EC                | 008        | Figure B.8 |

**Table 1 (4 of 12)**

| Document kind name              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Mandatory content                                                                                                                                                                                                                                                                                                 | DCC (informative) | Identifier | Example     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|-------------|
| Requirement specification       | This document includes the necessary requirements of E&I equipment describing the task, the operational conditions and additional information as for example using a subset of the operating list of properties (OLOP) according to IEC 61987-10. It is typically the user's technical input to the purchasing process.                                                                                                                                             | See IEC 61987-10<br>- Base conditions<br>- Process case<br>- Operating conditions for device design<br>- Process equipment<br>- Location                                                                                                                                                                          | EC                | 009        | Figure B.9  |
| Specification sheet             | This data sheet includes data describing a particular implementation of the E&I equipment specified by the requirement specification, as for example using a subset of the device list of properties (DLOP) according IEC 61987-10. It is typically the common basis of the user and manufacturer for the purchasing process and contains the manufacturer's technical input from the offer. The information out of the requirement specification can be indicated. | See IEC 61987-10<br>- ID<br>- Application<br>- Function and system design<br>- Input<br>- Output<br>- Digital communication<br>- Performance<br>- Rated operating conditions<br>- Mechanical and electrical construction<br>- Operability<br>- Power supply<br>- Certificates and approval<br>- Component part ID | EC                | 010        | Figure B.10 |
| Loop list                       | Tabulated list of all E&I IDs.                                                                                                                                                                                                                                                                                                                                                                                                                                      | - ID<br>- Function<br>- P&ID reference                                                                                                                                                                                                                                                                            | EC                | 011        | Figure B.11 |
| Technical specification         | Complete description of all requirements for the realization (e.g. of an automation system).                                                                                                                                                                                                                                                                                                                                                                        | - Scope<br>- Requirements                                                                                                                                                                                                                                                                                         | EC                | 012        |             |
| Test specification              | Definition of test purpose, extent and execution.                                                                                                                                                                                                                                                                                                                                                                                                                   | - Scope<br>- Related documentation<br>- Function to be tested<br>- Test environment<br>- Test result documentation<br>- Test procedure                                                                                                                                                                            | EC                | 013        |             |
| Construction bill of quantities | List of required works for complete erection of a system, plant or unit including expected quantity.                                                                                                                                                                                                                                                                                                                                                                | - Scope<br>- Required works<br>- Quantities                                                                                                                                                                                                                                                                       | EC                | 014        | Figure B.12 |

Table 1 (5 of 12)

| Document kind name                                      | Description                                                                                                                                                                                         | Mandatory content                                                                                                 | DCC (informative) | Identifier | Example     |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------|------------|-------------|
| Specification E&I process connections                   | Definition of nozzle design for various applications (pressure, temperature, level, etc.).                                                                                                          | - Nozzle design                                                                                                   | EC                | 015        | Figure B.13 |
| User requirement specification                          | Rough user specification in view of the customer, to be detailed by the technical specification.                                                                                                    | - Scope<br>- User requirements                                                                                    | EC                | 016        |             |
| Safety requirement specification (SRS)                  | Requirements for SIF design according to IEC 61511.                                                                                                                                                 | See IEC 61511                                                                                                     | EC (alt. QB)      | 017        |             |
| Power supply system study                               | Impact analysis for the power distribution due to a short circuit. Additional studies could be supplemented (load flow, motor start, harmonics, selectivity, settings of protection devices, etc.). | - Scope<br>- Short circuit location assumed<br>- Impact                                                           | ED                | 001        |             |
| Cable sizing calculation                                | Cable sizing calculation of cables considering laying requirements, ambient conditions, and network topology for the specified operating conditions.                                                | - Scope of calculation<br>- Requirements<br>- Topology<br>- Ambient conditions assumed<br>- Result of calculation | ED                | 002        |             |
| Illuminance calculation                                 | Lighting system design calculation taking local conditions into account.                                                                                                                            | - Scope of calculation<br>- Requirements<br>- Local conditions assumed                                            | ED                | 003        |             |
| Calculation of the cathodic corrosion protection system | Design calculation of the cathodic corrosion protection system taking the local conditions into account.                                                                                            | - Scope of calculation<br>- Requirements<br>- Ambient conditions assumed<br>- Result of calculation               | ED                | 004        |             |
| Calculation of the electrical heat tracing              | Design calculation of the electrical heat tracing taking into account ambient conditions and the system topology.                                                                                   | - Scope of calculation<br>- Requirements<br>- Topology<br>- Ambient conditions assumed<br>- Result of calculation | ED                | 005        |             |
| Ex-i calculation sheet                                  | Calculation verifying that within a circuit with type of protection Ex-i all apparatuses are operated within their certified values.                                                                | - Scope of calculation<br>- Requirements<br>- Topology<br>- Ambient conditions assumed<br>- Result of calculation | ED                | 006        | Figure B.14 |

**Table 1 (6 of 12)**

| Document kind name                        | Description                                                                                                                                                              | Mandatory content                                                                                                                                                                                                 | DCC (informative) | Identifier | Example     |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|-------------|
| Heat dissipation summary                  | Heat dissipation summary of electrical equipment in switch, rack and control room.                                                                                       | <ul style="list-style-type: none"> <li>- Scope</li> <li>- Target system</li> <li>- Location</li> <li>- Grouping</li> <li>- Heat dissipation</li> </ul>                                                            | ED                | 007        | Figure B.15 |
| Electrical single line diagram            | Simplified schematic drawing of power distribution with graphic symbols and circuits – not showing any control wiring.                                                   | <ul style="list-style-type: none"> <li>- Scope of drawing</li> <li>- Symbols and IDs of power source</li> <li>- Symbols and IDs of power consumer</li> <li>- Symbols and IDs of power circuits</li> </ul>         | FA                | 001        | Figure B.16 |
| Structure diagram DCS/PLC/SIS             | Simplified schematic drawing of control systems and their network topology by graphical symbols – not showing any secondary wiring.                                      | <ul style="list-style-type: none"> <li>- Scope of drawing</li> <li>- Symbols and IDs of subsystem</li> <li>- Symbols and IDs of interconnection</li> </ul>                                                        | FA                | 002        | Figure B.17 |
| Piping and instrumentation diagram (P&ID) | Diagram according to ISO 10628 including plant process equipment and connecting piping. E&I equipment shown according project specific requirements and IEC 62424.       | See ISO 10628                                                                                                                                                                                                     | FB                | 001        | Figure B.18 |
| Process flow diagram                      | Diagram according to ISO 10628 including plant process equipment and important connecting piping. Important E&I equipment shown according project specific requirements. | See ISO 10628                                                                                                                                                                                                     | FB                | 002        |             |
| HMI specification                         | This specification contains detailed graphic standards and hierarchy of the human machine interface e.g. group-, trend-, alarm- and operator display.                    | <ul style="list-style-type: none"> <li>- Scope of specification</li> <li>- ID of target HMI system</li> <li>- Designation and specifications of display screen</li> <li>- Hierarchy of display screens</li> </ul> | FC                | 001        |             |
| Function description                      | Verbal description of task, function, operator interface and operation of closed control loop or open loop control like sequence, batch control and interlocks.          | <ul style="list-style-type: none"> <li>- Scope of description</li> <li>- Target</li> <li>- Functional descriptions</li> </ul>                                                                                     | FE                | 001        | Figure B.19 |

**Table 1 (7 of 12)**

| Document kind name           | Description                                                                                                                                                    | Mandatory content                                                                                                                                                                                                                                                          | DCC (informative) | Identifier | Example     |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|-------------|
| Function block diagram       | Graphical description of closed or open control loops following rules as e.g. given in IEC 61131-3 function block diagram with symbols according to IEC 60617. | <ul style="list-style-type: none"> <li>- Graphical symbols for objects representing functions</li> <li>- Graphical symbols representing functional connections or interrelations</li> <li>- Interface terminals and designations</li> <li>- Signal designations</li> </ul> | FF                | 001        | Figure B.20 |
| Cause and effect matrix      | Actuators and sensors assigned to columns and rows according to their function, including their related switching and/or alarm function.                       | <ul style="list-style-type: none"> <li>- Scope of document</li> <li>- Cause ID (inputs)</li> <li>- Effect ID (outputs)</li> <li>- Referenced documents</li> <li>- Description</li> <li>- Safety requirements</li> <li>- Relation between causes and effects</li> </ul>     | FF                | 002        | Figure B.21 |
| Signal list                  | List of all signals. See IEC 61082-1.                                                                                                                          | <ul style="list-style-type: none"> <li>- ID</li> <li>- Description</li> <li>- Source</li> <li>- Target</li> <li>- Type</li> </ul>                                                                                                                                          | FP                | 001        | Figure B.22 |
| I/O list                     | Extract of all signals from or to an automation system out of the signal list.                                                                                 | <ul style="list-style-type: none"> <li>- ID</li> <li>- Input or output designation</li> </ul>                                                                                                                                                                              | FP                | 002        | Figure B.23 |
| Trip point list              | Tabulated list of all process values resulting in a switching function of E&I equipment.                                                                       | <ul style="list-style-type: none"> <li>- ID of process value</li> <li>- Condition to trip</li> </ul>                                                                                                                                                                       | FQ                | 001        | Figure B.24 |
| Configuration parameter list | Tabulated list of all variable parameter for E&I equipment.                                                                                                    | <ul style="list-style-type: none"> <li>- ID of equipment</li> <li>- ID of parameters</li> <li>- Value for parameter</li> </ul>                                                                                                                                             | FQ                | 002        | Figure B.25 |

**Table 1 (8 of 12)**

| Document kind name              | Description                                                                                                                                                                                           | Mandatory content                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | DCC (informative) | Identifier | Example     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|-------------|
| Circuit diagram                 | Schematic drawing of current path without consideration of spatial and mechanical position of the electrical equipment. See IEC 61082-1.                                                              | <ul style="list-style-type: none"> <li>- Graphical symbols representing the objects</li> <li>- Graphical symbols representing the connections among objects</li> <li>- Reference designations</li> <li>- Terminal designations</li> <li>- Signal level conventions (applicable to logic signals)</li> <li>- Information necessary to trace paths and circuits (signal designations, location)</li> <li>- Supplementary information necessary for the understanding of functions</li> </ul> | FS                | 001        |             |
| Loop diagram                    | Representation of hardware and/or software functions of a control loop with graphical symbols according to IEC 60617. It shows equipment in its topological order and wiring including the terminals. | <ul style="list-style-type: none"> <li>- ID of loop</li> <li>- Symbols according to IEC 60617</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                   | FS                | 002        | Figure B.26 |
| Bus layout drawing              | Representation of all bus participants including their communication address and relation.                                                                                                            | <ul style="list-style-type: none"> <li>- ID of bus</li> <li>- ID of bus participant</li> <li>- Their address</li> <li>- Relation between participant</li> </ul>                                                                                                                                                                                                                                                                                                                            | FS                | 003        | Figure B.27 |
| Main cable tray layout          | Arrangement drawing showing the major cable trays in the plot plan.                                                                                                                                   | <ul style="list-style-type: none"> <li>- ID of cable tray</li> <li>- Location</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                   | LD (alt. LH)      | 001        |             |
| Cable route section             | List of cables at a defined point along a cable route.                                                                                                                                                | <ul style="list-style-type: none"> <li>- Location</li> <li>- List of cable ID</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                   | LD (alt. LH)      | 002        |             |
| Plot plan E&I                   | Presentation of the locations of E&I equipment in the plot plan.                                                                                                                                      | <ul style="list-style-type: none"> <li>- ID of equipment</li> <li>- Location</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                    | LD (alt. LH)      | 003        | Figure B.28 |
| Instrument air supply plot plan | Layout of main instrument air pipes and equipment in the plot plan.                                                                                                                                   | <ul style="list-style-type: none"> <li>- ID of equipment</li> <li>- Location</li> <li>- Representation of air pipes</li> </ul>                                                                                                                                                                                                                                                                                                                                                             | LD (alt. LH)      | 004        |             |
| Plot plan                       | Graphic representation of major equipment and structures in a given area in a top view drawing to scale. At least outlines of these equipments are shown. Other views may be added.                   | <ul style="list-style-type: none"> <li>- ID and representation of equipment or structure</li> <li>- Outline of equipment and structure</li> <li>- Location</li> </ul>                                                                                                                                                                                                                                                                                                                      | LD (alt. LH)      | 005        |             |



**Table 1 (9 of 12)**

| Document kind name           | Description                                                                                                                                                                                                                                                                        | Mandatory content                                                                                                                                                                                       | DCC (informative) | Identifier | Example     |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|-------------|
| Arrangement drawing          | Construction document for lighting, earthing, lightning protection, cathodic protection, heat tracing, cable trays, etc. The drawing contains the location of individual components or group of components and its designation with the required level of detail for the erection. | <ul style="list-style-type: none"> <li>- Scope of drawing</li> <li>- ID and representation of component or group of components</li> <li>- Their representation</li> <li>- Location</li> </ul>           | LD<br>(alt. LH)   | 006        | Figure B.29 |
| Allocation plan wall bushing | Survey of all cable bulkheads, which contains:                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>- Cable ID</li> <li>- Position</li> </ul>                                                                                                                        | LH                | 001        |             |
| Cabinet layout drawing       | Drawing to scale of equipment, terminal strips, cable trays, etc., in cabinets, consoles and similar equipment.                                                                                                                                                                    | <ul style="list-style-type: none"> <li>- ID of cabinet, console or similar equipment</li> <li>- ID and representation of components in the cabinet</li> <li>- Position of component</li> </ul>          | LU                | 001        | Figure B.30 |
| Allocation plan              | Allocation of objects defining the usage of the object's resources with declaration of object resource and identification of resource consumer (e.g. signal allocation of an multichannel I/O card).                                                                               | <ul style="list-style-type: none"> <li>- ID of object</li> <li>- Object's resource</li> <li>- Declaration of object resource</li> <li>- Resource consumer</li> </ul>                                    | LU                | 002        |             |
| Terminal connection diagram  | Schematic representation of terminal strips including designation of all connected wires, cables and jumper for each terminal.                                                                                                                                                     | <ul style="list-style-type: none"> <li>- ID of the connected objects</li> </ul>                                                                                                                         | MA                | 001        | Figure B.31 |
| Cross wiring diagram         | Terminal diagram of incoming and outgoing terminals typically of a marshalling cabinet including their cross wiring connections.                                                                                                                                                   | <ul style="list-style-type: none"> <li>- Scope of document</li> <li>- Incoming signal</li> <li>- Outgoing signal</li> <li>- Corresponding terminal ID</li> </ul>                                        | MA                | 002        |             |
| Conceptual wiring diagram    | Conceptual wiring diagram of instruments, system components and their auxiliary power supplies. Drawing shows equipment, location of all terminals and type of connection between terminals for all type of signals.                                                               | <ul style="list-style-type: none"> <li>- Graphical symbols according to IEC 60617 or defined project specific, representing E&amp;I components</li> <li>- E&amp;I component interconnections</li> </ul> | MA                | 003        | Figure B.32 |
| Cable list                   | List of all electrical cables.                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>- Cable ID</li> <li>- Cable type</li> <li>- Cable cross section</li> <li>- Starting point</li> <li>- End point</li> <li>- Length</li> </ul>                      | MB                | 001        | Figure B.33 |

**Table 1** (10 of 12)

| Document kind name                    | Description                                                                                                                                                | Mandatory content                                                                                                                                                                                                | DCC (informative) | Identifier | Example     |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|-------------|
| Cable laying list                     | Tabulated list containing the starting point, the cable route sections and the end point in the course of a cable.                                         | <ul style="list-style-type: none"> <li>- Cable ID</li> <li>- Cable starting point</li> <li>- Cable route section</li> <li>- Cable end point</li> </ul>                                                           | MB                | 002        | Figure B.34 |
| Material take off                     | Specification and quantity for bulk material.                                                                                                              | <ul style="list-style-type: none"> <li>- Name of material</li> <li>- Its specification</li> <li>- Its quantity</li> </ul>                                                                                        | PA                | 001        | Figure B.35 |
| Spare parts list                      | List of recommended spare parts for a specific purpose or period with all required details for procurement.                                                | <ul style="list-style-type: none"> <li>- Item reference number</li> <li>- Quantity</li> <li>- ID of the spare part</li> <li>- Name of manufacturer or supplier of the spare part</li> <li>- Part name</li> </ul> | PB                | 001        | Figure B.36 |
| Instrument index                      | Tabulated list of all instruments per ID.                                                                                                                  | <ul style="list-style-type: none"> <li>- ID</li> <li>- Instrument type</li> <li>- Labelling</li> </ul>                                                                                                           | PB                | 002        | Figure B.37 |
| System log book                       | Detailed list of all hardware and software releases of a system.                                                                                           | <ul style="list-style-type: none"> <li>- ID of hardware</li> <li>- Its revision of software</li> </ul>                                                                                                           | PD                | 001        | Figure B.38 |
| Quality plan                          | Description of basic processes within the projects phases securing the contractual requirements regarding product quality, health, safety and environment. | See ISO 9000:2005                                                                                                                                                                                                | QA                | 001        |             |
| Test plan                             | Overview of tests as provided in the contract.                                                                                                             | <ul style="list-style-type: none"> <li>- Scope of test</li> <li>- Purpose</li> <li>- Target</li> <li>- Related document</li> </ul>                                                                               | QA                | 002        |             |
| List of deficiencies                  | List of faulty characteristics or incomplete performed tests which are finally unremedied.                                                                 | <ul style="list-style-type: none"> <li>- Scope of document</li> <li>- Faulty characteristics or incomplete performed tests</li> </ul>                                                                            | QA                | 003        |             |
| Check list                            | List of all tests.                                                                                                                                         | <ul style="list-style-type: none"> <li>- Scope of document</li> <li>- List of all tests</li> </ul>                                                                                                               | QA                | 004        |             |
| Hazardous area classification drawing | Plan showing hazardous areas and the related equipment according to IEC 60079-10-1.                                                                        | <ul style="list-style-type: none"> <li>- Location</li> <li>- Classification of areas</li> <li>- Related equipment</li> <li>- Dimensions</li> </ul>                                                               | QB                | 001        |             |

**Table 1 (11 of 12)**

| Document kind name                | Description                                                                                      | Mandatory content                                                                                                                                                                                                             | DCC (informative) | Identifier | Example |
|-----------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|---------|
| Safety concept for power supply   | Definition of preventive measures for persons, electrical equipment and plant availability.      | <ul style="list-style-type: none"> <li>- ID of preventive measures</li> <li>- Purpose</li> <li>- Procedure</li> </ul>                                                                                                         | QB                | 002        |         |
| SIL classification                | SIL classification according to IEC 61511.                                                       | <ul style="list-style-type: none"> <li>- Scope of document</li> <li>- Loop ID</li> <li>- SIL classification</li> </ul>                                                                                                        | QB                | 003        |         |
| Material safety data sheet (MSDS) | Details of used chemical media including ID, name and main physical and chemical properties.     | <ul style="list-style-type: none"> <li>- ID of material</li> <li>- Name of material class</li> <li>- Properties</li> <li>- Location</li> <li>- Quantity</li> </ul>                                                            | QB                | 004        |         |
| Certificate                       | Proof and certificate for type specific or individual properties of supplied devices or systems. | <ul style="list-style-type: none"> <li>- Designation of target device, system, or project</li> <li>- Type of target</li> <li>- Designation and title of applicable law or regulation</li> <li>- Approval of issuer</li> </ul> | QC                | 001        |         |
| Test report                       | Document verifying tested characteristics of a certain object.                                   | <ul style="list-style-type: none"> <li>- Date of testing</li> <li>- Signature of person responsible for test</li> <li>- Object ID (type, series number, etc.)</li> <li>- Measured values</li> </ul>                           | QC                | 002        |         |
| Acceptance documentation          | Certificate of FAT, SAT or SIT according to IEC 62381.                                           | <ul style="list-style-type: none"> <li>- Certificate according to IEC 62381</li> </ul>                                                                                                                                        | QC                | 003        |         |
| Test sheet for SIF                | Specification of required tests and confirmation of correct completion.                          | <ul style="list-style-type: none"> <li>- Scope of document</li> <li>- Designation of test plan document</li> <li>- Punch list</li> </ul>                                                                                      | QC                | 004        |         |
| SIL verification                  | Verification that the required SIL classification is achieved.                                   | <ul style="list-style-type: none"> <li>- Scope of document</li> <li>- Loop ID</li> <li>- SIL classification</li> <li>- Information of verification</li> </ul>                                                                 | QC                | 005        |         |

**Table 1** (12 of 12)

| Document kind name             | Description                                                                                                                                      | Mandatory content                                                                                                                                                                     | DCC (informative) | Identifier | Example     |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|-------------|
| Installation drawing (hook-up) | Schematic drawing and basic construction details for the installation of E&I equipment with all interconnections and required bill of materials. | <ul style="list-style-type: none"> <li>- Scope of document</li> <li>- ID and symbol of E&amp;I equipment</li> <li>- Representation of interconnection</li> <li>- Part list</li> </ul> | TC                | 001        | Figure B.39 |
| Assembly drawing               | Drawing with main dimensions and connecting details.                                                                                             | <ul style="list-style-type: none"> <li>- Dimensions</li> <li>- Arrangement</li> <li>- Method of assembly</li> </ul>                                                                   | TC                | 002        | Figure B.40 |

## Annex A (informative)

### Names of document kinds in different languages

Table A.1 and Table A.2 show the names of document kinds in different languages.

**Table A.1 – Names of document kinds in English and French (1 of 4)**

| Document kind                                                     | Type de document                                                                            | DCC | Identifier |
|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----|------------|
| List of documents                                                 | Liste des documents                                                                         | AB  | 001        |
| Punch list                                                        | Liste des points résiduels                                                                  | BB  | 001        |
| Work breakdown structure (WBS)                                    | Plan structurel des projets                                                                 | BD  | 001        |
| Communication plan                                                | Plan de la communication                                                                    | BD  | 002        |
| Project execution plan                                            | Plan d'exécution du projet                                                                  | BD  | 003        |
| Manpower mobilization plan                                        | Planning du personnel                                                                       | BE  | 001        |
| Time schedule                                                     | Agenda                                                                                      | BE  | 002        |
| Equipment list with export restriction                            | Liste de l'équipement avec les interdictions d'export                                       | BF  | 001        |
| Instrument data sheet                                             | Feuille de postes PLT                                                                       | DA  | 001        |
| Identification system                                             | Système d'étiquetage                                                                        | DB  | 001        |
| Test and maintenance recommendations                              | Instruction d'essai et d'entretien                                                          | DC  | 001        |
| Operating manual                                                  | Manuel d'utilisation                                                                        | DC  | 002        |
| Test and maintenance requirements                                 | Règlement d'essai et d'entretien                                                            | DZ  | 001        |
| General design requirements                                       | Spécification générale pour l'ingénierie                                                    | EC  | 001        |
| Electrical consumer list                                          | Liste des consommateurs électriques                                                         | EC  | 002        |
| Lighting concept                                                  | Concept d'éclairage                                                                         | EC  | 003        |
| Concept for communication equipment                               | Concept de communication de l'équipement                                                    | EC  | 004        |
| Lightning protection, grounding and equipotential bonding concept | Concept de protection contre la foudre, la mise à la terre et le câblage des équipotentiels | EC  | 005        |
| Cathodic corrosion protection concept                             | Concept de protection anticorrosion cathodique                                              | EC  | 006        |
| Electrical heat tracing concept                                   | Concept pour le chauffage électrique et la tuyauterie des appareils                         | EC  | 007        |
| Heating circuit list                                              | Liste des circuits de chauffage                                                             | EC  | 008        |

**Table A.1** (2 of 4)

| Document kind                                           | Type de document                                                                     | DCC | Identifiant |
|---------------------------------------------------------|--------------------------------------------------------------------------------------|-----|-------------|
| Requirement specification                               | Spécification des exigences                                                          | EC  | 009         |
| Specification sheet                                     | Spécification de l'équipement                                                        | EC  | 010         |
| Loop list                                               | Liste de postes PLT                                                                  | EC  | 011         |
| Technical specification                                 | Cahier des charges                                                                   | EC  | 012         |
| Test specification                                      | Spécification de contrôle                                                            | EC  | 013         |
| Construction bill of quantities                         | Cahier des charges du montage                                                        | EC  | 014         |
| Specification E&I process connections                   | Spécification des connexions des processus PLT                                       | EC  | 015         |
| User requirement specification                          | Cahier des charges                                                                   | EC  | 016         |
| Safety requirement specification (SRS)                  | Spécification des demandes de sécurité                                               | EC  | 017         |
| Power supply system study                               | Etude du réseau électrique                                                           | ED  | 001         |
| Cable sizing calculation                                | Calcul de dimension des câbles                                                       | ED  | 002         |
| Illuminance calculation                                 | Calcul de l'éclairage                                                                | ED  | 003         |
| Calculation of the cathodic corrosion protection system | Calcul de la protection anticorrosion cathodique                                     | ED  | 004         |
| Calculation of the electrical heat tracing              | Calcul du chauffage électrique et de la tuyauterie des appareils                     | ED  | 005         |
| Ex-i calculation sheet                                  | Feuille de calcul Ex-i                                                               | ED  | 006         |
| Heat dissipation summary                                | Inventaire des pertes de chaleur                                                     | ED  | 007         |
| Electrical single line diagram                          | Schéma unifilaire de la distribution de l'énergie                                    | FA  | 001         |
| Structure diagram DCS/PLC/SIS                           | Schéma de structure SNCC, API                                                        | FA  | 002         |
| Piping and instrumentation diagram (P&ID)               | Schéma instruments de fonctionnement et des conduites (schéma de fonctionnement R&I) | FB  | 001         |
| Process flow diagram                                    | Schéma des procédés                                                                  | FB  | 002         |
| HMI specification                                       | Spécification de l'interface utilisateur                                             | FC  | 001         |
| Function description                                    | Description des fonctions                                                            | FE  | 001         |
| Function block diagram                                  | Diagramme fonctionnel                                                                | FF  | 001         |
| Cause & effect matrix                                   | Tableau cause-effet                                                                  | FF  | 002         |
| Signal list                                             | Liste des signaux                                                                    | FP  | 001         |
| I/O list                                                | Liste des E/S                                                                        | FP  | 002         |
| Trip point list                                         | Liste des points de déclenchement                                                    | FQ  | 001         |

**Table A.1** (3 of 4)

| Document kind                         | Type de document                              | DCC | Identifiant |
|---------------------------------------|-----------------------------------------------|-----|-------------|
| Configuration parameter list          | Liste des paramètres de configuration         | FQ  | 002         |
| Circuit diagram                       | Schéma électrique                             | FS  | 001         |
| Loop diagram                          | Schéma des boucles                            | FS  | 002         |
| Bus layout drawing                    | Plan des bus                                  | FS  | 003         |
| Main cable tray layout                | Vue synoptique: cheminement des câbles        | LD  | 001         |
| Cable route section                   | Tracé du cheminement du câble                 | LD  | 002         |
| Plot plan E&I                         | Plan local E&I                                | LD  | 003         |
| Instrument air supply plot plan       | Plan de l'alimentation en air des instruments | LD  | 004         |
| Plot plan                             | Plan de mise sur pied                         | LD  | 005         |
| Arrangement drawing                   | Plan d'installation                           | LD  | 006         |
| Allocation plan wall bushing          | Plan du passage des câbles                    | LH  | 001         |
| Cabinet layout drawing                | Schéma de l'armoire                           | LU  | 001         |
| Allocation plan                       | Schéma des dispositions                       | LU  | 002         |
| Terminal connection diagram           | Schéma des bornes                             | MA  | 001         |
| Cross wiring diagram                  | Schéma croisé du câblage                      | MA  | 002         |
| Conceptual wiring diagram             | Plan de conception du câblage                 | MA  | 003         |
| Cable list                            | Liste des câbles                              | MB  | 001         |
| Cable laying list                     | Schéma du tracé des câbles                    | MB  | 002         |
| Material take off                     | Bordereau des matériaux                       | PA  | 001         |
| Spare parts list                      | Liste des pièces détachées                    | PB  | 001         |
| Instrument index                      | Liste d'appareils PLT                         | PB  | 002         |
| System log book                       | Journal de bord du système                    | PD  | 001         |
| Quality plan                          | Plan qualité                                  | QA  | 001         |
| Test plan                             | Plan d'essai                                  | QA  | 002         |
| List of deficiencies                  | Liste des manquants                           | QA  | 003         |
| Check list                            | Liste d'essai                                 | QA  | 004         |
| Hazardous area classification drawing | Plan de classification des zones dangereuses  | QB  | 001         |
| Safety concept for power supply       | Concept des protections de l'alimentation     | QB  | 002         |
| SIL classification                    | Classification SIL                            | QB  | 003         |
| Material safety data sheet (MSDS)     | Fiche technique de sécurité                   | QB  | 004         |
| Certificate                           | Certificat                                    | QC  | 001         |
| Test report                           | Procès-verbal d'essai                         | QC  | 002         |

**Table A.1 (4 of 4)**

| Document kind                  | Type de document                                 | DCC | Identifïer |
|--------------------------------|--------------------------------------------------|-----|------------|
| Acceptance documentation       | Documentation de réception                       | QC  | 003        |
| Test sheet for SIF             | Feuille d'essai pour appareillages de protection | QC  | 004        |
| SIL verification               | Contrôle SIL                                     | QC  | 005        |
| Installation drawing (hook-up) | Schéma du montage                                | TC  | 001        |
| Assembly drawing               | Dessin de montage                                | TC  | 002        |

**Table A.2 – Names of document kinds in Chinese and German (1 of 3)**

| 文件种类              | Dokumentenart                                      | DCC | Identifïer |
|-------------------|----------------------------------------------------|-----|------------|
| 文件列表              | Dokumentenliste                                    | AB  | 001        |
| 剩余工作清单            | Restpunktliste                                     | BB  | 001        |
| 工作分解结构            | Projektstrukturplan                                | BD  | 001        |
| 沟通计划              | Kommunikationsplan                                 | BD  | 002        |
| 项目实施计划            | Projektabwicklungsplan                             | BD  | 003        |
| 人力动员计划            | Personaleinsatzplan                                | BE  | 001        |
| 时间表               | Terminplan                                         | BE  | 002        |
| 限制出口设备清单          | Liste ausfuhrkritischer Ausrüstungen               | BF  | 001        |
| 仪表数据表             | PLT-Stellenblatt                                   | DA  | 001        |
| 标识系统 标识制          | Kennzeichnungssystem                               | DB  | 001        |
| 测试与维护建议           | Prüf- und Wartungsanleitung                        | DC  | 001        |
| 使用说明书             | Betriebsanleitung                                  | DC  | 002        |
| 测试与维护要求           | Prüf- und Wartungsvorschrift                       | DZ  | 001        |
| 总体设计要求            | Allgemeine Engineeringspezifikation                | EC  | 001        |
| 电气易耗品表            | Liste elektrischer Verbraucher                     | EC  | 002        |
| 照明概念设计大纲          | Beleuchtungskonzept                                | EC  | 003        |
| 通信设备概念设计大纲        | Konzept für Kommunikationseinrichtungen            | EC  | 004        |
| 防雷、接地与等电位连接概念设计大纲 | Konzept Blitzschutz, Erdung und Potentialausgleich | EC  | 005        |
| 阴极腐蚀防护概念设计大纲      | Konzept kathodischer Korrosionsschutz              | EC  | 006        |
| 电伴热概念设计大纲         | Konzept elektrische Begleitheizung                 | EC  | 007        |
| 加热电路列表            | Heizkreisliste                                     | EC  | 008        |
| 要求规范 需求规范         | Anforderungs Spezifikation                         | EC  | 009        |
| 规范明细表             | Geräte Spezifikation                               | EC  | 010        |
| 回路列表              | PLT-Stellenliste                                   | EC  | 011        |
| 技术规范              | Pflichtenheft                                      | EC  | 012        |
| 测试规范              | Prüfspezifikation                                  | EC  | 013        |



Table A.2 (2 of 3)

| 文件种类           | Dokumentenart                                           | DCC | Identifier |
|----------------|---------------------------------------------------------|-----|------------|
| 建设工程量清单        | Montage Leistungsverzeichnis                            | EC  | 014        |
| E&I过程连接规范      | Spezifikation PLT Prozessanschlüsse                     | EC  | 015        |
| 用户要求规范         | Lastenheft                                              | EC  | 016        |
| 安全要求规范 (SRS)   | Spezifikation der Sicherheitsanforderungen              | EC  | 017        |
| 供电系统研究         | Netzberechnung Energieversorgung                        | ED  | 001        |
| 电缆选型计算         | Berechnung der Kabel Dimensionierung                    | ED  | 002        |
| 照度计算           | Berechnung der Beleuchtungsstärke                       | ED  | 003        |
| 阴极腐蚀防护系统计算     | Berechnung kath. Korrosionsschutzanlage                 | ED  | 004        |
| 电伴热计算          | Berechnung elektrischer Begleitheizung                  | ED  | 005        |
| Ex-i计算表        | Ex-i Berechnung                                         | ED  | 006        |
| 热耗散汇总表         | Zusammenstellung der Wärmeverluste                      | ED  | 007        |
| 电气单线图          | Übersichtsschaltplan der Energieversorgung              | FA  | 001        |
| DCS/PLC/SIS结构图 | Strukturdiagramm PLS/SPS/ESD                            | FA  | 002        |
| 管道仪表流程图 (P&ID) | Rohrleitungs- und Instrumentenfließbild (R&I-Fließbild) | FB  | 001        |
| 工艺流程图          | Verfahrensfließbild                                     | FB  | 002        |
| HMI规范          | Spezifikation Bedien- und Beobachtungsoberfläche        | FC  | 001        |
| 功能描述           | Funktionsbeschreibung                                   | FE  | 001        |
| 功能块图           | Funktionsplan                                           | FF  | 001        |
| 因果矩阵           | Ursache-Wirkungs Tabelle                                | FF  | 002        |
| 信号明细表          | Signalliste                                             | FP  | 001        |
| I/O明细表         | E/A-Liste                                               | FP  | 002        |
| 触发点明细表         | Grenzwertliste                                          | FQ  | 001        |
| 配置参数明细表        | Parameterliste                                          | FQ  | 002        |
| 线路图            | Stromlaufplan                                           | FS  | 001        |
| 回路图            | PLT-Stellenplan                                         | FS  | 002        |
| 总线配线图          | Bus Strukturplan                                        | FS  | 003        |
| 主电缆槽布置图        | Kabeltrassen Übersichtsplan                             | LD  | 001        |
| 分段电缆部件表        | Kabeltrassenschnitt                                     | LD  | 002        |
| E&I总图?         | Lageplan PLT                                            | LD  | 003        |
| 仪表气源配置图        | Lageplan Instrumenten Luftversorgung                    | LD  | 004        |
| 总图             | Aufstellungsplan                                        | LD  | 005        |
| 布置图            | Installationsplan                                       | LD  | 006        |

**Table A.2 (3 of 3)**

| 文件种类          | Dokumentenart                        | DCC | Identifier |
|---------------|--------------------------------------|-----|------------|
| 穿墙套管配置方案      | Belegungsplan Kabel-Wanddurchführung | LH  | 001        |
| 机柜布置图         | Schrankschrankbauplan                | LU  | 001        |
| 配置方案          | Belegungsplan                        | LU  | 002        |
| 端子接线图         | Anschlussplan                        | MA  | 001        |
| 交叉布线图         | Rangierplan                          | MA  | 002        |
| 接线示意图         | Strukturplan der Verdrahtung         | MA  | 003        |
| 电缆明细表         | Kabelliste                           | MB  | 001        |
| 电缆敷设明细表       | Kabelzugliste                        | MB  | 002        |
| 材料统计          | Materialauszug                       | PA  | 001        |
| 备件清单          | Ersatzteilliste                      | PB  | 001        |
| 仪表索引          | PLT-Gerätelliste                     | PB  | 002        |
| 系统运行记录；系统日志   | Systemspiegel                        | PD  | 001        |
| 质量计划          | Qualitätsplan                        | QA  | 001        |
| 测试计划          | Prüfplan                             | QA  | 002        |
| 缺陷清单          | Mängelliste                          | QA  | 003        |
| 检查表           | Prüfliste                            | QA  | 004        |
| 危险场所分类图       | Gefahrenzonenplan                    | QB  | 001        |
| 供电安全概念设计大纲    | Schutzkonzept Energieversorgung      | QB  | 002        |
| SIL分类         | SIL Einstufung                       | QB  | 003        |
| 材料安全数据表（MSDS） | Sicherheitsdatenblatt                | QB  | 004        |
| 证书            | Zertifikat                           | QC  | 001        |
| 试验报告          | Prüfprotokoll                        | QC  | 002        |
| 验收文件          | Abnahmedokumentation                 | QC  | 003        |
| SIF测试表        | Prüfblatt für Schutzeinrichtungen    | QC  | 004        |
| SIL验证         | SIL Überprüfung                      | QC  | 005        |
| 安装图           | Montageanordnung (Hook-up)           | TC  | 001        |
| 装配图           | Einbauzeichnung                      | TC  | 002        |

## **Annex B** (informative)

### **Examples**

Figures in Annex B are examples of document kinds for electrical and instrumentation projects in the process industry. They are taken from current projects and anonymised as far as required and as such are reproduced as is, and are given purely for the user's information.

& EAB  
1 of 1

## List of Documents

427/Smith/2010-11-10

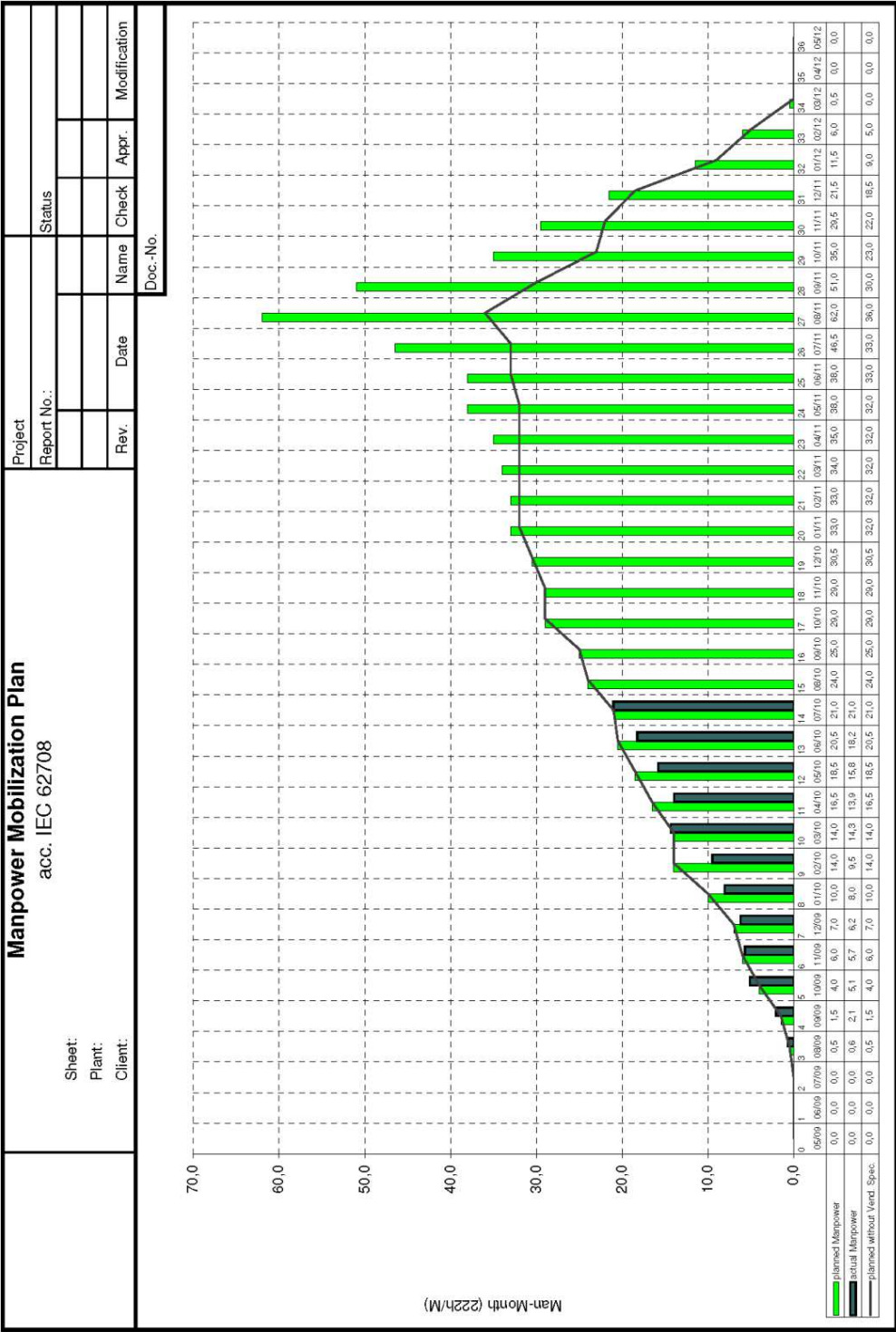
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**Figure B.1 – AB001 list of documents**

|                       |                     |                             |
|-----------------------|---------------------|-----------------------------|
| <b># Company logo</b> |                     | Change state<br># released  |
|                       |                     | Change date<br># 2012-07-01 |
| <b>Customer</b>       | <b># Customer</b>   | Change note                 |
| Document Title        | # PLC-System Unit 4 | DCC                         |
| Document Type         | Punch list          | Language                    |
| Created by            | # Name1             | # EN                        |
| Checked by            | Name2               | Version Index               |
| Document Number       | # AB123 123-4       | Total page number<br># 1    |
|                       |                     | Department<br># department  |

[illegible]

**Figure B.2 – BB001 punch list**



File: BE001\_ManpowerMobilizationPlan.xls  
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Figure B.3 – BE001 manpower mobilization plan

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| Installation area data                                                                                          |                |                                 |                            |                 |                  |       |                              |                                 |                              | R                              |                      |                       |                   |
|-----------------------------------------------------------------------------------------------------------------|----------------|---------------------------------|----------------------------|-----------------|------------------|-------|------------------------------|---------------------------------|------------------------------|--------------------------------|----------------------|-----------------------|-------------------|
| 2                                                                                                               | B51            | Installation location           | Outdoor, only antifreezing |                 |                  |       | B57                          | Remote hazardous area class     | Zone 1, Group IIA            |                                |                      |                       |                   |
| 3                                                                                                               | B52            | Corrosive influence by (1)      | Coastal climate            |                 |                  |       | B58                          | Remote area min. ign. temp.     | T3 (> 200 °C)                |                                |                      |                       |                   |
| 4                                                                                                               | B53            | Ambient temp. [min.](max.)      | -15.0                      |                 | 40.0 °C          |       | B59                          | Max. allow. sound press. level  | 85 dB(A)                     |                                |                      |                       |                   |
| 5                                                                                                               | B54            | Ambient work temp. [min.](max.) | -15.0                      |                 | 40.0 °C          |       | B20                          | Remark (1)                      |                              |                                |                      |                       |                   |
| 6                                                                                                               | B55            | Max. relative humidity          |                            |                 | 95.00 %          |       | B21                          | Remark (2)                      |                              |                                |                      |                       |                   |
| 7                                                                                                               | B57            | Altitude above sea level        |                            |                 | 20.00 m          |       |                              |                                 |                              |                                |                      |                       |                   |
| Process data                                                                                                    |                |                                 |                            |                 |                  |       |                              |                                 |                              | R                              |                      |                       |                   |
| Process data (continued)                                                                                        |                |                                 |                            |                 |                  |       |                              |                                 |                              | R                              |                      |                       |                   |
| 9                                                                                                               | B25            | Fluid                           | Water                      |                 |                  |       | D65                          | Rel. dielectr. const. Epsilon r |                              |                                |                      |                       |                   |
| 10                                                                                                              | B41            | Composition                     | H2O2                       |                 |                  |       | D66                          | Electrical conductivity         | mS/cm                        |                                |                      |                       |                   |
| 11                                                                                                              | B42            | Corrosive components            |                            |                 |                  |       | D66                          | Isentropic exponent             |                              |                                |                      |                       |                   |
| 12                                                                                                              | B43            | Toxic components                |                            |                 |                  |       | D43                          | Max. allowable pressure drop    | 0.50 bar                     |                                |                      |                       |                   |
| 13                                                                                                              | B44            | Abrasive components             |                            |                 |                  |       | D69                          | Remark (1)                      |                              |                                |                      |                       |                   |
| 14                                                                                                              | B45            | Suspended particles             |                            |                 |                  |       | D60                          | Remark (2)                      |                              |                                |                      |                       |                   |
| 15                                                                                                              | B39            | Special fluid properties (1)    |                            |                 |                  |       | D61                          | Remark (3)                      |                              |                                |                      |                       |                   |
| 16                                                                                                              | B40            | Special fluid properties (2)    |                            |                 |                  |       |                              |                                 |                              |                                |                      |                       |                   |
| 17                                                                                                              | B46            | Water hazard class (WHC)        |                            |                 |                  |       | Location data                |                                 |                              |                                |                      |                       |                   |
| 18                                                                                                              | B47            | Indical of danger (57/543/EEC)  |                            |                 |                  |       | B04                          | PI-Diagram / Sheet no.          | 13                           |                                |                      |                       |                   |
| 19                                                                                                              | B50            | Pollution restriction           |                            |                 |                  |       | B80                          | Reference location              | 2"-P-13-76009-A3-3F          |                                |                      |                       |                   |
| 20                                                                                                              | B48            | Inline hazardous area           |                            |                 |                  |       | B84                          | Pipe spec. selected             | A3-3F                        |                                |                      |                       |                   |
| 21                                                                                                              | B26            | Phase                           | (L) liquid                 |                 |                  |       | B97                          | Connection type                 | flanged                      |                                |                      |                       |                   |
| 22                                                                                                              | Run case value |                                 |                            |                 | min.             | norm. | max.                         | unit                            | B14                          | Line(DN)(PN)                   | 2"                   | CLASS 300             |                   |
| 23                                                                                                              | D80            | Measuring range                 | 0.00                       |                 | 11.00            |       | m³/h                         | B93                             | Connection facing            | RF, ANSI 16.5                  |                      |                       |                   |
| 24                                                                                                              | D60            | Mass flow rate                  | 3486.00                    |                 | 3984.00          |       | 9960.00                      | kg/h                            | B92                          | Line material                  | Killed C.S. (A106-B) |                       |                   |
| 25                                                                                                              | D42            | Actual flow rate                | 3.50                       |                 | 4.00             |       | 10.00                        | m³/h                            | B64                          | Line diam. [inside](outside)   | 52.48                | 60.30 mm              |                   |
| 26                                                                                                              | D61            | Actual flow [i.N.]              |                            |                 |                  |       | Nm³/h                        | B15                             | Insulation [type](thickness) |                                |                      |                       |                   |
| 27                                                                                                              | D24            | Operating pressure p1           | 6.00                       |                 | 7.00             |       | 9.00                         | bar a                           | B66                          | Heating/cooling [trace](temp.) |                      |                       |                   |
| 28                                                                                                              | D30            | Operating temperature t1        | 30.0                       |                 | 30.0             |       | 30.0                         | °C                              | B70                          | Design pressure [min.](max.)   | 27.00 bar a          |                       |                   |
| 29                                                                                                              | D33            | Operating density               | 996.00                     |                 | 996.00           |       | 996.00                       | kg/m³                           | B72                          | Design temp. [min.](max.)      | 260.0 °C             |                       |                   |
| 30                                                                                                              | D36            | Pressure [Boiling-](Critical-)  | 0.04                       |                 | 220.00           |       | bar a                        | B98                             | Remark (1)                   |                                |                      |                       |                   |
| 31                                                                                                              | D62            | Temp. [Boiling-](Condensation-) | 373.0                      |                 |                  |       | °C                           | B99                             | Remark (2)                   |                                |                      |                       |                   |
| 32                                                                                                              | D10            | Density at ref. cond.           |                            |                 |                  |       | kg/Nm³                       |                                 |                              |                                |                      |                       |                   |
| 33                                                                                                              | D11            | Dyn. viscosity                  |                            |                 |                  |       | cP                           |                                 |                              |                                |                      |                       |                   |
| 34                                                                                                              | D63            | Molecular weight                |                            |                 |                  |       | g/mol                        |                                 |                              |                                |                      |                       |                   |
| 35                                                                                                              | D64            | Compressibility factor (Z1/Zn)  |                            |                 |                  |       |                              |                                 |                              |                                |                      |                       |                   |
| Loop functions                                                                                                  |                |                                 |                            |                 |                  |       |                              |                                 |                              |                                |                      |                       |                   |
| 37                                                                                                              | Req. functions |                                 | Add. functions             |                 | Funct. set point |       | Interlock                    |                                 | Funct. realis.               |                                | PID No.              | Remark                |                   |
| 38                                                                                                              | FC             |                                 |                            |                 |                  |       |                              |                                 | DCS                          |                                | 13                   |                       |                   |
| Loop I/O list                                                                                                   |                |                                 |                            |                 |                  |       |                              |                                 |                              |                                |                      |                       |                   |
| 40                                                                                                              | Signal-ID      |                                 | Realisation                |                 | Design class     |       | Ex. prot.                    |                                 | Type of signal               |                                | Signal rate          | Signal characteristic | SIL               |
| 41                                                                                                              | -              |                                 | DCS                        |                 |                  |       | EEEx i                       |                                 | analogue signal              |                                | 4.20 mA              | Syst. powered         | linear increasing |
| Loop elements                                                                                                   |                |                                 |                            |                 |                  |       |                              |                                 |                              |                                |                      |                       |                   |
| 43                                                                                                              | Tag no.        |                                 | Description                |                 | Part no.         |       | Calibr. range [lower](upper) |                                 | Signal type                  |                                | SIL                  | Remark                |                   |
| 44                                                                                                              | FE7608         |                                 | Onifice plate assembly     |                 | KFAA001          |       | 0.0 \ 500.0 mbar             |                                 |                              |                                |                      |                       |                   |
| 45                                                                                                              | FT7608         |                                 | Flow dP-transmitter        |                 | KFEA001          |       | 0.0 \ 500.0 mbar             |                                 | analogue signal              |                                |                      |                       |                   |
| <div style="text-align: center;"> <b>Instrument data sheet</b><br/>             acc. IEC 62708           </div> |                |                                 |                            |                 |                  |       |                              |                                 |                              |                                |                      |                       |                   |
| Code                                                                                                            |                | IEC 62708 / Doc templates       |                            |                 |                  |       |                              |                                 |                              |                                |                      |                       |                   |
| Plant                                                                                                           |                |                                 |                            |                 |                  |       |                              |                                 |                              |                                |                      |                       |                   |
| Unit                                                                                                            |                |                                 |                            |                 |                  |       |                              |                                 |                              |                                |                      |                       |                   |
| Loop Identific.                                                                                                 |                | F7608                           |                            |                 |                  |       |                              |                                 |                              |                                |                      |                       |                   |
| R                                                                                                               |                | Date                            |                            | Client Doc.-ID: |                  | CC    |                              | UA                              |                              | Page                           |                      | 1 / 1                 |                   |
| Doc.-ID-Code:                                                                                                   |                |                                 |                            |                 |                  |       |                              |                                 |                              |                                |                      |                       |                   |

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Figure B.4 – DA001 instrument data sheet

#Company#

#Customer#

#IC Dep#

Preventive maintenance has the task of checking the I&C components case sensitive or at specified intervals.  
This contributes significantly to the availability of the I&C system and therewith the plant.  
This service is required for the system components listed.

| Type        | DCS Part             | Equipment                                | Task                                                                   | Frequency                |
|-------------|----------------------|------------------------------------------|------------------------------------------------------------------------|--------------------------|
| Test        | Emerg. Push Button   | Emergency Shut Down                      |                                                                        | once a year              |
| Maintenance | Digital Input Module | #Company# Order Number 1E1234-1BH02-0AA0 | replacement with spare part and fixing                                 | general device I&C alarm |
| Maintenance | SMART Actuator       | #Company# Order Number 1A3210-1AA2-0AB0  | upload of device diagnostic data, task according to detail information | device maintenance alarm |
| Maintenance | pH-Analyzer          | #Company# Order Number 1A3210-1AA2-0AB0  | calibration                                                            | once a month             |
| Maintenance | SMART Actuator       | #Company# Order Number 1A3210-1AA2-0AB0  | visual on-site inspection                                              | once a year              |
| Maintenance | DCS Server 123       | #Engineering Software#                   | update                                                                 | twice a year             |
| Maintenance | DCS Server 345       | #DCS System Software#                    | patch                                                                  | case sensitive           |
| Maintenance | DCS Server 345       | #Malware Protection Software'            | malware protection                                                     | daily                    |

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Figure B.5 – DC001 test and maintenance recommendations



|                       |  |                   |              |
|-----------------------|--|-------------------|--------------|
| <b># Company logo</b> |  | Change state      | # released   |
|                       |  | Change date       | # 2012-07-01 |
|                       |  | Change note       |              |
|                       |  | DCC               | &EDZ         |
|                       |  | Language          | # EN         |
|                       |  | Version Index     | # A          |
|                       |  | Total page number | # 1          |
|                       |  | Department        | # department |

[illegible]

**Figure B.6 – DZ001 test and maintenance requirements**

| EL_CONSUMERLIST                                                                                                                                                                                                                                                                |                              |               |          |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      |                                   |   | Print:            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------|----------|--------------------------------------|---------------------------------------|---------------------------------|-------------------------------------|---------------------------|----------|-------------------------|--------------------------|---------------|-------------------------------------|----------------------|-----------------------------------|---|-------------------|
| Identification                                                                                                                                                                                                                                                                 | Designation                  | Consumer type | Part No. | Power<br>P 100<br>P req.<br>PN<br>kW | Voltage<br>V<br>Current<br>Strom<br>A | Nominal<br>in operation         | Emergency<br>supply<br>in operation | Speed<br>rpm<br>Direction | Variable | Type of<br>construction | Mechanical<br>protection | Frame<br>size | Delivery<br>to<br>mach.<br>supplier | Ready<br>to<br>order | Distribution panel identification | R |                   |
|                                                                                                                                                                                                                                                                                |                              |               |          |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      |                                   |   | Trans-<br>mission |
| 1                                                                                                                                                                                                                                                                              |                              |               | 2        | 3                                    | 4                                     | 5                               | 6                                   | 7                         | 8        | 9                       | 10                       | 11            |                                     |                      |                                   |   |                   |
| 180E303-EM01                                                                                                                                                                                                                                                                   | CONDENSER II - AIRCOOLER FAN |               |          | 15.00<br>16.50<br>22.00              | 480<br>35.42                          | Yes                             | Yes                                 | 3600<br>Left (cw)         | No       | IM V 1<br>Coupling      | IP 54<br>Ex d            |               | Yes                                 | No                   | 4C21A                             | * |                   |
|                                                                                                                                                                                                                                                                                | LV Motor                     |               | EMBA001  |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      | C18/180/LAND D                    |   |                   |
|                                                                                                                                                                                                                                                                                | PIDNO.: FEEDER TYPE:         |               |          |                                      |                                       | SOURCE:                         | STATUS:                             |                           |          |                         |                          |               | VENDOR: EN1-MU<br>PECULIARITY:      |                      |                                   |   |                   |
| 180E303-EM02                                                                                                                                                                                                                                                                   | CONDENSER II - AIRCOOLER FAN |               |          | 15.00<br>16.50<br>22.00              | 480<br>35.42                          | Yes                             | Yes                                 | 3600<br>Left (cw)         | No       | IM V 1<br>Coupling      | IP 54<br>Ex d            |               | Yes                                 | No                   | 4C21B                             | * |                   |
|                                                                                                                                                                                                                                                                                | LV Motor                     |               | EMBA001  |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      | C18/180/LAND D                    |   |                   |
|                                                                                                                                                                                                                                                                                | PIDNO.: FEEDER TYPE:         |               |          |                                      |                                       | SOURCE:                         | STATUS:                             |                           |          |                         |                          |               | VENDOR: EN1-MU<br>PECULIARITY:      |                      |                                   |   |                   |
| 180E303-EM03                                                                                                                                                                                                                                                                   | CONDENSER II - AIRCOOLER FAN |               |          | 15.00<br>16.50<br>22.00              | 480<br>35.42                          | Yes                             | Yes                                 | 3600<br>Left (cw)         | No       | IM V 1<br>Coupling      | IP 54<br>Ex d            |               | Yes                                 | No                   | 4C21A                             | * |                   |
|                                                                                                                                                                                                                                                                                | LV Motor                     |               | EMBA001  |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      | C18/180/LAND D                    |   |                   |
|                                                                                                                                                                                                                                                                                | PIDNO.: FEEDER TYPE:         |               |          |                                      |                                       | SOURCE:                         | STATUS:                             |                           |          |                         |                          |               | VENDOR: EN1-MU<br>PECULIARITY:      |                      |                                   |   |                   |
| 180E303-EM04                                                                                                                                                                                                                                                                   | CONDENSER II - AIRCOOLER FAN |               |          | 15.00<br>16.50<br>22.00              | 480<br>35.42                          | Yes                             | Yes                                 | 3600<br>Left (cw)         | No       | IM V 1<br>Coupling      | IP 54<br>Ex d            |               | Yes                                 | No                   | 4C21B                             | * |                   |
|                                                                                                                                                                                                                                                                                | LV Motor                     |               | EMBA001  |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      | C18/180/LAND D                    |   |                   |
|                                                                                                                                                                                                                                                                                | PIDNO.: FEEDER TYPE:         |               |          |                                      |                                       | SOURCE:                         | STATUS:                             |                           |          |                         |                          |               | VENDOR: EN1-MU<br>PECULIARITY:      |                      |                                   |   |                   |
| 180ES460A-100-EC06                                                                                                                                                                                                                                                             | RECEPTACLE 480VAC/3P/4W/REX  |               |          | 40.00<br>50.00<br>50.00              | 480<br>75.26                          | No                              | No                                  | 0<br>-                    | No       | -                       | IP 54<br>Ex d            |               | No                                  | No                   | 4C21B<br>SERVICE OUTLET (RCD)     | * |                   |
|                                                                                                                                                                                                                                                                                | Power outlet                 |               | ES00001  |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      | C18/180/LAND D                    |   |                   |
|                                                                                                                                                                                                                                                                                | PIDNO.: FEEDER TYPE:         |               |          |                                      |                                       | SOURCE:                         | STATUS:                             |                           |          |                         |                          |               | VENDOR: EN3-EI<br>PECULIARITY:      |                      |                                   |   |                   |
| 180ES460A-100-EC08                                                                                                                                                                                                                                                             | RECEPTACLE 480VAC/3P/4W/REX  |               |          | 40.00<br>50.00<br>50.00              | 480<br>75.26                          | No                              | No                                  | 0<br>-                    | No       | -                       | IP 54<br>Ex d            |               | No                                  | No                   | 4C21B<br>SERVICE OUTLET (RCD)     | * |                   |
|                                                                                                                                                                                                                                                                                | Power outlet                 |               | ES00001  |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      | C18/180/LAND D/EDG PUMP AREA      |   |                   |
|                                                                                                                                                                                                                                                                                | PIDNO.: FEEDER TYPE:         |               |          |                                      |                                       | SOURCE:                         | STATUS:                             |                           |          |                         |                          |               | VENDOR: EN3-EI<br>PECULIARITY:      |                      |                                   |   |                   |
|                                                                                                                                                                                                                                                                                |                              |               |          |                                      |                                       | LV POWER FEEDER                 |                                     |                           |          |                         |                          |               |                                     |                      |                                   |   |                   |
|                                                                                                                                                                                                                                                                                | PIDNO.: FEEDER TYPE:         |               |          |                                      |                                       | SOURCE:                         | STATUS:                             |                           |          |                         |                          |               | VENDOR: EN3-EI<br>PECULIARITY:      |                      |                                   |   |                   |
|                                                                                                                                                                                                                                                                                |                              |               |          |                                      |                                       | 480VAC, 3PH-GND, 60A RCD 300 mA |                                     |                           |          |                         |                          |               |                                     |                      |                                   |   |                   |
| Column 3: P100 = Mechanical power at the shaft at 100% plant capacity<br>P req. = Mechanical power required (P100 + Safety margin specified by machinery/ process division)<br>PN = Rated output (calculated by electrical or to be provided by supplier, if motor is ordered) |                              |               |          |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      |                                   |   |                   |
| Column 8: Direction of rotation when facing drive end of motor.<br>Column 15: 0 = for design<br>1 = for inquiry<br>8 = As built                                                                                                                                                |                              |               |          |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      |                                   |   |                   |
| Electrical<br>CONSUMER LIST<br>acc IEC 62708                                                                                                                                                                                                                                   |                              |               |          |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      |                                   |   |                   |
| Cook:<br>Plant:<br>Unit                                                                                                                                                                                                                                                        |                              |               |          |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      |                                   |   |                   |
| Doc-ID: Client-ID: bsc: Page: 1 / 1                                                                                                                                                                                                                                            |                              |               |          |                                      |                                       |                                 |                                     |                           |          |                         |                          |               |                                     |                      |                                   |   |                   |

Figure B.7 – EC002 electrical consumer list

| K.T. No. |     | P.No. |     |
|----------|-----|-------|-----|
| CLIENT   |     | DATE  |     |
| 01       | H.C | 01    | H.C |
| 02       | H.C | 02    | H.C |
| 03       | H.C | 03    | H.C |
| 04       | H.C | 04    | H.C |
| 05       | H.C | 05    | H.C |
| 06       | H.C | 06    | H.C |
| 07       | H.C | 07    | H.C |
| 08       | H.C | 08    | H.C |
| 09       | H.C | 09    | H.C |
| 10       | H.C | 10    | H.C |
| 11       | H.C | 11    | H.C |
| 12       | H.C | 12    | H.C |
| 13       | H.C | 13    | H.C |
| 14       | H.C | 14    | H.C |
| 15       | H.C | 15    | H.C |
| 16       | H.C | 16    | H.C |
| 17       | H.C | 17    | H.C |
| 18       | H.C | 18    | H.C |
| 19       | H.C | 19    | H.C |
| 20       | H.C | 20    | H.C |
| 21       | H.C | 21    | H.C |
| 22       | H.C | 22    | H.C |
| 23       | H.C | 23    | H.C |
| 24       | H.C | 24    | H.C |
| 25       | H.C | 25    | H.C |
| 26       | H.C | 26    | H.C |
| 27       | H.C | 27    | H.C |

### Process Temperature

|      |                     |                     |                    |        |      |      |      |      |   |    |    |    |    |     |     |     |     |     |      |      |       |      |      |         |         |        |      |      |      |      |      |      |
|------|---------------------|---------------------|--------------------|--------|------|------|------|------|---|----|----|----|----|-----|-----|-----|-----|-----|------|------|-------|------|------|---------|---------|--------|------|------|------|------|------|------|
| 01   | C12 CS03000101D-N01 | C121CS030010D-N01   | 50                 | 2'     | 60   | 28.1 | 30.9 | 3    | 2 | 0  | 0  | 6  | 10 | 8   | 50  | -20 | 30  | 150 | 20   | 55   | 15.2  | 22.5 | 1    | 35.0    | 43      | HKT26J | 240  | 22.5 | 0.00 | 0.97 | 0.0  | 4.00 |
| 02   | C12 CS03034101-N01  | C121CS034101-N01    | 15                 | 1/2'   | 21   | 10   | 20.1 | 3    | 1 | 0  | 4  | 5  | 4  | 50  | -20 | 30  | 150 | 20  | 90   | 8.5  | 12.5  | 1    | 12.0 | 28      | HKT25J  | 240    | 12.5 | 0.00 | 0.35 | 0.0  | 1.46 |      |
| 03   | C12 HGSS31201D-N01  | C121HGSS31201D-N01  | 50                 | 2'     | 60   | 10.9 | 14.6 | 7    | 0 | 2  | 4  | 6  | 10 | 50  | -20 | 40  | 150 | 20  | 78   | 15.2 | 22.5  | 1    | 22.0 | 27      | HKT26J  | 240    | 22.5 | 0.00 | 0.61 | 0.0  | 2.53 |      |
| 04   | C12 HGSS31202-N01   | C121HGSS31202-N01   | 40                 | 1 1/2' | 48   | 3.7  | 5.4  | 2    | 0 | 0  | 0  | 1  | 2  | 50  | -20 | 40  | 150 | 20  | 73   | 13.2 | 14.0  | 1    | 7.0  | 11      | HKT25J  | 240    | 14.0 | 0.00 | 0.15 | 0.0  | 0.64 |      |
| 05   | 3-LEE-1/ C121-N01   | C12 ML331205-N01    | C121HML331205-N01  | 150    | 6'   | 168  | 21.2 | 24.7 | 2 | 2  | 0  | 4  | 4  | 60  | -20 | 40  | 150 | 30  | 82   | 34.4 | 44.0  | 1    | 35.0 | 41      | HKT215J | 240    | 44.0 | 0.00 | 1.80 | 0.0  | 7.52 |      |
| 06   | C12 ML331206D-N01   | C121HML331206D-N01  | 150                | 6'     | 168  | 22.1 | 23.1 | 0    | 1 | 12 | 0  | 5  | 5  | 60  | -20 | 40  | 110 | 30  | 82   | 34.4 | 44.0  | 1    | 45.0 | 41      | HKT215J | 240    | 44.0 | 0.00 | 1.80 | 0.0  | 7.50 |      |
| 07   | 3-LEE-1/ C122-N01   | C12 ML331206D-N02   | C121HML331206D-N02 | 150    | 6'   | 168  | 22.1 | 28.1 | 0 | 1  | 12 | 0  | 4  | 60  | -20 | 40  | 110 | 30  | 82   | 34.4 | 44.0  | 1    | 46.0 | 39      | HKT215J | 240    | 44.0 | 0.00 | 1.72 | 0.0  | 7.15 |      |
| 07   | C12 ML331206D-N02   | ML331206D           | 50                 | 2'     | 60   | 0    | 5.1  |      |   |    |    |    |    | 60  | -20 | 40  | 110 | 30  | 82   | 17.0 | 25.2  | 1    |      | 9       | HKT28J  | 240    | 21.0 | 0.00 | 0.19 | 0.0  | 0.79 |      |
| 08   | 3-LEE-1/ C121-N01   | C12 3-LEE-1/ML33114 | C121HML33114       | 400    | 16   | 406  | 0.8  | 3    | 0 | 0  | 0  | 8  | 8  | 50  | -20 | 40  | 180 | 10  | 72   | 9.9  | 15.0  | 1    | 27.0 | 42      | HKT25J  | 240    | 15.0 | 0.00 | 0.63 | 0.0  | 2.63 |      |
| 08.1 | 3-LEE-1/ C12.21-N01 | C12 D3103-N01       | D3103              |        |      |      |      | 0    | 0 | 0  | 0  | 0  | 0  | 50  | -20 | 40  | 180 | 10  | 10   | 50.1 | 288.0 | 12   |      | 12      | HKT28J  | 240    | 24.0 | 0.00 | 0.29 | 0.0  | 1.20 |      |
| 09   | 3-LEE-1/ C123-N01   | C12 ML331202-N01    | C121HML331202-N01  | 50     | 2'   | 60   | 4.2  | 4.6  | 3 | 1  | 0  | 2  | 2  | 4   | 50  | -20 | 40  | 180 | 10   | 70   | 11.4  | 15.0 | 1    | 11.0    | 10      | HKT25J | 240  | 15.0 | 0.00 | 0.15 | 0.0  | 0.63 |
| 10   | C12 ML331210-N01    | C121HML331210-N01   | ML331210           | 15     | 1/2' | 21   | 10.4 | 1    | 0 | 0  | 0  | 7  | 50 | -20 | 40  | 150 | 30  | 85  | 10.7 | 13.0 | 1     | 30.0 | 18   | HKT25J  | 240     | 13.0   | 0.00 | 0.23 | 0.0  | 0.98 |      |      |
| 10.1 | 3-LEE-1/ C12.21-N01 | C12 ML331210-N02    | ML331210           | 15     | 1/2' | 21   | 3    | 10.4 | 1 | 0  | 0  | 6  | 50 | -20 | 40  | 150 | 30  | 85  | 10.7 | 13.0 | 1     | 30.0 | 7    | HKT25J  | 240     | 13.0   | 0.00 | 0.09 | 0.0  | 0.38 |      |      |
| 11   | C12 OQ335102D-N01   | C121OQ335102D-N01   | 80                 | 3'     | 89   | 9    | 25.3 | 6    | 4 | 8  | 0  | 6  | 5  | 50  | -20 | 40  | 150 | 40  | 85   | 29.6 | 30.0  | 1    | 30.0 | 39      | HKT212J | 240    | 30.0 | 0.00 | 1.17 | 0.0  | 4.88 |      |
| 12   | C12 OQ335102D-N02   | C121OQ335102D-N02   | 80                 | 3'     | 89   | 9.3  | 31.4 | 4    | 4 | 0  | 8  | 0  | 7  | 50  | -20 | 40  | 150 | 40  | 85   | 29.6 | 30.0  | 1    | 30.0 | 43      | HKT212J | 240    | 30.0 | 0.00 | 1.29 | 0.0  | 5.38 |      |
| 13   | 3-LEE-1/ C122-N01   | C12 WQ335101D-N01   | C121WQ335101D-N01  | 80     | 3'   | 89   | 15.5 | 14.1 | 0 | 0  | 0  | 4  | 3  | 50  | -20 | 50  | 150 | 40  | 85   | 29.6 | 30.0  | 1    | 19.0 | 19      | HKT212J | 240    | 30.0 | 0.00 | 0.57 | 0.0  | 2.38 |      |
| 13.2 | C12 WQ335106-N01    | WQ335106            | 80                 | 3'     | 89   | 6.2  | 9.5  | 5    | 2 | 2  | 0  | 5  | 50 | -20 | 50  | 150 | 40  | 85  | 29.6 | 30.0 | 1     | 17.0 | 21   | HKT212J | 240     | 30.0   | 0.00 | 0.63 | 0.0  | 2.63 |      |      |
| 14   | C12 ML333101-N01    | C121HML333101-N01   | 25                 | 1'     | 34   | 43.3 | 6    | 0    | 0 | 0  | 0  | 1  | 16 | 3   | 50  | -20 | 30  | 150 | 30   | 88   | 13.6  | 21.0 | 1    |         | 52      | HKT28J | 240  | 21.0 | 0.00 | 1.09 | 0.0  | 4.55 |
| 15   | C12 ML333101-N02    | C121HML333101-N02   | 25                 | 1'     | 34   | 42.2 | 0    | 0    | 0 | 0  | 0  | 1  | 11 | 3   | 50  | -20 | 30  | 150 | 30   | 88   | 13.6  | 21.0 | 1    |         | 59      | HKT28J | 240  | 21.0 | 0.00 | 1.24 | 0.0  | 5.16 |
| 16   | Reverse             |                     |                    |        |      |      |      |      |   |    |    |    |    |     |     |     |     |     |      |      |       |      |      |         |         |        |      |      |      |      |      |      |
| 17   | 3-LEE-1/ C122-N01   | C12 WQ335114-N01    | C121WQ335114-N01   | 80     | 3'   | 89   | 6.9  | 4    | 1 | 0  | 0  | 2  | 2  | 60  | -20 | 50  | 150 | 40  | 85   | 26.2 | 30.0  | 1    | 4.0  | 15      | HKT212J | 240    | 30.0 | 0.00 | 0.45 | 0.0  | 1.88 |      |
| 17.1 | 3-LEE-1/ C122-N01   | C12 WQ335115-N01    | WQ335115           | 80     | 3'   | 89   | 7.2  | 1    | 0 | 0  | 0  | 2  | 2  | 60  | -20 | 50  | 150 | 40  | 85   | 26.2 | 30.0  | 1    | 4.0  | 15      | HKT212J | 240    | 30.0 | 0.00 | 0.45 | 0.0  | 1.88 |      |
| 18   | C13 CS0304102-N01   | C131CS0304102-N01   | 25                 | 1'     | 34   | 30   | 38.5 | 1    | 0 | 0  | 0  | 8  | 11 | 6   | 50  | -20 | 30  | 150 | 20   | 78   | 10.9  | 14.0 | 1    | 32.0    | 43      | HKT25J | 240  | 14.0 | 0.00 | 0.60 | 0.0  | 2.51 |
|      | C13 ML32217P-N01    | C131ML32217P-N01    | 50                 | 2'     | 60   | 18   | 41.7 | 0    | 2 | 6  | 0  | 11 | 5  | 50  | -20 | 40  | 150 | 30  | 79   | 18.9 | 21.0  | 1    | 40.0 | 57      | HKT28J  | 240    | 21.0 | 0.00 | 1.20 | 0.0  | 4.99 |      |

**Figure B.8 – EC008 heating circuit list**

Print:

| Installation area data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                 |                            |         |                |               |                                            |                                |                      |               | R                   |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------|---------|----------------|---------------|--------------------------------------------|--------------------------------|----------------------|---------------|---------------------|---------------------------|--|--|--|------|--|---------------------------|--|----------------|--|--|--|-------|--|--|--|------------------------|--|--|--|------|--|--|--|--|--|--|--|----------|--|---------|--|--|--|--|--|----------------|--|--------|--|---|------|-----------------|--|--|--|--|--|---------------|--|-----|-----|--|--|------|-------|
| B51                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Installation location           | Outdoor, only antifreezing |         |                | B67           | Remote hazardous area class                | Zone 1, Group IIA              |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B52                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Corrosive influence by (1)      | Coastal climate            |         |                | B68           | Remote area min. ign. temp.                | T3 (> 200 °C)                  |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B53                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Ambient temp. [min.](max.)      | -15.0                      | 40.0    | °C             | B69           | Max. allow. sound press. level             | 85 dB(A)                       |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B54                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Ambient work temp. [min.](max.) | -15.0                      | 40.0    | °C             | B20           | Remark (1)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Max. relative humidity          | 95.00 %                    |         |                | B21           | Remark (2)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B57                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Altitude above sea level        | 20.00 m                    |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| Process data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                 |                            |         |                | R             | Process data (continued)                   |                                |                      |               |                     | R                         |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Fluid                           | Water                      |         |                | D53           | Molecular weight                           |                                |                      |               | g/mol               |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B41                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Composition                     | H2O2                       |         |                | D54           | Compressibility factor (Z1/Zn)             |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Corrosive components            |                            |         |                | D55           | Rel. dielectr. const. Epsilon r            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B43                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Toxic components                |                            |         |                | D56           | Electrical conductivity                    |                                |                      |               | mS/cm               |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Abrasive components             |                            |         |                | D66           | Isentropic exponent                        |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Suspended particles             |                            |         |                | D43           | Max. allowable pressure drop               |                                |                      |               | 0.50 bar            |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B39                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Special fluid properties (1)    |                            |         |                | D59           | Remark (1)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Special fluid properties (2)    |                            |         |                | D60           | Remark (2)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B46                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Water hazard class (WHC)        |                            |         |                | Location data |                                            |                                |                      |               |                     | R                         |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B47                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Indicat. of danger (67/549/EEC) |                            |         |                | B04           | PI-Diagram / Sheet no.                     |                                |                      |               | 13                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Pollution restriction           |                            |         |                | B60           | Reference location                         |                                |                      |               | 2"-P-13-76009-A3-3F |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Inline hazardous area           |                            |         |                | B84           | Pipe spec. selected                        |                                |                      |               | A3-3F               |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| B26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Phase                           | (L) liquid                 |         |                | B97           | Connection type                            |                                |                      |               | flanged             |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| Runcase value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                 |                            |         | min.           | norm.         | max.                                       | unit                           | B14                  | Line [DN](PN) | 2"                  | CLASS 300                 |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| D50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Mass flow rate                  | 3496.00                    | 3984.00 | 9960.00        | kg/h          | B93                                        | Connection facing              | RF, ANSI 16.5        |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| D42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Actual flow rate                | 3.50                       | 4.00    | 10.00          | m³/h          | B92                                        | Line material                  | Killed C.S. (A106-B) |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| D51                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Actual flow [N.]                |                            |         |                | Nm³/h         | B94                                        | Line diam. [inside](outside)   | 52.48                | 60.30         | mm                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| D24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Operating pressure p1           | 6.00                       | 7.00    | 9.00           | bar a         | B15                                        | Insulation [type](thickness)   |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| D30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Operating temperature t1        | 30.0                       | 30.0    | 30.0           | °C            | B66                                        | Heating/cooling [trace](temp.) |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| D33                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Operating density               | 996.00                     | 996.00  | 996.00         | kg/m³         | B70                                        | Design pressure [min.](max.)   | 27.00 bar a          |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| D36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Pressure [Boiling](Critical)    | 0.04                       | 220.00  | bar a          | B72           | Design temp. [min.](max.)                  | 260.0 °C                       |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| D52                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Temp. [Boiling](Condensation)   | 373.0                      |         |                | °C            | B98                                        | Remark (1)                     |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| D10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Density at rel. cond.           |                            |         |                | kg/Nm³        | B99                                        | Remark (2)                     |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| D11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Dyn. viscosity                  |                            |         |                | cP            |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| Component process design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                 |                            |         |                | R             | Component process design (continued)       |                                |                      |               |                     | R                         |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Manufacturer                    |                            |         |                | N93           | Flow element type                          |                                |                      |               | flange orifice      |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Manufacturer model no.          |                            |         |                | N10           | Cleaning requirement                       |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N03                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Type of construction            |                            |         |                | T44           | Design max. flow                           |                                |                      |               | 11.00 m³/h          |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N08                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Compon. conn. [style](stand.)   | flanged                    |         |                | N04           | Calibration range [lower](upper)           | 0.0                            | 500.0                |               | mbar                |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N43                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Compon. conn. [DN](PN)          | 2"                         |         |                | T45           | Max. calculated pressure loss              |                                |                      |               | bar a               |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Facing compon. conn.            | RF, ANSI 16.5              |         |                | N12           | Remark (1)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Material body/process conn.     | 316 L                      |         |                | N13           | Remark (2)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N97                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Material meas. cell (wetted)    |                            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N58                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Plate thickness                 |                            |         |                |               |                                            |                                |                      |               | mm                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N59                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Orifice bore type               |                            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Orifice inlet edge style        |                            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N89                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Beta d/D Bore dia.              |                            |         |                |               |                                            |                                |                      |               | mm                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Plate outside diameter          |                            |         |                |               |                                            |                                |                      |               | mm                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N95                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Clearance [up.](downstream)     |                            |         |                |               |                                            |                                |                      |               | mm                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N92                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Vent/drain hole size            |                            |         |                |               |                                            |                                |                      |               | mm                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| Mechanical design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                 |                            |         |                | R             | Additional accessories / Material part no. |                                |                      |               |                     | R                         |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N94                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Stampings                       |                            |         |                | N87           |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| T47                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Installation position           |                            |         |                | T51           |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N78                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Flow direction                  | horizontal                 |         |                | T52           |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| T17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Internal connection style       |                            |         |                | T53           |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| T48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Tap conn. [type](size)          | --                         |         |                | N60           |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| T49                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Material tapping conn.          |                            |         |                | N37           | Remark (1)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| T50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Material lining                 |                            |         |                | N38           | Remark (2)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| F01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                 |                            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Remark (1)                      |                            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| N26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Remark (2)                      |                            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| <table border="1"> <tr> <td colspan="4">Requirement Specification</td> <td colspan="2">Code</td> <td colspan="2">IEC 62708 / Doc templates</td> </tr> <tr> <td colspan="4">acc. IEC 62708</td> <td colspan="2">Plant</td> <td colspan="2"></td> </tr> <tr> <td colspan="4">Orifice plate assembly</td> <td colspan="2">Unit</td> <td colspan="2"></td> </tr> <tr> <td colspan="4"></td> <td colspan="2">Part no.</td> <td colspan="2">KFAA001</td> </tr> <tr> <td colspan="4"></td> <td colspan="2">TAG Identific.</td> <td colspan="2">FE7608</td> </tr> <tr> <td>R</td> <td>Date</td> <td colspan="2">Client Doc.-ID:</td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td colspan="2">Doc.-ID-Code:</td> <td>CC:</td> <td>UA:</td> <td colspan="2"></td> <td>Page</td> <td>1 / 1</td> </tr> </table> |                                 |                            |         |                |               |                                            |                                |                      |               |                     | Requirement Specification |  |  |  | Code |  | IEC 62708 / Doc templates |  | acc. IEC 62708 |  |  |  | Plant |  |  |  | Orifice plate assembly |  |  |  | Unit |  |  |  |  |  |  |  | Part no. |  | KFAA001 |  |  |  |  |  | TAG Identific. |  | FE7608 |  | R | Date | Client Doc.-ID: |  |  |  |  |  | Doc.-ID-Code: |  | CC: | UA: |  |  | Page | 1 / 1 |
| Requirement Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                 |                            |         | Code           |               | IEC 62708 / Doc templates                  |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| acc. IEC 62708                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |                            |         | Plant          |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| Orifice plate assembly                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                 |                            |         | Unit           |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                 |                            |         | Part no.       |               | KFAA001                                    |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                 |                            |         | TAG Identific. |               | FE7608                                     |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| R                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Date                            | Client Doc.-ID:            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |
| Doc.-ID-Code:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                 | CC:                        | UA:     |                |               | Page                                       | 1 / 1                          |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |  |  |  |  |               |  |     |     |  |  |      |       |

IEC

Figure B.9 – EC009 requirement specification

Print:

| Installation area data                                                                                                                                                                                                                                                                |                                 |                               |         |            |                    |                                                          |                                |                      |               | R        |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------------|---------|------------|--------------------|----------------------------------------------------------|--------------------------------|----------------------|---------------|----------|-----------|
| B51                                                                                                                                                                                                                                                                                   | Installation location           | Outdoor, only antifreezing    |         |            | B67                | Remote hazardous area class                              | Zone 1, Group IIA              |                      |               |          |           |
| B52                                                                                                                                                                                                                                                                                   | Corrosive influence by (1)      | Coastal climate               |         |            | B68                | Remote area min. ign. temp.                              | T <sub>3</sub> (> 200 °C)      |                      |               |          |           |
| B53                                                                                                                                                                                                                                                                                   | Ambient temp. [min.][max.]      | -15.0                         | 40.0    | °C         | B69                | Max. allow. sound press. level                           | 85 dB(A)                       |                      |               |          |           |
| B54                                                                                                                                                                                                                                                                                   | Ambient work temp. [min.][max.] | -15.0                         | 40.0    | °C         | B20                | Remark (1)                                               |                                |                      |               |          |           |
| B55                                                                                                                                                                                                                                                                                   | Max. relative humidity          | 95.00 %                       |         |            | B21                | Remark (2)                                               |                                |                      |               |          |           |
| B57                                                                                                                                                                                                                                                                                   | Altitude above sea level        | 20.00 m                       |         |            |                    |                                                          |                                |                      |               |          |           |
| Process data                                                                                                                                                                                                                                                                          |                                 |                               |         |            | R                  | Process data (continued)                                 |                                |                      |               |          | R         |
| B25                                                                                                                                                                                                                                                                                   | Fluid                           | Water                         |         |            | D53                | Molecular weight                                         |                                |                      |               | g/mol    |           |
| B41                                                                                                                                                                                                                                                                                   | Composition                     | H <sub>2</sub> O <sub>2</sub> |         |            | D54                | Compressibility factor (Z <sub>1</sub> /Z <sub>2</sub> ) |                                |                      |               |          |           |
| B42                                                                                                                                                                                                                                                                                   | Corrosive components            |                               |         |            | D55                | Rel. dielectr. const. Epsilon r                          |                                |                      |               |          |           |
| B43                                                                                                                                                                                                                                                                                   | Toxic components                |                               |         |            | D56                | Electrical conductivity                                  |                                |                      |               | mS/cm    |           |
| B44                                                                                                                                                                                                                                                                                   | Abrasive components             |                               |         |            | D66                | Isentropic exponent                                      |                                |                      |               |          |           |
| B45                                                                                                                                                                                                                                                                                   | Suspended particles             |                               |         |            | D43                | Max. allowable pressure drop                             |                                |                      |               | 0.50 bar |           |
| B39                                                                                                                                                                                                                                                                                   | Special fluid properties (1)    |                               |         |            | D59                | Remark (1)                                               |                                |                      |               |          |           |
| B40                                                                                                                                                                                                                                                                                   | Special fluid properties (2)    |                               |         |            | D60                | Remark (2)                                               |                                |                      |               |          |           |
| B46                                                                                                                                                                                                                                                                                   | Water hazard class (WHC)        |                               |         |            | Location data      |                                                          |                                |                      |               | R        |           |
| B47                                                                                                                                                                                                                                                                                   | Indicat. of danger (67/549/EEC) |                               |         |            | B04                | PI-Diagram / Sheet no.                                   | 13                             |                      |               |          |           |
| B50                                                                                                                                                                                                                                                                                   | Pollution restriction           |                               |         |            | B60                | Reference location                                       | 2"-P-13-76009-A3-3F            |                      |               |          |           |
| B48                                                                                                                                                                                                                                                                                   | Inline hazardous area           |                               |         |            | B84                | Pipe spec. selected                                      | A3-3F                          |                      |               |          |           |
| B26                                                                                                                                                                                                                                                                                   | Phase                           | (L) liquid                    |         |            | B97                | Connection type                                          | flanged                        |                      |               |          |           |
| Runcase value                                                                                                                                                                                                                                                                         |                                 |                               |         | min.       | norm.              | max.                                                     | unit                           | B14                  | Line [DN][PN] | 2"       | CLASS 300 |
| D50                                                                                                                                                                                                                                                                                   | Mass flow rate                  | 3496.00                       | 3984.00 | 9960.00    | kg/h               | B93                                                      | Connection facing              | RF, ANSI 16.5        |               |          |           |
| D42                                                                                                                                                                                                                                                                                   | Actual flow rate                | 3.50                          | 4.00    | 10.00      | m <sup>3</sup> /h  | B92                                                      | Line material                  | Killed C.S. (A106-B) |               |          |           |
| D51                                                                                                                                                                                                                                                                                   | Actual flow [L.N.]              |                               |         |            | Nm <sup>3</sup> /h | B94                                                      | Line diam. [inside][outside]   | 52.48                | 60.30         | mm       |           |
| D24                                                                                                                                                                                                                                                                                   | Operating pressure p1           | 6.00                          | 7.00    | 9.00       | bar a              | B15                                                      | Insulation [type][thickness]   |                      |               |          |           |
| D30                                                                                                                                                                                                                                                                                   | Operating temperature t1        | 30.0                          | 30.0    | 30.0       | °C                 | B66                                                      | Heating/cooling [trace][temp.] |                      |               |          |           |
| D33                                                                                                                                                                                                                                                                                   | Operating density               | 996.00                        | 996.00  | 996.00     | kg/m <sup>3</sup>  | B70                                                      | Design pressure [min.][max.]   | 27.00 bar a          |               |          |           |
| D36                                                                                                                                                                                                                                                                                   | Pressure [Boiling.][Critical.]  | 0.04                          | 220.00  | bar a      | B72                | Design temp. [min.][max.]                                | 260.0 °C                       |                      |               |          |           |
| D52                                                                                                                                                                                                                                                                                   | Temp. [Boiling.][Condensation.] | 373.0                         |         |            | °C                 | B98                                                      | Remark (1)                     |                      |               |          |           |
| D10                                                                                                                                                                                                                                                                                   | Density at rel. cond.           |                               |         |            | kg/Nm <sup>3</sup> | B99                                                      | Remark (2)                     |                      |               |          |           |
| D11                                                                                                                                                                                                                                                                                   | Dyn. viscosity                  |                               |         |            | cP                 |                                                          |                                |                      |               |          |           |
| Component process design                                                                                                                                                                                                                                                              |                                 |                               |         |            | R                  | Component process design (continued)                     |                                |                      |               |          | R         |
| N01                                                                                                                                                                                                                                                                                   | Manufacturer                    | XYZ Company                   |         |            | N93                | Flow element type                                        | flange orifice                 |                      |               |          |           |
| N02                                                                                                                                                                                                                                                                                   | Manufacturer model no.          | 678-BD                        |         |            | N10                | Cleaning requirement                                     |                                |                      |               |          |           |
| N03                                                                                                                                                                                                                                                                                   | Type of construction            | ISO 5167                      |         |            | T44                | Design max. flow                                         | 11.00 m <sup>3</sup> /h        |                      |               |          |           |
| N08                                                                                                                                                                                                                                                                                   | Compon. conn. [style][stand.]   | flanged                       |         | ANSI B16.5 | N04                | Calibration range [lower][upper]                         | 0.0                            |                      | 500.0         | mbar     |           |
| N43                                                                                                                                                                                                                                                                                   | Compon. conn. [DN][PN]          | 2"                            |         | CLASS 300  | T45                | Max. calculated pressure loss                            | 0.5                            |                      |               | bar a    |           |
| N44                                                                                                                                                                                                                                                                                   | Facing compon. conn.            | RF, ANSI 16.5                 |         |            | N12                | Remark (1)                                               |                                |                      |               |          |           |
| N09                                                                                                                                                                                                                                                                                   | Material body/process conn.     | 316 L                         |         |            | N13                | Remark (2)                                               |                                |                      |               |          |           |
| N97                                                                                                                                                                                                                                                                                   | Material meas. cell (wetted)    |                               |         |            |                    |                                                          |                                |                      |               |          |           |
| N58                                                                                                                                                                                                                                                                                   | Plate thickness                 | 4.50 mm                       |         |            |                    |                                                          |                                |                      |               |          |           |
| N59                                                                                                                                                                                                                                                                                   | Orifice bore type               | straight                      |         |            |                    |                                                          |                                |                      |               |          |           |
| N88                                                                                                                                                                                                                                                                                   | Orifice inlet edge style        | sharp edge                    |         |            |                    |                                                          |                                |                      |               |          |           |
| N89                                                                                                                                                                                                                                                                                   | Beta d/D Bore dia.              | 0.475                         | 24.9    |            | mm                 |                                                          |                                |                      |               |          |           |
| N90                                                                                                                                                                                                                                                                                   | Plate outside diameter          | 100                           |         |            | mm                 |                                                          |                                |                      |               |          |           |
| N95                                                                                                                                                                                                                                                                                   | Clearance [up.][downstream]     | 700                           | 1500    |            | mm                 |                                                          |                                |                      |               |          |           |
| N92                                                                                                                                                                                                                                                                                   | Vent/drain hole size            | n.a.                          | n.a.    |            | mm                 |                                                          |                                |                      |               |          |           |
| Mechanical design                                                                                                                                                                                                                                                                     |                                 |                               |         |            | R                  | Additional accessories / Material part no.               |                                |                      |               |          | R         |
| N94                                                                                                                                                                                                                                                                                   | Stampings                       | Bore diameter/ material       |         |            | N87                |                                                          |                                |                      |               |          |           |
| T47                                                                                                                                                                                                                                                                                   | Installation position           | horizontal                    |         |            | T51                |                                                          |                                |                      |               |          |           |
| N78                                                                                                                                                                                                                                                                                   | Flow direction                  | horizontal                    |         |            | T52                |                                                          |                                |                      |               |          |           |
| T17                                                                                                                                                                                                                                                                                   | Internal connection style       | n.a.                          |         |            | T53                |                                                          |                                |                      |               |          |           |
| T48                                                                                                                                                                                                                                                                                   | Tap conn. [type][size]          | flange tap                    |         | 1/2"       | N60                |                                                          |                                |                      |               |          |           |
| T49                                                                                                                                                                                                                                                                                   | Material tapping conn.          |                               |         |            | N37                | Remark (1)                                               |                                |                      |               |          |           |
| T50                                                                                                                                                                                                                                                                                   | Material lining                 |                               |         |            | N38                | Remark (2)                                               |                                |                      |               |          |           |
| F01                                                                                                                                                                                                                                                                                   |                                 |                               |         |            |                    |                                                          |                                |                      |               |          |           |
| N25                                                                                                                                                                                                                                                                                   | Remark (1)                      |                               |         |            |                    |                                                          |                                |                      |               |          |           |
| N26                                                                                                                                                                                                                                                                                   | Remark (2)                      |                               |         |            |                    |                                                          |                                |                      |               |          |           |
| <div style="display: flex; justify-content: space-between;"> <div> <p><b>Specification Sheet</b><br/>acc. IEC 62708<br/>Orifice plate assembly</p> </div> <div> <p>Code IEC 62708 / Doc templates<br/>Plant<br/>Unit<br/>Part no. KFAA001<br/>TAG Identific. FE7608</p> </div> </div> |                                 |                               |         |            |                    |                                                          |                                |                      |               |          |           |
| Doc-ID-Code:                                                                                                                                                                                                                                                                          |                                 | Client Doc-ID:                |         | CC:        | UA:                | Page                                                     |                                | 1 / 1                |               |          |           |

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Figure B.10 – EC010 specification sheet

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| 1                                         | Loop-<br>Identification | Service                    | PID No.         | Required functions             | Remark | R  | Date | R          |
|-------------------------------------------|-------------------------|----------------------------|-----------------|--------------------------------|--------|----|------|------------|
| 2                                         | 1                       | 2                          | 3               | 4                              | 5      | 6  | 7    | 8          |
| 4                                         | A7602                   | Product to BL              | 14              | I                              |        |    |      |            |
| 5                                         | A7654                   | Heavies to BL              | 13              | E                              |        |    |      |            |
| 6                                         | F7608                   | Heavies to BL              | 13              | IC                             |        |    |      |            |
| 7                                         | F7609                   | E7608 MP Steam in          | 13              | IC                             |        |    |      |            |
| 8                                         | F7610                   | P7604 Min. flow            | 14              | IC                             |        |    |      |            |
| 9                                         | F7612                   | C7602 Recycle              | 14              | IC                             |        |    |      |            |
| 10                                        | F7613                   | Product to BL              | 14              | IC                             |        |    |      |            |
| 11                                        | F7651                   | P7603A Min. Flow           | 13              | B                              |        |    |      |            |
| 12                                        | F7652                   | P7603B Min. flow           | 13              | B                              |        |    |      |            |
| 13                                        | H7613                   | P7603 Off                  | 13              | S,SL                           |        |    |      |            |
| 14                                        | H7614                   | P7603 Off                  | 13              | S,SL                           |        |    |      |            |
| 15                                        | H7615                   | P7603 On / Off             | 13              | S,SH,SL                        |        |    |      |            |
| 16                                        | H7619                   | P7604 Off                  | 14              | S,SL                           |        |    |      |            |
| 17                                        | H7620                   | P7604 Off                  | 14              | S,SL                           |        |    |      |            |
| 18                                        | H7621                   | P7604 On / Off             | 14              | S,SH,SL                        |        |    |      |            |
| 19                                        | L7604                   | C7602 Bottom               | 13              | IC,AH,AL                       |        |    |      |            |
| 20                                        | L7605                   | C7603                      | 14              | IC,AH,AL                       |        |    |      |            |
| 21                                        | L7654                   | C7602 Bottom               | 13              | I                              |        |    |      |            |
| 22                                        | L7655                   | D7603                      | 14              | I                              |        |    |      |            |
| 23                                        | P7615                   | C7602 Top                  | 13              | IC,AH,AL                       |        |    |      |            |
| 24                                        | P7616                   | C7602 upper section        | 13              | DI,AH                          |        |    |      |            |
| 25                                        | P7617                   | C7602 lower section        | 13              | DI,AH                          |        |    |      |            |
| 26                                        | P7619                   | C7602 Bottom               | 13              | I                              |        |    |      |            |
| 27                                        | P7664                   | P7603A                     | 13              | I                              |        |    |      |            |
| 28                                        | P7665                   | P7603B                     | 13              | I                              |        |    |      |            |
| 29                                        | P7666                   | E7608 MP Steam in          | 13              | I                              |        |    |      |            |
| 30                                        | P7667                   | D7603                      | 14              | I                              |        |    |      |            |
| 31                                        | P7668                   | P7604A                     | 14              | I                              |        |    |      |            |
| 32                                        | P7669                   | P7604B                     | 14              | I                              |        |    |      |            |
| 33                                        | P7670                   | Product to BL              | 14              | I                              |        |    |      |            |
| 34                                        | T7614                   | E7610 Cooler out           | 13              | I                              |        |    |      |            |
| 35                                        | T7615                   | C7602 tray 1               | 13              | I                              |        |    |      |            |
| 36                                        | T7616                   | C7602 tray 6               | 13              | I                              |        |    |      |            |
| 37                                        | T7617                   | C7602 tray 28              | 13              | I                              |        |    |      |            |
| 38                                        | T7618                   | C7602 tray 48              | 13              | IC                             |        |    |      |            |
| 39                                        | T7619                   | E7608 Reboiler out         | 13              | I                              |        |    |      |            |
| 40                                        | T7620                   | C7602 Bottom               | 13              | I                              |        |    |      |            |
| 41                                        | T7621                   | E7609 Condenser out        | 14              | IC,AL                          |        |    |      |            |
| 42                                        | T7622                   | D7603                      | 14              | I                              |        |    |      |            |
| 43                                        | T7623                   | Product to BL              | 14              | I                              |        |    |      |            |
| 44                                        | T7630                   | C7602 tray 43              | 13              | I                              |        |    |      |            |
| 45                                        | T7631                   | C7602 tray 15              | 13              | I                              |        |    |      |            |
| 46                                        | T7632                   | C7602 tray 24              | 13              | I                              |        |    |      |            |
| 47                                        | T7669                   | Heavies to BL              | 13              | I                              |        |    |      |            |
| 48                                        | T7670                   | E7610 Cooling Water Return | 13              | I                              |        |    |      |            |
| 49                                        | T7671                   | E7610 Cooler in            | 13              | I                              |        |    |      |            |
| 50                                        | T7672                   | E7608 Reboiler in          | 13              | I                              |        |    |      |            |
| 51                                        | T7673                   | E7609 Condenser in         | 14              | I                              |        |    |      |            |
| 52                                        | T7675                   | E7611 Cooling Water Return | 14              | I                              |        |    |      |            |
| 53                                        | U7605                   | Shut Down C7602 Feed       | 13              | S                              |        |    |      |            |
| 54                                        | U7606                   | Shut down P7603            | 13              | S                              |        |    |      |            |
| 55                                        | U7608                   | Shut Down C7602 Recycle    | 14              | S                              |        |    |      |            |
| 56                                        | U7609                   | Shut down P7604            | 14              | S                              |        |    |      |            |
| 57                                        | U7610                   | Split range D7603          | 14              | C                              |        |    |      |            |
| 58                                        | U7612                   | C7602 Recycle              | 14              | C                              |        |    |      |            |
| 59                                        | U7613                   | Product to BL              | 14              | C                              |        |    |      |            |
| 60                                        | U7633                   | Delta T17631 / T17632      | 13              | C                              |        |    |      |            |
| 61                                        | V7602                   | E7609 Fan                  | 14              | S,ASH                          |        |    |      |            |
| 62                                        | Y7603                   | Heavies to BL              | 13              | C                              |        |    |      |            |
| 63                                        | Y7604                   | E7608 MP Condensate out    | 13              | C                              |        |    |      |            |
| 64                                        | Y7605                   | C7602 Bottom               | 13              | S,OH,OSL                       |        |    |      |            |
| <b>Loop list</b><br><b>acc. IEC 62708</b> |                         |                            |                 | Code IEC 62708 / Doc templates |        |    |      |            |
|                                           |                         |                            |                 | Plant Unit                     |        |    |      |            |
| R                                         |                         | Date                       | Client Doc.-ID: |                                |        |    |      |            |
| Doc.-ID-Code:                             |                         |                            |                 | CC                             | EC     | JA | DE   | Page 1 / 2 |

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Figure B.11 – EC011 loop list

| BILL OF QUANTITIES |           |                                 |      | Project                     |               |                |                  |              |                               |     |            |     |  |
|--------------------|-----------|---------------------------------|------|-----------------------------|---------------|----------------|------------------|--------------|-------------------------------|-----|------------|-----|--|
| INSTRUMENTATION    |           |                                 |      | Revision                    |               | 00             |                  |              |                               |     |            |     |  |
|                    |           |                                 |      | Bidder                      |               |                |                  | Quantities   |                               |     |            |     |  |
| Rev                | Bo Q Item | Description                     | Unit | Actual<br>Total<br>Quantity | Unit<br>Hours | Total<br>Hours | Unit Rate<br>USD | Total<br>USD | Units -<br>Central<br>Devices | 103 | 105<br>905 | 901 |  |
| 54                 |           | INSTRUMENTATION                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.00              |           | GENERAL DESCRIPTION OF WORK     |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.00.00.0000      |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K1              |           | Process connection, direct      |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K1.00           |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K1.00.0000      |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K1.00.A110      |           | Direct mounted < 80 °C          | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K1.00.A120      |           | PI flanged, with flushing ring  | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K1.00.A210      |           | Direct mounted > 80 °C          | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2              |           | Process connection, remote      |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K2.00           |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K2.00.0000      |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K2.00.G110      |           | P for gas service, above TP     | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2.00.G210      |           | P for gas service, below TP     | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2.00.G410      |           | P for reformer fire detection   | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2.00.GR10      |           | PI remote, above TP             | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2.00.GT10      |           | P for gas, above, two TPs       | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2.00.L110      |           | P for liquid service, below TP  | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2.00.L210      |           | P for liquid service, above TP  | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2.00.P110      |           | P with purge gas connection     | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2.00.P120      |           | P for liquid, in box, below TP  | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2.00.P310      |           | P for wet gas, in box, above TP | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2.00.V110      |           | P for LP, < 900#, below TP      | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2.00.V210      |           | P for LPS, < 900#, above TP     | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K2.00.V310      |           | P for HPS, > 900# below TP      | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3              |           | Process connection, dP          |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K3.00           |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K3.00.0000      |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K3.00.G110      |           | dP for gas service, above TP    | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.G210      |           | dP for gas service, below TP    | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.GR10      |           | dPg for gas service, above TP   | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.GR20      |           | dPg for gas service, below TP   | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.L110      |           | dP for liquid, below TP         | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.L210      |           | dP for liquid, above TP         | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.L310      |           | dP with CC, above TP            | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.L410      |           | dP liquid, in box, below TP     | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.LR10      |           | dPg for liquid, above TP        | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.LR20      |           | dPg for liquid, below TP        | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.P110      |           | dP with purge gas, above TP     | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.P310      |           | dP wet gas, in box, above TP    | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.V110      |           | dP for LPS, below TP            | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K3.00.V210      |           | dP for LPS, above TP            | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4              |           | Sensors, final check            |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K4.00           |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K4.00.0000      |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K4.00.4110      |           | PT, capillary, with FR pipe     | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.4120      |           | PT, capillary, with tubing      | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.4210      |           | dPT, capillary, with FR pipe    | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.4710      |           | PT, capillary, with FR vessel   | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.4730      |           | dPT, capillary, with diaphragm  | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.4810      |           | dPT, capillary, with FR vessel  | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.4910      |           | TM flanged, with flushing ring  | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.FA20      |           | F, annubar, opposite support    | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.FE10      |           | F, orifice                      | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.FN10      |           | F, magnetic, with ER            | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.FN20      |           | F, magnetic, with remote TM     | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.FU20      |           | F, ultrasonic                   | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.FV10      |           | F, variable                     | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.FV20      |           | Mass flow meter                 | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.FVM0      |           | Variable micro flow             | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.L110      |           | LI, magnetic                    | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.L120      |           | LI, magnetic                    | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.L210      |           | LI measurement, flanged         | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.L220      |           | LI displacer, sandwich, pipe    | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.L230      |           | LI displacer, sandwich, vessel  | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.L420      |           | LI fork, radar, capacity, etc   | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.L450      |           | LI pilot with indicator         | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.LD10      |           | LI direct, minus leg tubed      | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K4.00.T010      |           | TWV installation check          | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5              |           | Sensors, miscellaneous          |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K5.00           |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K5.00.0000      |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.K5.00.0020      |           | Local electrical device         | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5.00.0030      |           | Local push button               | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5.00.0040      |           | T, local, ambient               | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5.00.8020      |           | Flame scanner                   | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5.00.L910      |           | L, radioactive, stripper        | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5.00.L920      |           | L, radioactive, reactor         | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5.00.L930      |           | L, radioactive, vessel          | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5.00.T010      |           | TI, local                       | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5.00.T020      |           | TTM, one head                   | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5.00.T030      |           | TTM, two heads                  | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5.00.T040      |           | T, multi, with signal cable     | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5.00.T050      |           | T, multi, with home run cable   | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.K5.00.T060      |           | T, thermocouples for flare      | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.M4              |           | Actors, final check             |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.M4.00           |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.M4.00.0000      |           |                                 |      |                             |               |                |                  |              |                               |     |            |     |  |
| 54.M4.00.0110      |           | CV with positioner              | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.M4.00.0120      |           | CV with positioner and FBS      | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.M4.00.0130      |           | CV with positioner and SOL      | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.M4.00.0140      |           | CV with tank, PCOS and FBS      | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |
| 54.M4.00.0150      |           | CV with 5/2 solenoid and FBS    | nos  | 0.00                        |               | 0.00           |                  | 0.00         |                               |     |            |     |  |

**Figure B.12 – EC014 construction bill of quantities**

|              |                     |                   |
|--------------|---------------------|-------------------|
|              |                     |                   |
| Project No:  | Project No:         | Owner Project No: |
| Job Code:    | Job Code:           | Owner Job Code:   |
| Document No: | Owner Document No.: |                   |
|              |                     | Page 2 of 3       |

### Engineering specification for instrumentation

#### Process connections and measuring points

| Instrument tapping sizes                           |                         |                   |                                            |
|----------------------------------------------------|-------------------------|-------------------|--------------------------------------------|
| Part 1 Connection on equipment                     |                         |                   |                                            |
| Instrument type                                    | Equipment connection    | First block valve | Instrument connection                      |
| <b>Pressure</b>                                    |                         |                   |                                            |
| Pressure gauge / pressure switch                   | 1" nozzle               | 1"                | 1/2" male thread <sup>1)</sup>             |
| Diaphragm gauge / pressure switch                  | 2" nozzle               | 2"                | 2" flanged                                 |
| Pressure transmitter                               | 1" nozzle               | 1"                | 1/2" male thread <sup>1)</sup>             |
| Flanged pressure transmitter                       | 2" nozzle               | 2"                | 2" flanged                                 |
| Remote seal type pressure transmitter              | 2" nozzle               | 2"                | 2" wafer                                   |
| DP transmitter                                     | 1" nozzle               | 1"                | 1/2" (F) <sup>1)</sup>                     |
| Remote seal type DP transmitter                    | 3" nozzle <sup>3)</sup> | 3"                | 3" wafer <sup>3)</sup>                     |
| <b>Temperature</b>                                 |                         |                   |                                            |
| Thermowell <sup>2)</sup>                           | 2" nozzle               | ---               | 2" flanged thermowell with 1/2" (F) thread |
| Gauge / RTD / thermocouple                         |                         |                   | 1/2" male thread                           |
| <b>Level</b>                                       |                         |                   |                                            |
| Level gauges                                       | 1" nozzle               | 1"                | 1" flanged                                 |
| Magnetic level indicator                           | 2" nozzle               | 2"                | 2" flanged                                 |
| Level switch (external float switch, side mounted) | 1" nozzle               | 1"                | 1" flanged                                 |
| DP level transmitter                               | 1" nozzle               | 1"                | 1/2" (F) <sup>1)</sup>                     |
| Flanged level transmitter                          | 3" nozzle <sup>3)</sup> | 3" <sup>3)</sup>  | 3" flanged <sup>3)</sup>                   |
| Remote seal type level transmitter                 | 3" nozzle <sup>3)</sup> | 3" <sup>3)</sup>  | 3" wafer <sup>3)</sup>                     |
| Displacer level transmitter                        | 2" nozzle               | 2"                | 2" flanged                                 |
| Purge level transmitter                            | 1" nozzle               | 1/2"              | 1/2" (F) <sup>1)</sup>                     |
| Capacitive level transmitter                       | 2" nozzle               | ---               | 2" flanged                                 |
| Level switch (vibrating, capacitive)               | 2" nozzle               | ---               | 2" flanged                                 |
| Level switch (internal float)                      | 3" nozzle (min.)        | ---               | 3" flanged                                 |
| Stand pipe <sup>5)</sup>                           | 3" nozzle (min.)        | 1/2"              | ---                                        |

|  |              |      |
|--|--------------|------|
|  | Doc. ID-Code | Rev. |
|  | ...          |      |

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Figure B.13 – EC015 specification E&I process connections



|              |                 |  |                      |  |           |     |
|--------------|-----------------|--|----------------------|--|-----------|-----|
| Company Logo | Site:           |  | Plant Complex:       |  | Building: |     |
|              | Process:        |  | Sub-Process:         |  | Page / of | 1/1 |
|              | Technical Item: |  | PCT Loop:            |  |           |     |
| Department   | PCT-Loop type   |  | Pressure transmitter |  |           |     |
| Version x.x  |                 |  |                      |  |           |     |

**Ex-i calculation sheet**  
Based on IEC 60079-11  
! Only valid for combinations with with one intrinsically-safe electrical apparatus !

| Explosion hazardous area classification | Zone | Explos.- Group | Temp. Class |
|-----------------------------------------|------|----------------|-------------|
|                                         | 1    | IIA            | T3          |

Vergleich der sicherheitsrelevanten Grenzwerte

| Intrinsically-safe electrical apparatus + cable             | Comparison | dedicated apparatus                     | Intrinsically safe? |     |
|-------------------------------------------------------------|------------|-----------------------------------------|---------------------|-----|
| U <sub>i</sub> (V)                                          | 40         | U <sub>0</sub> (V)                      | 27,6                | Yes |
| I <sub>i</sub> (mA)                                         | 100        | I <sub>0</sub> (mA)                     | 91                  | Yes |
| P <sub>i</sub> (mW)                                         | 2000       | P <sub>0</sub> (mW)                     | 630                 | Yes |
| L <sub>i</sub> - field device + L <sub>c</sub> cable (mH)   | 0,1        | L <sub>0</sub> (mH)                     | 3                   | Yes |
| C <sub>i</sub> - field device + C <sub>c</sub> - cable (nF) | 15         | C <sub>0</sub> (nF)                     | 83                  | Yes |
| Classification of the electrical circuit                    | Comparison | Explosion hazardous area classification | Certification ?     |     |
| Zone:                                                       | 1          | Zone:                                   | 1                   | Yes |
| Explos. - Group:                                            | IIC        | Explos. - Groupe:                       | IIA                 | Yes |
| T. - Class:                                                 | T4-T6      | T. - Class:                             | T3                  | Yes |

| Apparatus:          | Ex-i values | Manufacturer:   | XXX                              |
|---------------------|-------------|-----------------|----------------------------------|
| U <sub>0</sub> (V)  | 27,6        | Type:           | 6ES7 134-7TD00-0AB0              |
| I <sub>0</sub> (mA) | 91          | Attribute:      | II 2 G (1) GD EEx ib [ia] IIC T4 |
| P <sub>0</sub> (mW) | 630         | Conformity No.: | KEMA 04 ATEX 1244                |
| L <sub>0</sub> (mH) | 3           | Amendment No.:  |                                  |
| C <sub>0</sub> (nF) | 83          | Ex.-Group:      | IIC                              |

| Cable                    | Ex-i values | Manufacturer: | XXX                 |
|--------------------------|-------------|---------------|---------------------|
| L <sub>c</sub> (mH/100m) | 0,1         | Type:         | RD Y (St) Y 2x2x0,5 |
| C <sub>c</sub> (nF/100m) | 15          |               |                     |
| Länge (m)                | 100         |               |                     |

| Apparatus:          | Ex-i values    | Manufacturer:   | YYY                  |
|---------------------|----------------|-----------------|----------------------|
| U <sub>i</sub> (V)  | 40             | Type:           | BIB 562              |
| I <sub>i</sub> (mA) | 100            | Attribute:      | EEx ib d IIC T4-T6   |
| P <sub>i</sub> (mW) | 2000           | Conformity No.: | PTB Nr. Ex-85.B.2007 |
| L <sub>i</sub> (mH) | 0 (ungefähr 0) | Amendment No.:  |                      |
| C <sub>i</sub> (nF) | 0 (ungefähr 0) | Zone:           | 1                    |
|                     |                | Ex.-Group:      | IIC                  |
|                     |                | T.-Class:       | T4-T6                |

**Comment:**

|             |  |                |  |           |  |            |  |
|-------------|--|----------------|--|-----------|--|------------|--|
| Name:       |  | Date:          |  | PCT Loop: |  | File Name: |  |
| Department: |  | Revision Date: |  | Revision: |  |            |  |
| Verified:   |  | Revision:      |  | Date:     |  |            |  |

Figure B.14 – ED006 Ex-i calculation sheet

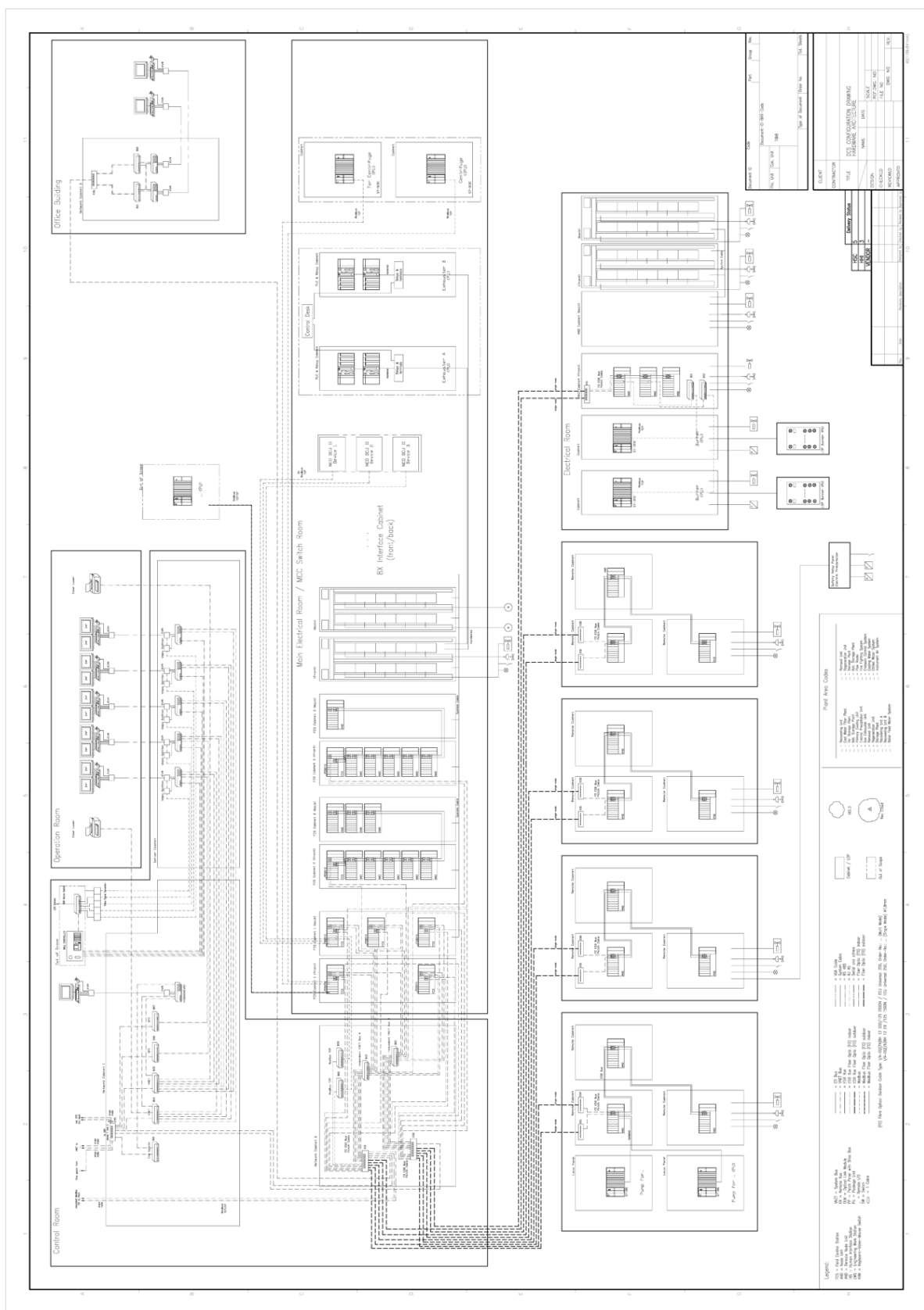
Rev.: 0, Dated at: XX.XX.XXXX  
Printed at: 27/02/2012

| Heat Loss Calculation - UPS-Room                                                              |                                                                        |                    |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------|
| <b>UPS-System</b>                                                                             | Item No.: <b>UPS-1</b>                                                 | Location: MCC-Room |
| <b>Data:</b>                                                                                  | Rated Capacity                                                         | 150 kVA            |
|                                                                                               | Efficiency                                                             | 85 % *             |
| <b>Heat Loss Calculation:</b>                                                                 | Heat loss capacity = Rated Capacity * (1 - Efficiency)                 |                    |
|                                                                                               | <b>Total Heat loss capacity:</b>                                       | <b>22.5 kW</b>     |
| * efficiency of 85% due to the additional transformers at incoming outgoing of UPS considered |                                                                        |                    |
| <b>UPS-System</b>                                                                             | Item No.: <b>UPS-2</b>                                                 | Location: MCC-Room |
| <b>Data:</b>                                                                                  | Rated Capacity                                                         | 30 kVA             |
|                                                                                               | Efficiency                                                             | 85 %               |
| <b>Heat Loss Calculation:</b>                                                                 | Heat loss capacity = Rated Capacity * (1 - Efficiency)                 |                    |
|                                                                                               | <b>Total Heat loss capacity:</b>                                       | <b>4.5 kW</b>      |
| * efficiency of 85% due to the additional transformers at incoming outgoing of UPS considered |                                                                        |                    |
| <b>DC-System</b>                                                                              | Item No.: <b>DC-1</b>                                                  | Location: MCC-Room |
| <b>Data:</b>                                                                                  | Rated Capacity                                                         | 15 A               |
|                                                                                               | Efficiency                                                             | 85 %               |
|                                                                                               | Rated Voltage                                                          | 110 V              |
| <b>Heat Loss Calculation:</b>                                                                 | Heat loss capacity = Rated Capacity * Rated Voltage * (1 - Efficiency) |                    |
|                                                                                               | <b>Total Heat loss capacity:</b>                                       | <b>0.2475 kW</b>   |
| * efficiency of 85% due to the additional transformers at incoming of DC considered           |                                                                        |                    |
| <b>DC-System</b>                                                                              | Item No.: <b>DC-2</b>                                                  | Location: MCC-Room |
| <b>Data:</b>                                                                                  | Rated Capacity                                                         | 100 A              |
|                                                                                               | Efficiency                                                             | 85 %               |
|                                                                                               | Rated Voltage                                                          | 110 V              |
| <b>Heat Loss Calculation:</b>                                                                 | Heat loss capacity = Rated Capacity * Rated Voltage * (1 - Efficiency) |                    |
|                                                                                               | <b>Total Heat loss capacity:</b>                                       | <b>1.65 kW</b>     |
| * efficiency of 85% due to the additional transformers at incoming of DC considered           |                                                                        |                    |
| <b>GRAND TOTAL Heat Loss Capacity</b>                                                         | <b>UPS-Room</b>                                                        | <b>28.8975 kW</b>  |

Figure B.15 – ED007 heat dissipation summary



**Figure B.16 – FA001 electrical single line diagram**



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Figure B.17 – FA002 structure diagram DCS-PLC-SIS

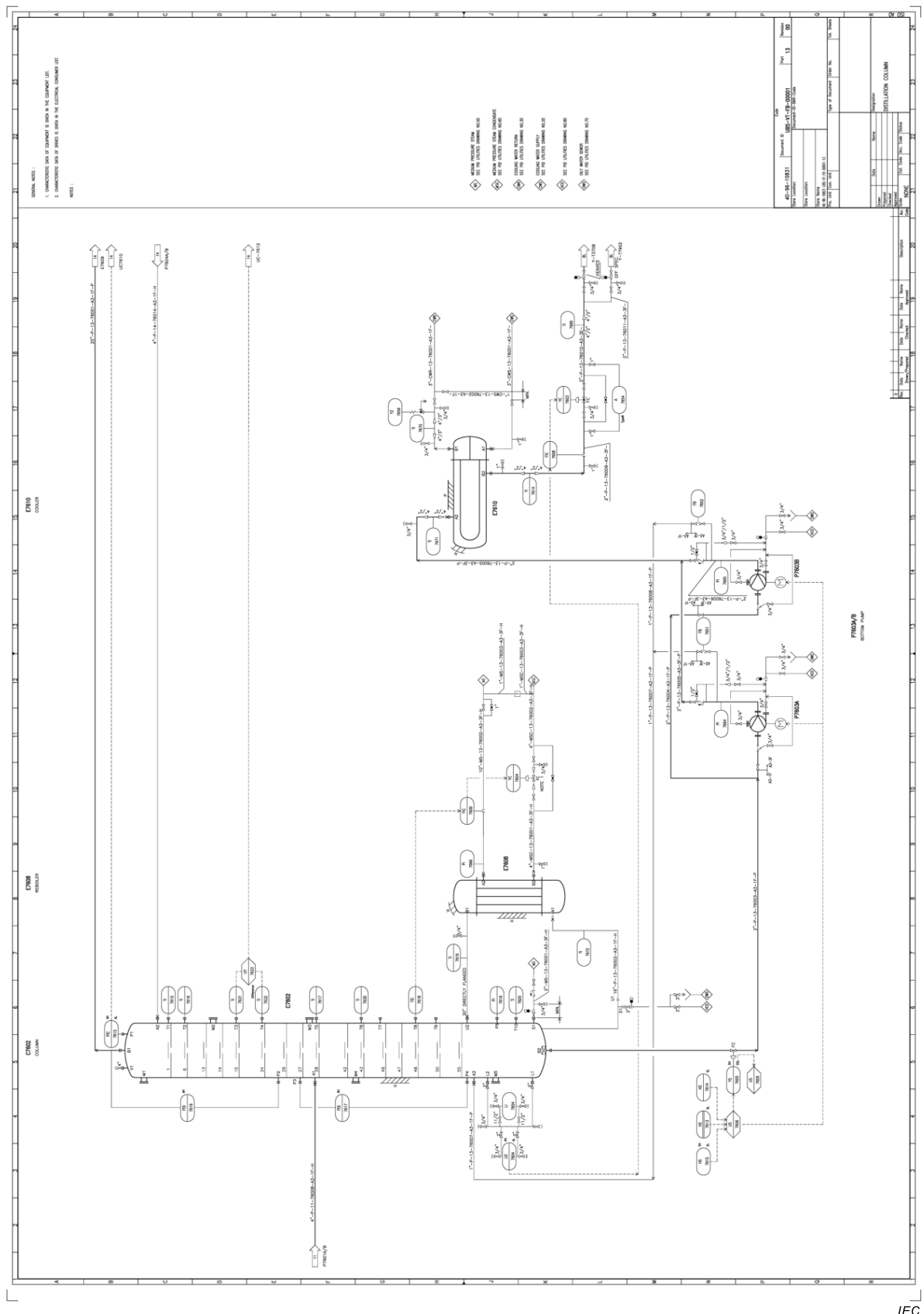


Figure B.18 – FB001 piping and instrumentation diagram (P&amp;ID)

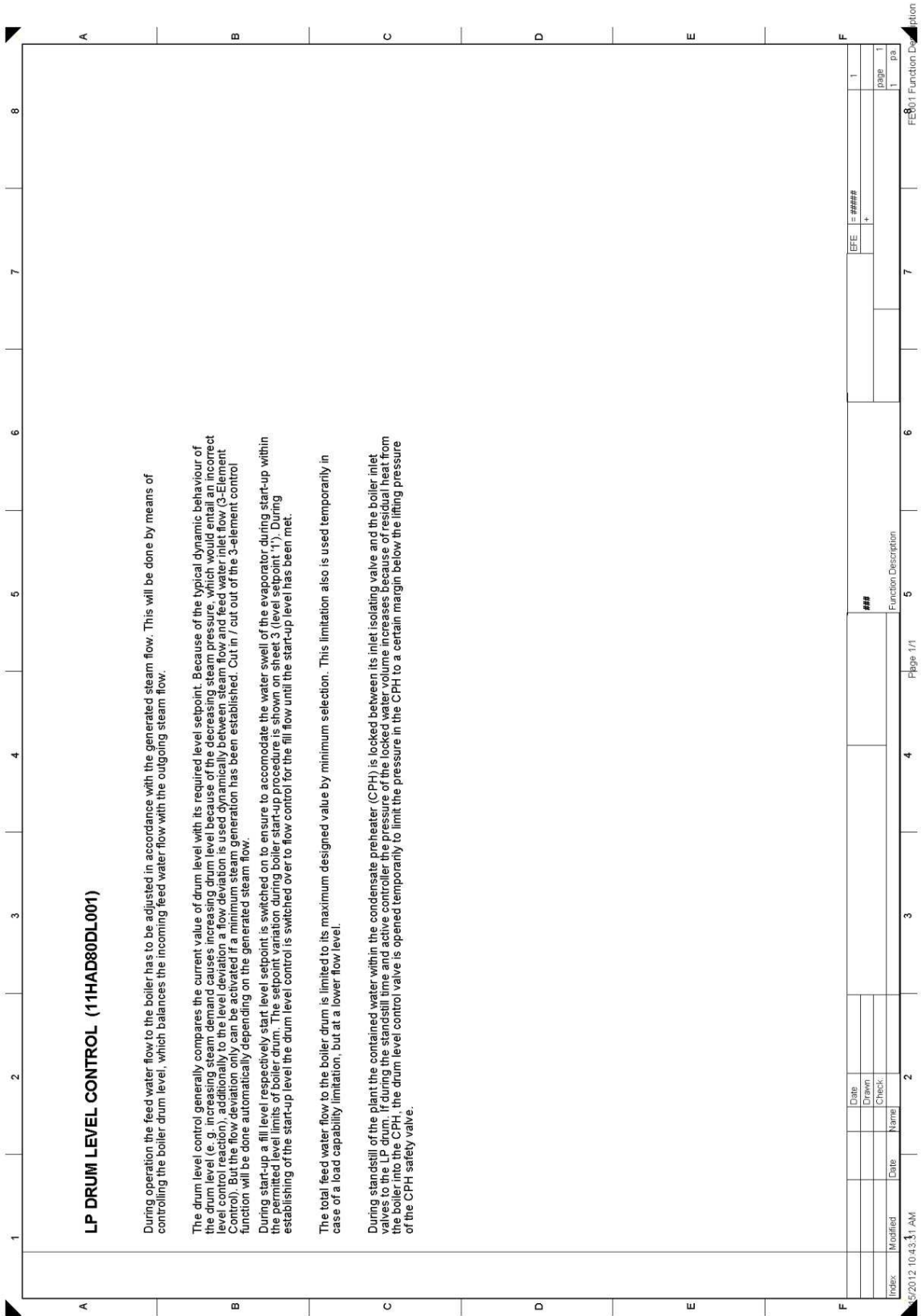
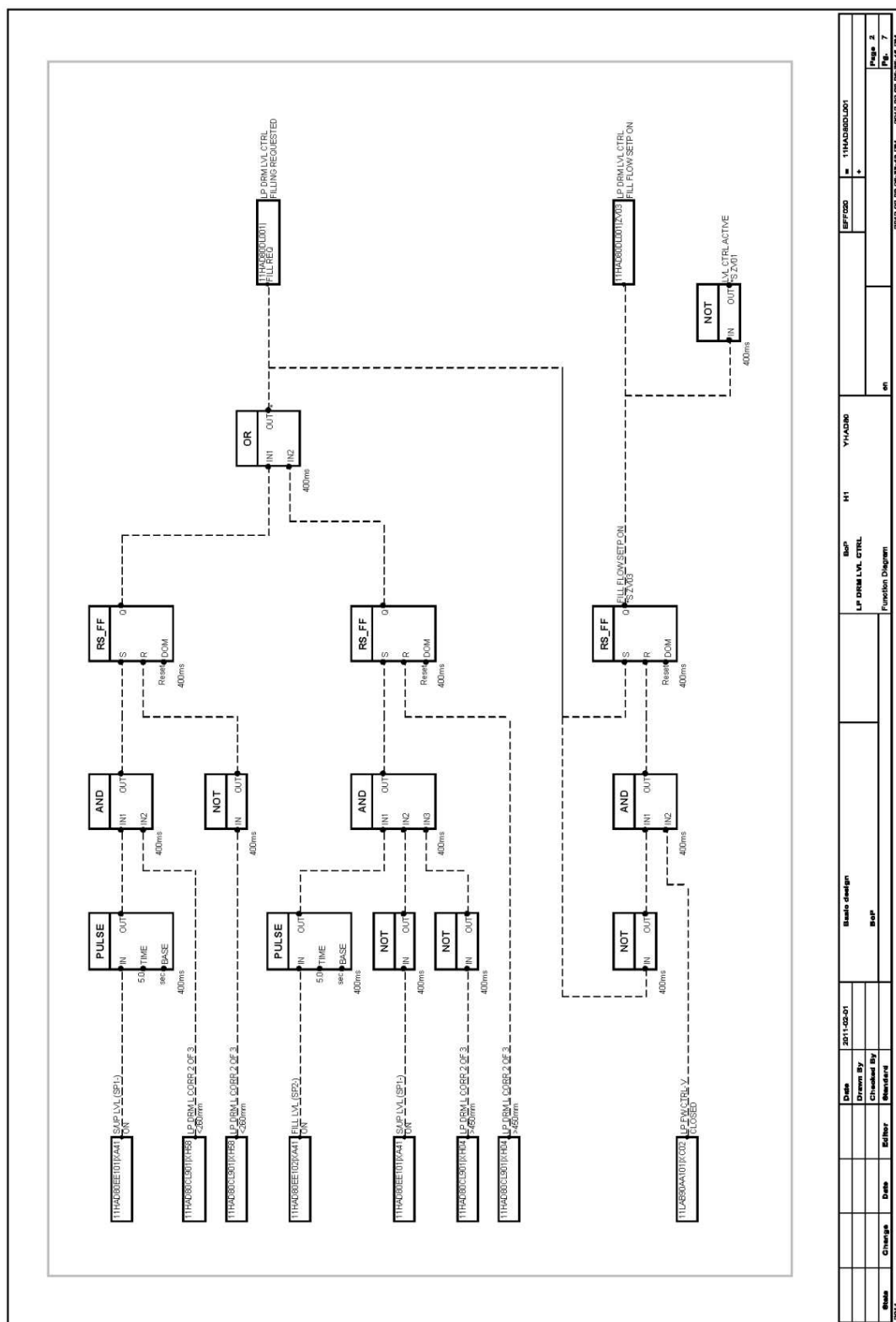


Figure B.19 – FE001 function description



**Figure B.20 – FF001 function block diagram**

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| Loop identifi.            |             | System                |               | Sub-system     |                      | I/O label           |                   | PI diagram            |      | Fault description |    | Calibration range [unit] |    | SIL class |    |
|---------------------------|-------------|-----------------------|---------------|----------------|----------------------|---------------------|-------------------|-----------------------|------|-------------------|----|--------------------------|----|-----------|----|
| 1                         | 2           | 3                     | 4             | 5              | 6                    | 7                   | 8                 | 9                     | 10   | 11                | 12 | 13                       | 14 | 15        | 16 |
| Loop identifi.            | Realisation | Signal identification | Process group | Design class   | Explosion protection | Type of signal      | Signal rate       | Signal characteristic | Var. | R                 |    |                          |    |           |    |
| A7602                     | DCS         |                       |               | AQ7602         | 14                   | Product to BL       | 4.20 mA HART      | Syst powered          | 10   | 11                |    |                          |    |           |    |
| F7608                     | PV          |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| F7608                     | DCS         |                       |               | FT7608         | 13                   | Heaves to BL        | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| F7609                     | PV          |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| F7609                     | DCS         |                       |               | FT7609         | 13                   | F7609 MF Steam in   | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| F7610                     | PV          |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| F7610                     | DCS         |                       |               | FT7610         | 14                   | P7604 Min. flow     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| F7612                     | PV          |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| F7612                     | DCS         |                       |               | FT7612         | 14                   | C7602 Recycle       | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| F7613                     | PV          |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| F7613                     | DCS         |                       |               | FT7613         | 14                   | Product to BL       | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7613                     | PV          |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7613                     | DCS         |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7615                     | L           |                       |               | Input standard | EExi                 | binary signal       | contact pot. free | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7615                     | DCS         |                       |               | Input standard | EExi                 | binary signal       | contact pot. free | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7615                     | H           |                       |               | Input standard | EExi                 | binary signal       | contact pot. free | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7615                     | DCS         |                       |               | Input standard | EExi                 | binary signal       | contact pot. free | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7619                     | L           |                       |               | Input standard | EExi                 | binary signal       | contact pot. free | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7619                     | DCS         |                       |               | Input standard | EExi                 | binary signal       | contact pot. free | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7620                     | L           |                       |               | Input standard | EExi                 | binary signal       | contact pot. free | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7620                     | DCS         |                       |               | Input standard | EExi                 | binary signal       | contact pot. free | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7621                     | L           |                       |               | Input standard | EExi                 | binary signal       | contact pot. free | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7621                     | DCS         |                       |               | Input standard | EExi                 | binary signal       | contact pot. free | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7621                     | H           |                       |               | Input standard | EExi                 | binary signal       | contact pot. free | Syst powered          | 000  |                   |    |                          |    |           |    |
| H7621                     | DCS         |                       |               | Input standard | EExi                 | binary signal       | contact pot. free | Syst powered          | 000  |                   |    |                          |    |           |    |
| L7604                     | PV          |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| L7604                     | DCS         |                       |               | LT7604         | 13                   | C7602 Bottom        | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| L7605                     | PV          |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| L7605                     | DCS         |                       |               | LT7605         | 14                   | D7603               | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| P7615                     | PV          |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| P7615                     | DCS         |                       |               | PT7615         | 13                   | C7602 Top           | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| P7616                     | PV          |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| P7616                     | DCS         |                       |               | PT7616         | 13                   | C7602 upper section | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| P7617                     | PV          |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| P7617                     | DCS         |                       |               | PT7617         | 13                   | C7602 lower section | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| P7617                     | PV          |                       |               | Input standard | EExi                 | analogue signal     | 4.20 mA HART      | Syst powered          | 000  |                   |    |                          |    |           |    |
| IEC 62708 / Doc templates |             |                       |               |                |                      |                     |                   |                       |      |                   |    |                          |    |           |    |
| Instrument specification  |             |                       |               | Plant          |                      |                     |                   | Realisation           |      |                   |    | Page                     |    |           |    |
| I/O signal list           |             |                       |               | DCS            |                      |                     |                   | 2 / 5                 |      |                   |    |                          |    |           |    |
| Doc-ID:Code               |             |                       |               | Client Doc-ID  |                      |                     |                   |                       |      |                   |    |                          |    |           |    |
| R                         |             |                       |               | R              |                      |                     |                   | Date                  |      |                   |    |                          |    |           |    |

Figure B.22 – FP001 signal list



[illegible]

**Figure B.24 – FQ001 trip point list**

|                     |                         |                      |
|---------------------|-------------------------|----------------------|
| ##company<br>logo## | #Project#               | ##Customer<br>logo## |
|                     | Configuration parameter |                      |

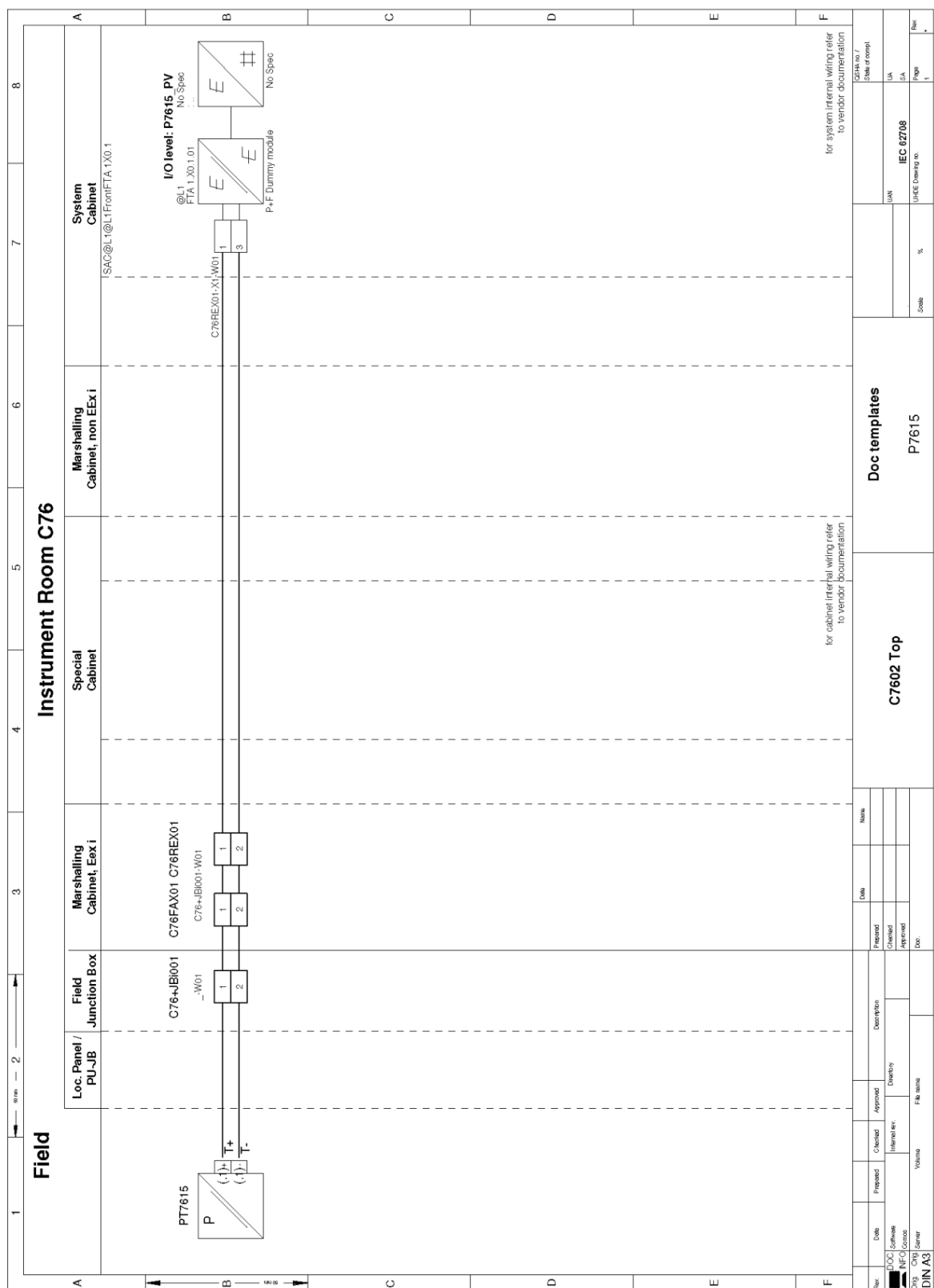
## Parameter list

Tag: CP001

Flue gas pressure

| Name                               | Value                    | Unit | Status |
|------------------------------------|--------------------------|------|--------|
| Pressure P DS III                  |                          |      |        |
| » Identification                   |                          |      |        |
| » » Operation Unit                 |                          |      |        |
| TAG                                | CP001                    | -    | -      |
| Descriptor                         | FGD PD                   | -    | -      |
| Message                            | Flue gas pressure        | -    | -      |
| » » Device                         |                          |      |        |
| Manufacturer                       | #Company                 | -    | -      |
| Device Type                        | Pressure Trans           | -    | -      |
| HART Device ID                     | 0                        | -    | -      |
| Distributor                        | #Company                 | -    | -      |
| Device order number                |                          | -    | -      |
| Universal Revision                 | 5                        | -    | -      |
| Device Revision                    | 1                        | -    | -      |
| Software Revision                  | 1                        | -    | -      |
| Hardware Revision                  | 1                        | -    | -      |
| Final Assembly Number              | 1                        | -    | -      |
| Sensor Type                        | Differential (DP) PN 160 | -    | -      |
| Sensor Serial Number               | 0                        | -    | -      |
| Date                               | 01.04.2010               | -    | -      |
| » Input                            |                          |      |        |
| » » Unit and measuring Speed       |                          |      |        |
| Unit (Measured Value)              | mbar                     | -    | -      |
| Cycle time                         | 90 ms                    | -    | -      |
| » » Measuring Limits               |                          |      |        |
| Lower Value Min                    | -60,00                   | mbar | -      |
| Upper Value Max                    | 60,00                    | mbar | -      |
| Measuring Range Min                | 1,00                     | mbar | -      |
| » » Process Value Scale            |                          |      |        |
| Lower Value                        | 0,000                    | mbar | -      |
| Upper Value                        | 40,000                   | mbar | -      |
| » Output                           |                          |      |        |
| » » Analog Output                  |                          |      |        |
| » » » Limits                       |                          |      |        |
| Analog Output Lower Endpoint Value | 3,84                     | mA   | -      |
| Analog Output Upper Endpoint Value | 20,50                    | mA   | -      |
| » » » Alarm States                 |                          |      |        |
| Analog Output Alarm Type           | Low                      | -    | -      |
| Alarm LRV                          | 3,60                     | mA   | -      |
| Alarm URV                          | 22,80                    | mA   | -      |
| » » Damping                        |                          |      |        |
| Damping                            | 0,10                     | s    | -      |

Figure B.25 – FQ002 configuration parameter list



**Figure B.26 – FS002 loop diagram**

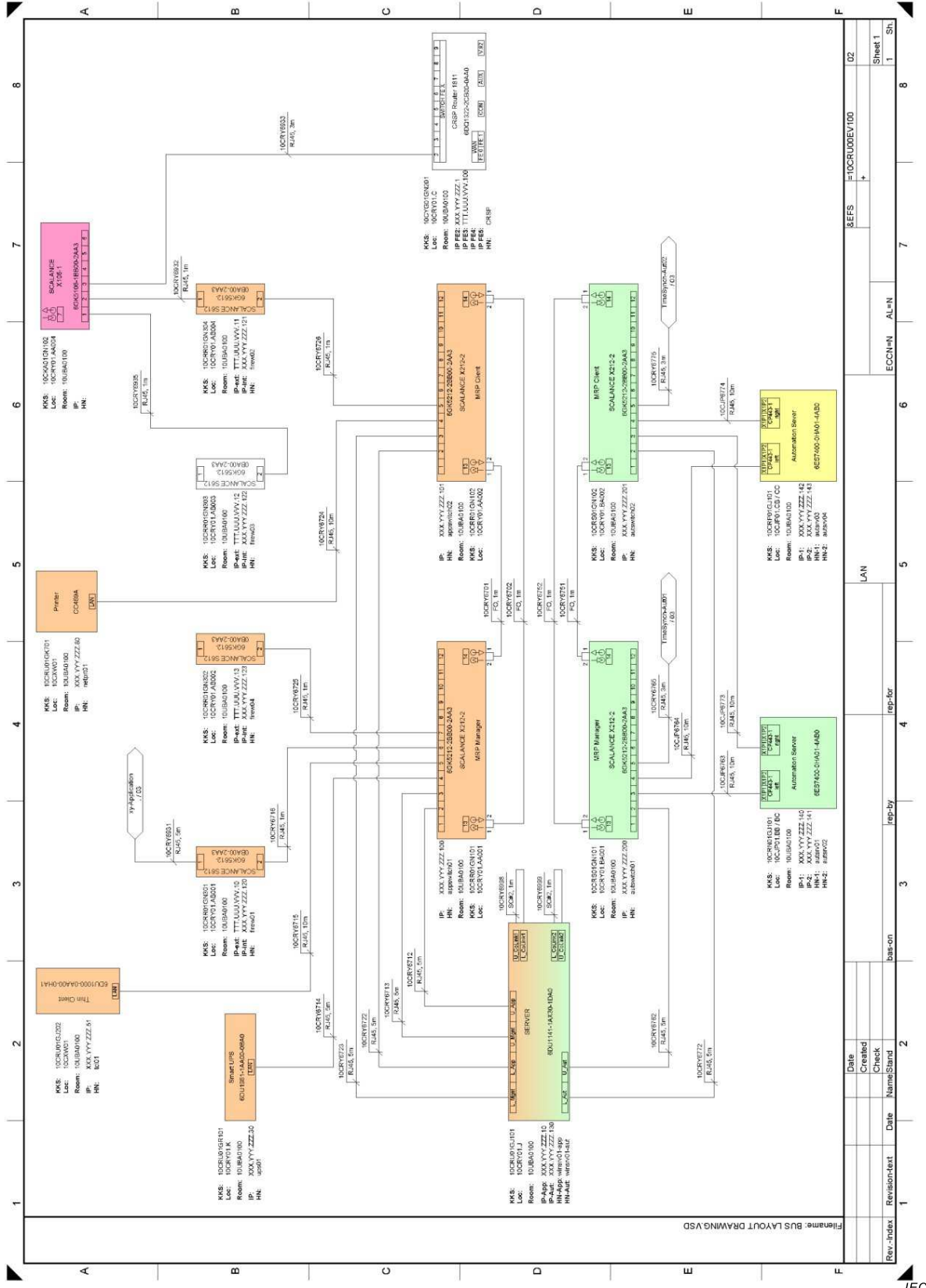
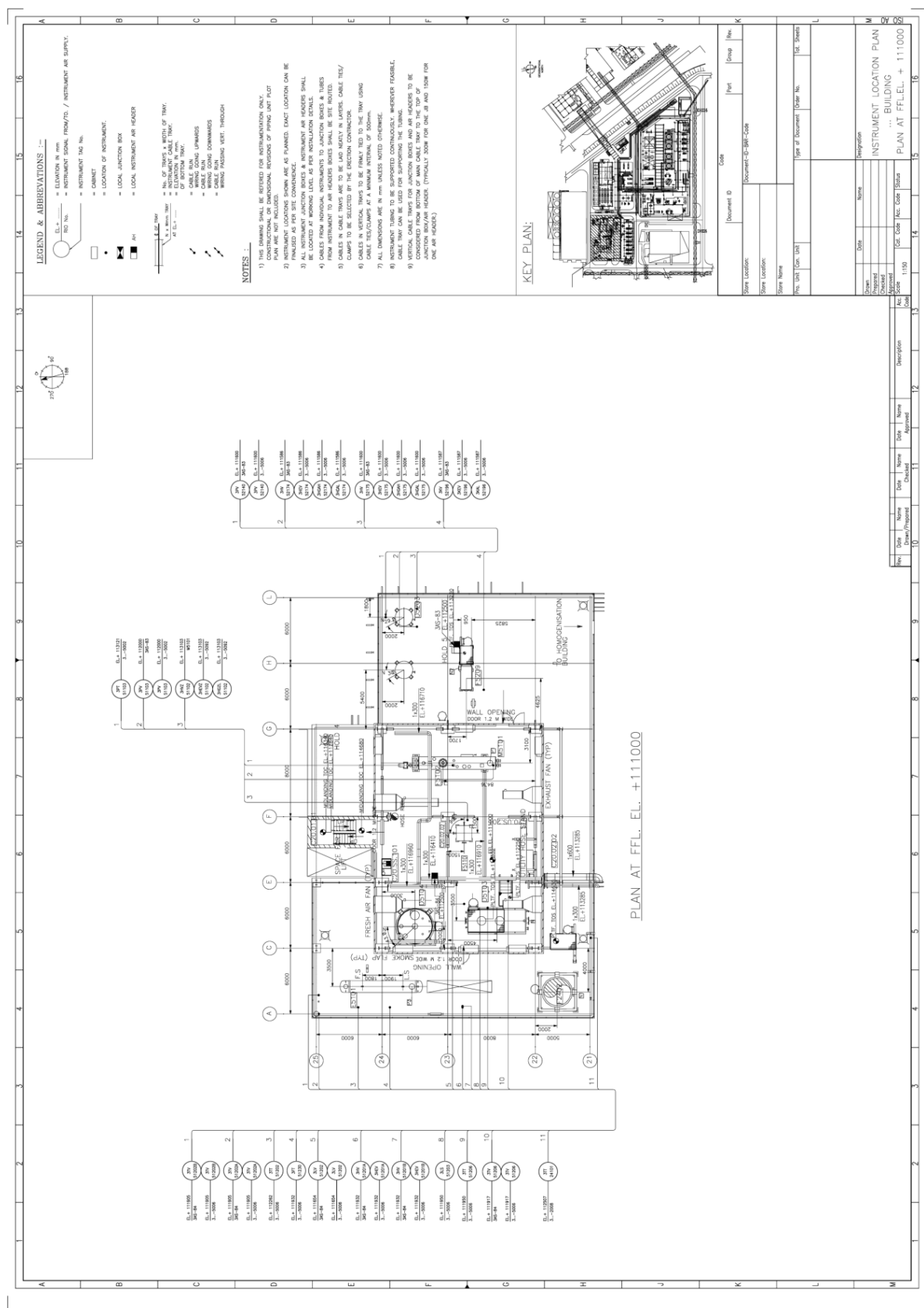


Figure B.27 – FS003 bus layout drawing

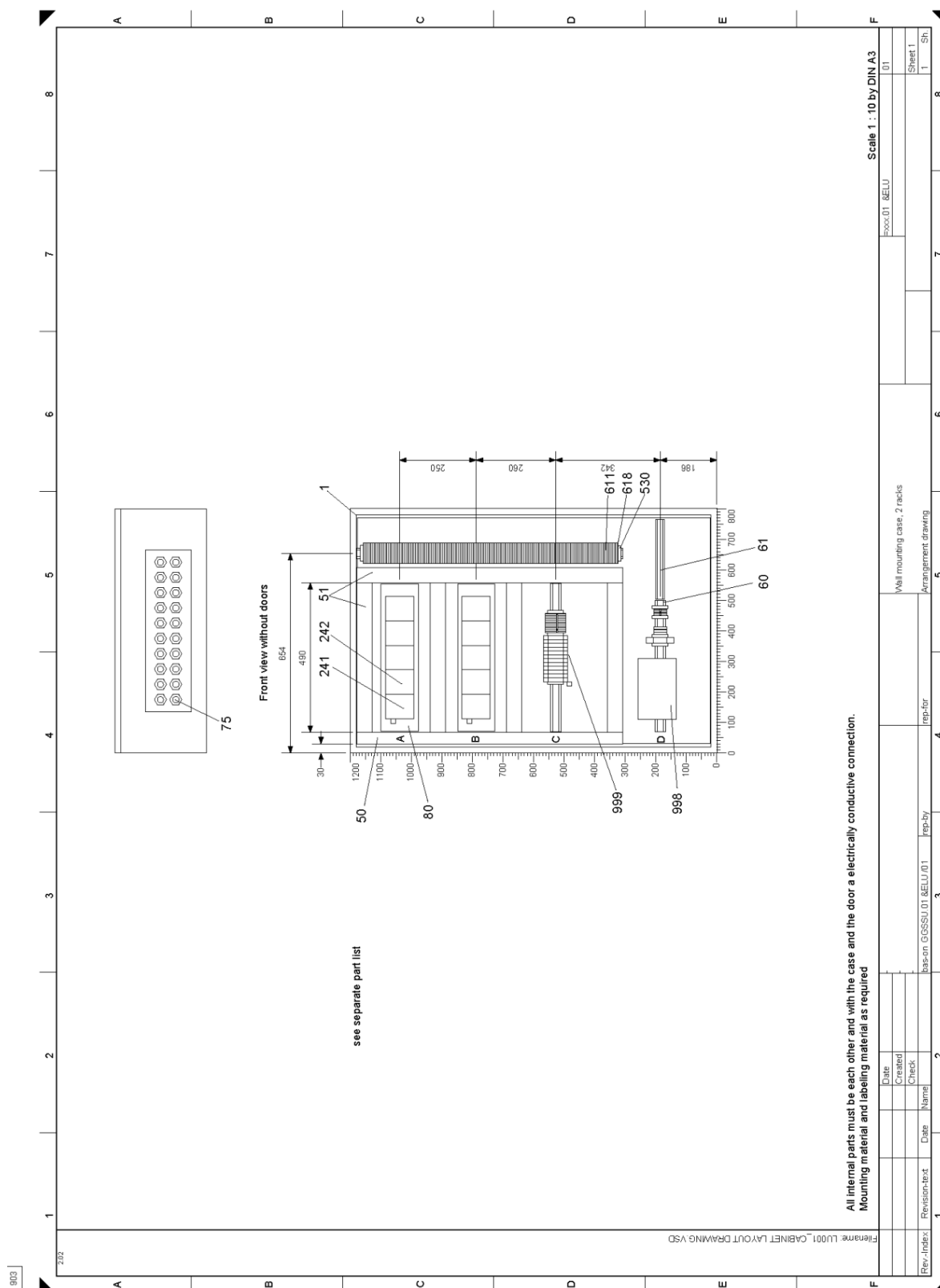


**Figure B.28 – LD003 plot plan E&I**



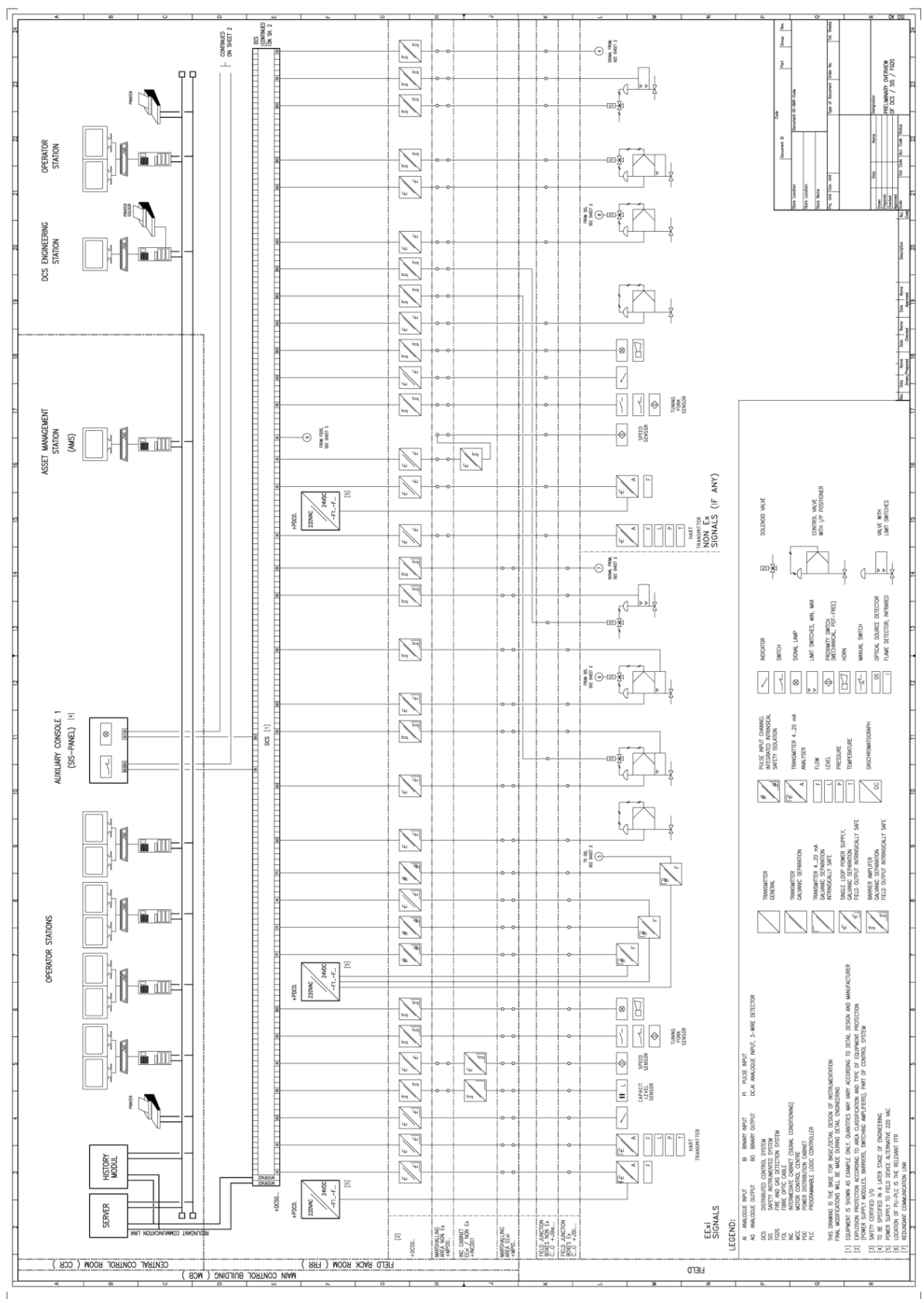
**Figure B.29 – LD006 arrangement drawing**





**Figure B.30 – LU001 cabinet layout drawing**

|    |                            |  |                |    |    |      |       |          |   |  |
|----|----------------------------|--|----------------|----|----|------|-------|----------|---|--|
| 1  |                            |  | Module         |    |    |      |       |          |   |  |
| 2  |                            |  |                |    |    |      |       |          |   |  |
| 3  |                            |  | SAC@L1@L1Front |    |    |      |       |          |   |  |
| 4  |                            |  |                |    |    |      |       |          |   |  |
| 5  |                            |  |                |    |    |      |       |          |   |  |
| 6  |                            |  |                |    |    |      |       |          |   |  |
| 7  |                            |  |                |    |    |      |       |          |   |  |
| 8  |                            |  |                |    |    |      |       |          |   |  |
| 9  | C76REX01                   |  | 1              | 01 | 01 | X0.1 | FTA 1 | P7615_PV | * |  |
| 10 |                            |  | 2              | 02 | 01 | X0.1 | FTA 1 | P7615_PV | * |  |
| 11 |                            |  | 3              | 03 | 02 | X0.1 | FTA 1 | P7616_PV | * |  |
| 12 |                            |  | 4              | 04 | 02 | X0.1 | FTA 1 | P7616_PV | * |  |
| 13 |                            |  | 5              | 05 | 01 | X0.2 | FTA 1 | P7617_PV | * |  |
| 14 |                            |  | 6              | 06 | 01 | X0.2 | FTA 1 | P7617_PV | * |  |
| 15 |                            |  | 7              | 07 | 02 | X0.2 | FTA 1 | P7619_PV | * |  |
| 16 |                            |  | 8              | 08 | 02 | X0.2 | FTA 1 | P7619_PV | * |  |
| 17 |                            |  | 9              | 09 | 01 | X0.3 | FTA 1 | L7604_PV | * |  |
| 18 |                            |  | 10             | 10 | 01 | X0.3 | FTA 1 | L7604_PV | * |  |
| 19 |                            |  | 11             | 11 | 02 | X0.3 | FTA 1 | L7605_PV | * |  |
| 20 |                            |  | 12             | 12 | 02 | X0.3 | FTA 1 | L7605_PV | * |  |
| 21 |                            |  | 13             | 13 | 01 | X0.4 | FTA 1 | T7614_PV | * |  |
| 22 |                            |  | 14             | 14 | 01 | X0.4 | FTA 1 | T7614_PV | * |  |
| 23 |                            |  | 15             | 15 | 02 | X0.4 | FTA 1 | T7615_PV | * |  |
| 24 |                            |  | 16             | 16 | 02 | X0.4 | FTA 1 | T7615_PV | * |  |
| 25 |                            |  | 17             | 17 | 01 | X0.5 | FTA 1 | T7616_PV | * |  |
| 26 |                            |  | 18             | 18 | 01 | X0.5 | FTA 1 | T7616_PV | * |  |
| 27 |                            |  | 19             | 19 | 02 | X0.5 | FTA 1 | T7617_PV | * |  |
| 28 |                            |  | 20             | 20 | 02 | X0.5 | FTA 1 | T7617_PV | * |  |
| 29 |                            |  | 21             | 21 | 01 | X0.6 | FTA 1 | T7618_PV | * |  |
| 30 |                            |  | 22             | 22 | 01 | X0.6 | FTA 1 | T7618_PV | * |  |
| 31 |                            |  | 23             | 23 | 02 | X0.6 | FTA 1 | T7619_PV | * |  |
| 32 |                            |  | 24             | 24 | 02 | X0.6 | FTA 1 | T7619_PV | * |  |
| 33 |                            |  | 25             | 25 | 01 | X0.7 | FTA 1 | T7620_PV | * |  |
| 34 |                            |  | 26             | 26 | 01 | X0.7 | FTA 1 | T7620_PV | * |  |
| 35 |                            |  | 27             | 27 | 02 | X0.7 | FTA 1 | T7621_PV | * |  |
| 36 |                            |  | 28             | 28 | 02 | X0.7 | FTA 1 | T7621_PV | * |  |
| 37 |                            |  | 29             | 29 | 01 | X0.8 | FTA 1 | T7622_PV | * |  |
| 38 |                            |  | 30             | 30 | 01 | X0.8 | FTA 1 | T7622_PV | * |  |
| 39 |                            |  | 31             | 31 | 02 | X0.8 | FTA 1 | T7623_PV | * |  |
| 40 |                            |  | 32             | 32 | 02 | X0.8 | FTA 1 | T7623_PV | * |  |
| 41 |                            |  |                |    |    |      |       |          |   |  |
| 42 |                            |  |                |    |    |      |       |          |   |  |
| 43 |                            |  |                |    |    |      |       |          |   |  |
| 44 |                            |  |                |    |    |      |       |          |   |  |
| 45 |                            |  |                |    |    |      |       |          |   |  |
| 46 |                            |  |                |    |    |      |       |          |   |  |
| 47 |                            |  |                |    |    |      |       |          |   |  |
| 48 |                            |  |                |    |    |      |       |          |   |  |
| 49 |                            |  |                |    |    |      |       |          |   |  |
| 50 |                            |  |                |    |    |      |       |          |   |  |
| 51 |                            |  |                |    |    |      |       |          |   |  |
| 52 | Cable-No. 01: C76REX01-W01 |  |                |    |    |      |       |          |   |  |
| 53 |                            |  |                |    |    |      |       |          |   |  |
| 54 |                            |  |                |    |    |      |       |          |   |  |
| 55 |                            |  |                |    |    |      |       |          |   |  |
| 56 |                            |  |                |    |    |      |       |          |   |  |
| 57 |                            |  |                |    |    |      |       |          |   |  |
| 58 |                            |  |                |    |    |      |       |          |   |  |
| 59 |                            |  |                |    |    |      |       |          |   |  |
| 60 |                            |  |                |    |    |      |       |          |   |  |
| 61 |                            |  |                |    |    |      |       |          |   |  |
| 62 |                            |  |                |    |    |      |       |          |   |  |
| 63 |                            |  |                |    |    |      |       |          |   |  |
| 64 |                            |  |                |    |    |      |       |          |   |  |



IEC

Figure B.32 – MA003 conceptual wiring diagram

[illegible]

**Figure B.33 – MB001 cable list**

| Cable Laying List<br>acc. IEC 62708 |                 | Project                                |           |    |           |    |           |    |           |    |           |    |           |    |                    |        |    |  |  |  |  |
|-------------------------------------|-----------------|----------------------------------------|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|--------------------|--------|----|--|--|--|--|
|                                     |                 |                                        |           |    |           |    |           |    |           |    |           |    |           |    |                    |        |    |  |  |  |  |
|                                     |                 | Page<br>Rev. 00<br>01.07.12<br>1 von 1 |           |    |           |    |           |    |           |    |           |    |           |    |                    |        |    |  |  |  |  |
| Cable No.                           | Start at        | End at                                 | Section A |    | Section B |    | Section C |    | Section D |    | Section E |    | Section F |    | number of<br>cable | Remark | R  |  |  |  |  |
|                                     |                 |                                        | E1        | MR | E1        | MR | E1        | MR | E1        | MR | E1        | MR | E1        | MR |                    |        |    |  |  |  |  |
| 33G002-M01-B12-W1S                  | 33G002-M01      | =37+BU01.1                             | X         |    |           |    |           |    |           |    |           |    |           |    | 01                 |        | 00 |  |  |  |  |
| 33G002-M01-W1N                      | 33G002-M01      | =37+BU01.1                             | X         |    |           |    |           |    |           |    |           |    |           |    | 01                 |        | 00 |  |  |  |  |
| 33G010-CC01-W1N                     | 33G010-CC01     | =37+CC01                               | X         |    |           |    |           | X  |           |    |           |    |           |    | 02                 |        | 00 |  |  |  |  |
| 33G010-M01-M1-W1N                   | 33G010-M01.M1   | =37+BU01.2                             | X         |    |           |    |           | X  |           |    |           |    |           |    | 01                 |        | 00 |  |  |  |  |
| 33G010-M01-B12-W1S                  | 33G010-M01      | =37+BU01.2                             | X         |    |           |    |           | X  |           |    |           |    |           |    | 01                 |        | 00 |  |  |  |  |
| 33G010-M01-W1N                      | 33G010-M01      | =37+BU01.2                             | X         |    |           |    |           | X  |           |    |           |    |           |    | 01                 |        | 00 |  |  |  |  |
| 33G010-M02-M1-W1N                   | 33G010-M02.M1   | =37+BU01.2                             | X         |    |           |    |           | X  |           |    |           |    |           |    | 01                 |        | 00 |  |  |  |  |
| 33G010-M02-B12-W1S                  | 33G010-M02      | =37+BU01.2                             | X         |    |           |    |           | X  |           |    |           |    |           |    | 01                 |        | 00 |  |  |  |  |
| 33G010-M02-W1N                      | 33G010-M02      | =37+BU01.2                             | X         |    |           |    |           | X  |           |    |           |    |           |    | 01                 |        | 00 |  |  |  |  |
| 33G040-M01-B12-W1S                  | 33G040-M01      | =37+BU01.2                             | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |
| 33G040-M01-W1N                      | 33G040-M01      | =37+BU01.2                             | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |
| 33G071-CC01-W1N                     | 33G071+CC01     | =37+CC01                               | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |
| 33G071-Z01-CC01-W1N                 | 33G071-Z01+CC01 | =37+CC01                               | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |
| 33H010-CC01-W1N                     | 33H010A+CC01    | =37+CC01                               | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |
| 33H010B-CC01-W1N                    | 33H010B+CC01    | =37+CC01                               | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |
| 33H070-CC01-W1N                     | 33H070+CC01     | =37+CC01                               | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |
| 33H071-CC01-W1N                     | 33H071+CC01     | =37+CC01                               | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |
| 33H072-CC01-W1N                     | 33H072+CC01     | =37+CC01                               | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |
| 33S050-CC01/01-W1N                  | 33S050+CC01/01  | =37+CC01                               | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |
| 33S050-CC01/03-W1N                  | 33S050+CC01/03  | =37+CC01                               | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |
| 33S050-CC01/04-W1N                  | 33S050+CC01/04  | =37+CC01                               | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |
| 33S050-CC01/05-W1N                  | 33S050+CC01/05  | =37+CC01                               | X         |    |           |    |           | X  |           |    |           | X  |           |    | 01                 |        | 00 |  |  |  |  |

Figure B.34 – MB002 cable laying list

| Single Material CODE | DESCRIPTION Single Material                                                                                                              | Additional description                                                    | Size                       | Material | Rev 0             | Unit   | Hook up no. 132.2A | 132.2C | 134.2A | 160.2A | 160.2d (1/2" monoflang e) | 160.2B | 160.2C | 162.2A | 162.2D (1/2" monoflang e) | Single Material Total |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------|----------|-------------------|--------|--------------------|--------|--------|--------|---------------------------|--------|--------|--------|---------------------------|-----------------------|
|                      |                                                                                                                                          |                                                                           |                            |          | Quantity hook ups |        | 2.00               | 4.00   | 2.00   | 21.00  | 0.00                      | 2.00   | 2.00   | 23.00  | 7.00                      |                       |
| 3A02.001             | Tube 12mm OD X 1mm Thk                                                                                                                   | Tube 12mmOD                                                               | 12mm OD X 1mm              | 1.4571   | 8844              | Meters | 12                 | 12     | 30     | 0.5    | 0.5                       | 6      | 6      | 0.5    |                           | 67.5                  |
| 3A02.002             | Tube 6mm OD X 1mm Thk, Prefabricated single length tube, Heat Traced                                                                     | Tube 6mmOD                                                                | 6mm OD X 1mm               | 1.4571   | 360               | Meters |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3A02.003             | Tube 6mm OD X 1mm Thk, SS316L                                                                                                            | Tube 6mmOD                                                                | 6mm OD X 1mm               | 1.4571   | 550               | Meters |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3B01.029             | Metal compression fittings, Gyrolok MMRS                                                                                                 | Male connector with parallel pipe                                         | 12mm ODx1/4"               | 1.4571   | 404               | nos.   |                    |        | 2      | 1      | 1                         | 2      | 2      | 1      |                           | 9                     |
| 3B01.031             | Metal compression fittings, Gyrolok MMRS                                                                                                 | Male connector with parallel pipe                                         | 12mm ODx1/2"               | 1.4571   | 464               | nos.   | 4                  | 4      | 4      |        |                           |        |        |        |                           | 12                    |
| 3B04.001             | Metal compression fittings, Gyrolok MMRS                                                                                                 | Plug                                                                      | 12mm OD G 1/2 (M)          | 1.4571   | 300               | nos.   | 2                  | 2      | 2      | 1      | 1                         |        |        | 1      |                           | 9                     |
| 3B06.003             | Syphon with G 1/2 male connection on process side and G 1/2 female connection on instrument side                                         | Syphon                                                                    | X G 1/2 (F)                | 1.4571   | 15                | nos.   |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3C01.001             | 1/2" Flange ANSI150 RF, output 12mm Gyrolok                                                                                              |                                                                           | ANSI 150 1/2" flange       | 1.4571   | 12                | nos.   |                    |        |        |        |                           | 1      |        |        |                           | 1                     |
| 3C01.002             | 1/2" Flange ANSI300 RF, output 12mm Gyrolok                                                                                              |                                                                           | ANSI 300 1/2" flange       | 1.4571   | 10                | nos.   |                    |        | 1      |        |                           |        | 1      |        |                           | 2                     |
| 3D01.001             | Manifold, three-way direct mounting, pipe thread, austenitic stainless steel conform PED and rules for pressure vessels                  | Manifold, three-way                                                       | G 1/2 (F)                  | 1.4571   | 10                | nos.   |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3D11.001             | Monoflange with instrument and vent valve, direct mounting flange NPS 1", class 300/600 Thread G1/2 internal. Monoflange with G1/2" Plug | Monoflange                                                                | As per PD 3.5.7_261 2EB.21 |          | 269               | nos.   | 2                  | 2      | 2      | 1      |                           | 1      | 1      | 1      |                           | 10                    |
| 3D11.003             | Monoflange with instrument and vent valve, direct mounting flange NPS 1", class 1500 Thread G1/2 internal. Monoflange with G1/2" Plug    | Monoflange                                                                | As per PD 3.5.7_261 2EB.21 |          | 1                 | nos.   |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3D12.001             | Monoflange with instrument and vent valve, direct mounting flange NPS 1", class 300/600 Thread G1/2 internal. Monoflange with G1/2" Plug | Monoflange with locked open valve for process connection and locked close | As per PD 3.5.7_261 2EB.21 |          | 4                 | nos.   |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3L01.001             | Instrument-protection box, plastic                                                                                                       | Instrument-protection box, plastic                                        | Big box ca 400X250         |          | 14                | nos.   |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3X01.001             | Metal compression fittings, Gyrolok MMRS                                                                                                 | Tubing union 12 mm OD                                                     | 12 mm OD                   | 1.4571   | 1342              | nos.   |                    | 2      | 5      |        |                           |        |        |        |                           | 7                     |
| 3X01.002             | Metal compression fittings, Gyrolok MMRS                                                                                                 | Union Tee 12 mm OD                                                        | 12mm OD X 12mm OD          | 1.4571   | 20                | nos.   | 2                  | 2      | 2      |        |                           |        |        |        |                           | 6                     |

Figure B.35 – PA001 material take off

| SPARE PARTS INTERCHANGEABILITY RECORD                                                                                                                                                                                                                                                                                                                                                                                                             |      |                              |                          |                        |                             |                 |                        |                                  |                            | erection, commissioning and start up                                                                                  |            | Document ID: |                               | SUPPLIER'S DATA    |                         |                |                 |                 |                 |                                    |                 |                 |                 | DSM DATA        |                 |                 |                 |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------------------------|--------------------------|------------------------|-----------------------------|-----------------|------------------------|----------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------|------------|--------------|-------------------------------|--------------------|-------------------------|----------------|-----------------|-----------------|-----------------|------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--|--|--|--|--|--|
| Notes: 1) For instructions see the attached instruction ...<br>2) If an item is interchangeable between two or more units, it should be listed once, incl. its characteristics such as dimensions, design specifications, etc.<br>3) Quote original manufacturer's identification numbers for all bought-out items such as ball bearings, fasteners, cables, components, fuses, relays, etc.<br>For further instructions refer to instruction ... |      |                              |                          |                        |                             |                 |                        |                                  |                            | Supplier:<br>Purchase Order no.:<br>Sheet n°: 1 of 1<br>Supplier to state total price for quantities as per column 15 |            |              |                               |                    |                         |                |                 |                 |                 | DSM SPR n°<br>Type:<br>Handled by: |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2    | 3                            | 4                        | 5                      | 6                           | 7               | 8                      | 9                                | 10                         | 11                                                                                                                    | 12         | 13           | 14                            | 15                 | 16                      | 17             | 18              | 19              | 20              | 21                                 | 22              | 23              | 24              | 25              | 26              | 27              |                 |  |  |  |  |  |  |
| Number of unit                                                                                                                                                                                                                                                                                                                                                                                                                                    | Unit | Manufacturer's model or type | Supplier's model or type | Supplier's part number | Drawing number (see note 2) | Supplier's name | Supplier's part number | Manufacturer's name (see note 3) | Manufacturer's part number | Quantity to be ordered                                                                                                | Unit price | Currency     | Delivery lead time (in weeks) | Approved by Client | Recommended by supplier | Estimated cost | Estimated price | Estimated price | Estimated price | Estimated price                    | Estimated price | Estimated price | Estimated price | Estimated price | Estimated price | Estimated price | Estimated price |  |  |  |  |  |  |
| (REMINDER: SUPPLIER TO ATTACH TO THIS FORM ALL DRAWINGS AND PART LISTS)                                                                                                                                                                                                                                                                                                                                                                           |      |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| DESCRIPTION OF PARTS COMPLETE WITH SPECIFICATION OF KIND OF MATERIAL (see note 2)                                                                                                                                                                                                                                                                                                                                                                 |      |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 11                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 12                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 13                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 14                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 15                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 16                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 17                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 18                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 19                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 20                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 21                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 22                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 23                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 24                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 25                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 26                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |
| 27                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1    |                              |                          |                        |                             |                 |                        |                                  |                            |                                                                                                                       |            |              |                               |                    |                         |                |                 |                 |                 |                                    |                 |                 |                 |                 |                 |                 |                 |  |  |  |  |  |  |

Figure B.36 – PB001 spare parts list

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Print: 15.09.11

| 1                                  | Loop-<br>Identification | PID No. | TAG No. | Description                     | Part no.                  | SIL        | DATA SHEET | R |
|------------------------------------|-------------------------|---------|---------|---------------------------------|---------------------------|------------|------------|---|
| 2                                  | 1                       | 2       | 3       | 4                               | 8                         | 9          | 5          | 6 |
| 3                                  |                         |         |         |                                 |                           |            |            |   |
| 4                                  | A7602                   | 14      | AQ7602  | Hydrocarbon analyzer            | QAAM001                   |            |            |   |
| 5                                  |                         |         |         |                                 |                           |            |            |   |
| 6                                  | A7654                   | 13      | AT7654  | Manual sampling system          | QCAA001                   |            |            |   |
| 7                                  | F7608                   | 13      | FE7608  | Onifice plate assembly          | KFAA001                   |            |            |   |
| 8                                  |                         |         | FT7608  | Flow dP-transmitter             | KFEA001                   |            |            |   |
| 9                                  | F7609                   | 13      | FE7609  | Onifice plate assembly          | KFAA001                   |            |            |   |
| 10                                 |                         |         | FT7609  | Flow dP-transmitter             | KFEA001                   |            |            |   |
| 11                                 | F7610                   | 14      | FE7610  | Onifice plate assembly          | KFAA001                   |            |            |   |
| 12                                 |                         |         | FT7610  | Flow dP-transmitter             | KFEA001                   |            |            |   |
| 13                                 | F7612                   | 14      | FE7612  | Onifice plate assembly          | KFAA001                   |            |            |   |
| 14                                 |                         |         | FT7612  | Flow dP-transmitter             | KFEA001                   |            |            |   |
| 15                                 | F7613                   | 14      | FE7613  | Onifice plate assembly          | KFAA001                   |            |            |   |
| 16                                 |                         |         | FT7613  | Flow dP-transmitter             | KFEA001                   |            |            |   |
| 17                                 | F7651                   | 13      | FO7651  | Restriction orifice             | MT00001                   |            |            |   |
| 18                                 | F7652                   | 13      | FO7652  | Restriction orifice             | MT00001                   |            |            |   |
| 19                                 | H7613                   | 13      | HS7613  | Operation device (field mount.) | TEA0001                   |            |            |   |
| 20                                 |                         |         |         | Switches / Buttons              |                           |            |            |   |
| 21                                 | H7614                   | 13      | HSA7614 | Configuration, flowsheets       | SAF0001                   |            |            |   |
| 22                                 | H7615                   | 13      | HS7615  | Operation device (field mount.) | TEA0001                   |            |            |   |
| 23                                 |                         |         |         | Switches / Buttons              |                           |            |            |   |
| 24                                 | H7619                   | 14      | HS7619  | Operation device (field mount.) | TEA0001                   |            |            |   |
| 25                                 |                         |         |         | Switches / Buttons              |                           |            |            |   |
| 26                                 | H7620                   | 14      | HSA7620 | Configuration, flowsheets       | SAF0001                   |            |            |   |
| 27                                 | H7621                   | 14      | HS7621  | Operation device (field mount.) | TEA0001                   |            |            |   |
| 28                                 |                         |         |         | Switches / Buttons              |                           |            |            |   |
| 29                                 | L7604                   | 13      | LT7604  | Displacer level transmitter     | KLCA001                   |            |            |   |
| 30                                 | L7605                   | 14      | LT7605  | Displacer level transmitter     | KLCA001                   |            |            |   |
| 31                                 | L7654                   | 13      | LI7654  | Magnetic level indicator        | KLBA001                   |            |            |   |
| 32                                 | L7655                   | 14      | LI7655  | Magnetic level indicator        | KLBA001                   |            |            |   |
| 33                                 | P7615                   | 13      | PT7615  | Pressure transmitter            | KPKA001                   |            |            |   |
| 34                                 | P7616                   | 13      | PT7616  | Pressure transmitter            | KPKA001                   |            |            |   |
| 35                                 | P7617                   | 13      | PT7617  | Pressure transmitter            | KPKA001                   |            |            |   |
| 36                                 | P7619                   | 13      | PT7619  | Pressure transmitter            | KPKA001                   |            |            |   |
| 37                                 | P7664                   | 13      | PI7664  | Pressure gauge                  | KPCA001                   |            |            |   |
| 38                                 | P7665                   | 13      | PI7665  | Pressure gauge                  | KPCA001                   |            |            |   |
| 39                                 | P7666                   | 13      | PI7666  | Pressure gauge                  | KPCA001                   |            |            |   |
| 40                                 | P7667                   | 14      | PI7667  | Pressure gauge                  | KPCA001                   |            |            |   |
| 41                                 | P7668                   | 14      | PI7668  | Pressure gauge                  | KPCA001                   |            |            |   |
| 42                                 | P7669                   | 14      | PI7669  | Pressure gauge                  | KPCA001                   |            |            |   |
| 43                                 | P7670                   | 14      | PI7670  | Pressure gauge                  | KPCA001                   |            |            |   |
| 44                                 | T7614                   | 13      | TW7614  | Thermowell (flanged type)       | KTAB001                   |            |            |   |
| 45                                 |                         |         | TT7614  | RTD-thermometer                 | KTFB001                   |            |            |   |
| 46                                 |                         |         |         | w. head-mounted transm.         |                           |            |            |   |
| 47                                 | T7615                   | 13      | TW7615  | Thermowell (flanged type)       | KTAB001                   |            |            |   |
| 48                                 |                         |         | TT7615  | RTD-thermometer                 | KTFB001                   |            |            |   |
| 49                                 |                         |         |         | w. head-mounted transm.         |                           |            |            |   |
| 50                                 | T7616                   | 13      | TW7616  | Thermowell (flanged type)       | KTAB001                   |            |            |   |
| 51                                 |                         |         | TT7616  | RTD-thermometer                 | KTFB001                   |            |            |   |
| 52                                 |                         |         |         | w. head-mounted transm.         |                           |            |            |   |
| 53                                 | T7617                   | 13      | TW7617  | Thermowell (flanged type)       | KTAB001                   |            |            |   |
| 54                                 |                         |         | TT7617  | RTD-thermometer                 | KTFB001                   |            |            |   |
| 55                                 |                         |         |         | w. head-mounted transm.         |                           |            |            |   |
| 56                                 | T7618                   | 13      | TW7618  | Thermowell (flanged type)       | KTAB001                   |            |            |   |
| 57                                 |                         |         | TT7618  | RTD-thermometer                 | KTFB001                   |            |            |   |
| 58                                 |                         |         |         | w. head-mounted transm.         |                           |            |            |   |
| 59                                 | T7619                   | 13      | TW7619  | Thermowell (flanged type)       | KTAB001                   |            |            |   |
| 60                                 |                         |         | TT7619  | RTD-thermometer                 | KTFB001                   |            |            |   |
| 61                                 |                         |         |         | w. head-mounted transm.         |                           |            |            |   |
| 62                                 | T7620                   | 13      | TW7620  | Thermowell (flanged type)       | KTAB001                   |            |            |   |
| 63                                 |                         |         | TT7620  | RTD-thermometer                 | KTFB001                   |            |            |   |
| 64                                 |                         |         |         | w. head-mounted transm.         |                           |            |            |   |
| Instrument index<br>acc. IEC 62708 |                         |         |         |                                 | IEC 62708 / Doc templates |            |            |   |
| Code<br>Plant<br>Unit              |                         |         |         |                                 |                           |            |            |   |
| R Date Client Doc-ID:              |                         |         |         |                                 |                           |            |            |   |
| Doc-ID-Code:                       |                         |         |         |                                 | CC PB UA:                 | Page 1 / 2 |            |   |

IEC

Figure B.37 – PB002 instrument index

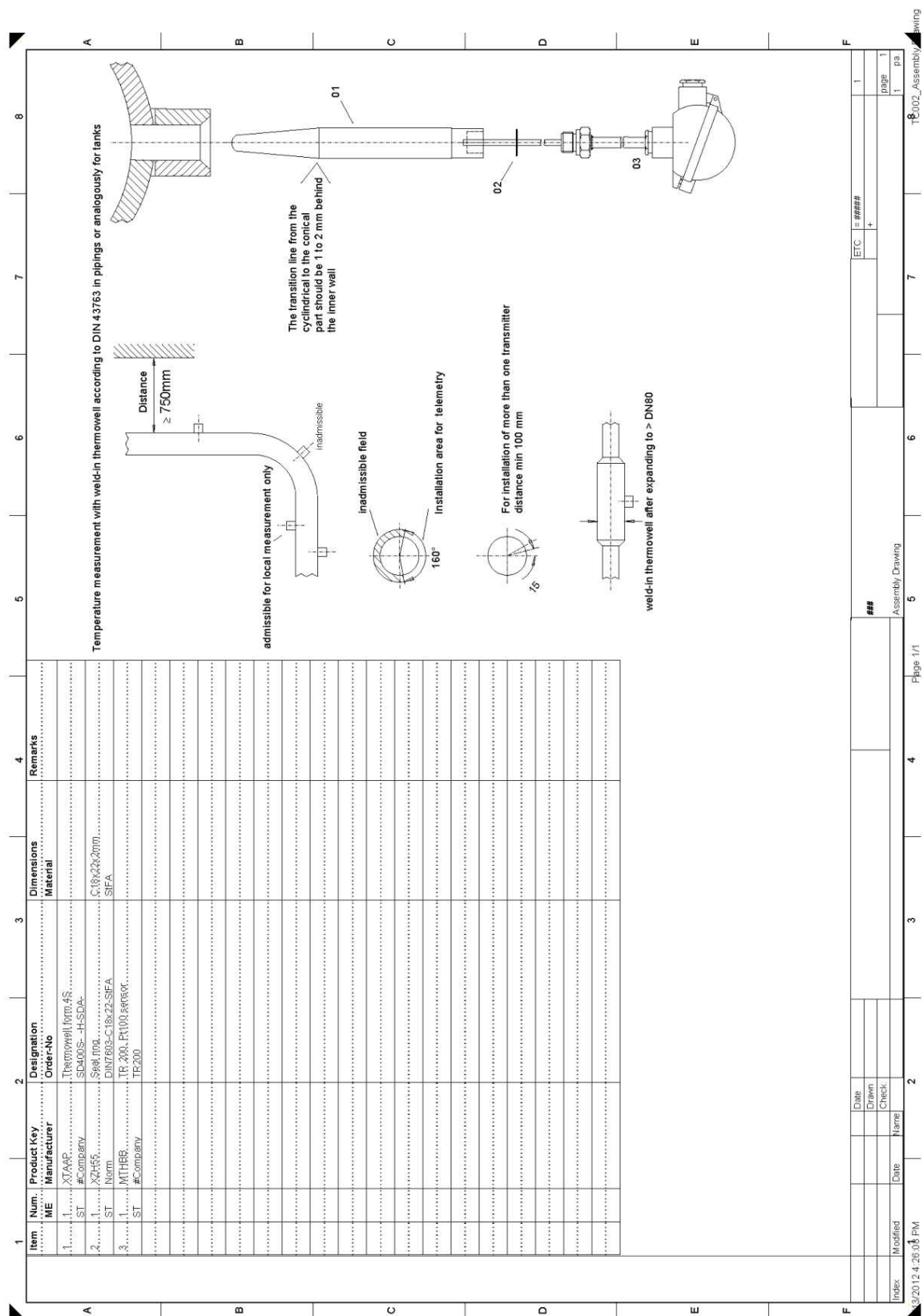


| #Company | #Customer         | #Plant       |               |                          |                  |                          |          |
|----------|-------------------|--------------|---------------|--------------------------|------------------|--------------------------|----------|
| No.      | Device Identifier | Location     | Software Name | Version                  | Release          | Release number           |          |
|          | 1                 | 10CRU01GJ101 | 10UBA0100     | DCS System Software      | V5.4 + SP5 + HF2 | K5.4.5.2 3.1.0.1         | K5.4.5.2 |
|          | 2                 | 10CRU01GJ101 | 10UBA0101     | ContinuousFunctionChart  | V7.0 + SP1 + HF3 | K07.00.01.03 01.05.00.01 | K7.0.1.3 |
|          | 3                 | 10CRU01GJ101 | 10UBA0102     | License Manager Software | V4.0 + SP5       | K04.00.05.00 01.06.00.01 | K4.0.5.0 |
|          | 4                 | 10CRU01GJ101 | 10UBA0103     | Failsafe System Software | V6.1             | V06.01.00.00 01.16.00.01 | V6.1.0.0 |
|          | 5                 | 10CRU01GJ101 | 10UBA0104     | PIIP Modbus Master       | V3.1 + SP2       | R3.1.2.1                 | V3.1.2.0 |
|          | 6                 | 10CRU01GJ101 | 10UBA0105     | PIIP Modbus Slave        | V3.1 + SP3       | R3.1.3.1                 | V3.1.3.0 |
|          | 7                 | 10CRU01GJ101 | 10UBA0106     | Failsafe System Library  | V1.2 + SP4       | K1.2.4.0 1.8.0.4         | V1.2.4.0 |
|          | 8                 | 10CRU01GJ101 | 10UBA0107     | NET PC Software          | V7.0 + Hotfix 1  | Build 3509               | 7.0.0.1  |
|          | 9                 |              |               |                          |                  |                          |          |
|          | 10                |              |               |                          |                  |                          |          |
|          | 11                |              |               |                          |                  |                          |          |
|          | 12                |              |               |                          |                  |                          |          |
|          | 13                |              |               |                          |                  |                          |          |
|          | 14                |              |               |                          |                  |                          |          |

Figure B.38 – PD001 system log book

|                                                                                                                                                                                                                                                                                                                                                                                                     |                                   |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                     | HOO K UP DRAWINGS<br>FOR ERECTION |                          |
| Owner Project Code:                                                                                                                                                                                                                                                                                                                                                                                 | Plant:                            | Page ... OF ...          |
| HOOK-UP TYPE : DP TRANSMITTER WITH 3 WAY MANIFOLD (L.T & PDT)<br>REMOTE MOUNTED - LIQUID SERVICE :<br>TRANSMITTER TO BE MOUNTED BELOW TAPPING POINT<br>SAFE AREA INSTALLATION (NON EX)                                                                                                                                                                                                              |                                   | Project No:<br>Job Code: |
| DRG. No.                                                                                                                                                                                                                                                                                                                                                                                            |                                   | SHEET 1 OF 2             |
|                                                                                                                                                                                                                                                                                                                                                                                                     |                                   | TAG No.                  |
|                                                                                                                                                                                                                                                                                                                                                                                                     |                                   | 3PDT-51207               |
| <p style="text-align: right;">(PAGE 1 OF 2)</p>                                                                                                                                                                                                                                                                                                                                                     |                                   |                          |
| <p><b>TAPPING ORIENTATION FOR LIQUID / VAPOUR SERVICE</b></p> <div style="display: flex; justify-content: space-around;"> <div> <p>VENT<br/>MONOF LANGE<br/>TRANSMITTER CONNECTION</p> <p>VERTICAL PIPE<br/>EQUIPMENT</p> </div> <div> <p>VENT<br/>MONOF LANGE<br/>TRANSMITTER CONNECTION</p> <p>HORIZONTAL PIPE<br/>EQUIPMENT</p> </div> </div> <p style="text-align: center;"><b>DETAIL Y</b></p> |                                   |                          |
| <p><b>NOTE:</b></p> <p>1) BEFORE INSTALLATION QUANTITIES AND LENGTH OF MATERIAL ARE TO BE CHECKED AT SITE.</p>                                                                                                                                                                                                                                                                                      |                                   |                          |
| Doc. ID CODE                                                                                                                                                                                                                                                                                                                                                                                        |                                   | Rev.                     |

**Figure B.39 – TC001 installation drawing (hook up)**



**Figure B.40 – TC002 assembly drawing**

## Bibliography

ISO 7200, *Technical product documentation – Data fields in title blocks and document headers*

IEC/ISO 81346-1, *Industrial systems, installations and equipment and industrial products – Structuring principles and reference designations – Part 1: Basic rules*

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## COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

### TYPES DE DOCUMENTS POUR LES PROJETS RELATIFS AUX SYSTÈMES ÉLECTRIQUES ET AUX INSTRUMENTS DE FONCTIONNEMENT DANS L'INDUSTRIE DE TRANSFORMATION

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Le texte de la présente norme est issu des documents suivants:

| FDIS        | Rapport de vote |
|-------------|-----------------|
| 65/580/FDIS | 65/583/RVD      |

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette norme.

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L'ingénierie dans l'industrie de transformation est pilotée par la coopération internationale. Pour des raisons économiques, un savoir-faire particulier, une licence particulière, une autorisation ou tout simplement l'utilisation de la capacité, le travail est réparti entre les partenaires. Ils organiseront leur coopération différemment pour chaque projet individuel. Cela nécessite une répartition bien définie des travaux et des responsabilités. Les documents sont la base de ces définitions, car ils sont le résultat d'un travail d'ingénierie.

S'il y a uniquement un nom de document sans description complémentaire de la forme et du contenu, il est probable que chaque partenaire développera son propre point de vue du résultat de ses efforts. Par conséquent, pour chaque projet, la définition des documents livrables est un enjeu majeur. Le nom d'un document est souvent utilisé pour des documents similaires, mais différents dans le détail. La présente norme prendra comme nom de type de document le nom le plus couramment utilisé parmi les noms synonymes, dans l'intention de rendre obsolètes les autres alternatives.

Le premier objectif de la présente norme est d'éviter les malentendus et la préparation erronée des documents afin de réduire les travaux correctifs supplémentaires et les dépenses de clarification entre les partenaires.

Le deuxième objectif est de faciliter la gestion des documents en utilisant la base de données de l'IEC 61355. La présente norme fournira les noms du type de document, les codes de classification du type de document spécifiés par l'IEC 61355, ainsi qu'un certain nombre de modèles.

Pour couvrir ces objectifs, nous spécifions les noms individuels de type de document, mais nous ne spécifions pas quels documents sont obligatoires ou facultatifs.

# TYPES DE DOCUMENTS POUR LES PROJETS RELATIFS AUX SYSTÈMES ÉLECTRIQUES ET AUX INSTRUMENTS DE FONCTIONNEMENT DANS L'INDUSTRIE DE TRANSFORMATION

## 1 Domaine d'application

La présente Norme internationale définit des documents spécifiques ainsi que leur contenu de base requis pour les projets relatifs aux systèmes électriques et aux instruments de fonctionnement dans l'industrie de transformation.

La présente norme spécifie le nom du type de document et le contenu obligatoire du type de document.

Les documents utilisés dans les phases d'un projet depuis la phase de conception jusqu'à la réalisation mécanique sont couverts (voir IEC 62337).

Les documents relatifs à la gestion de projet et à l'assurance qualité sont inclus.

Les documents relatifs à l'administration des projets commerciaux sont exclus.

Des exemples de documents sont fournis pour faciliter la consultation, la compréhension et l'utilisation.

## 2 Références normatives

Les documents suivants sont cités en référence de manière normative, en intégralité ou en partie, dans le présent document et sont indispensables pour son application. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60617, *Symboles graphiques pour schémas*

IEC 60079-10-1, *Atmosphères explosives – Partie 10-1: Classement des emplacements – Atmosphères explosives gazeuses*

IEC 60079-11, *Atmosphères explosives – Partie 11: Protection de l'équipement par sécurité intrinsèque «i»*

IEC 61082-1, *Établissement des documents utilisés en électrotechnique – Partie 1: Règles*

IEC 61131-3, *Automates programmables – Partie 3: Langages de programmation*

IEC 61355 (toutes les parties), *Classification et désignation des documents pour installations industrielles, systèmes et matériels*

IEC 61355-1:2008, *Classification et désignation des documents pour installations industrielles, systèmes et matériels – Partie 1: Règles et tableaux de classification*

IEC 61511 (toutes les parties), *Sécurité fonctionnelle – Systèmes instrumentés de sécurité pour le secteur des industries de transformation*

IEC 61987-10, *Mesure et contrôle des processus industriels – Structures de données et éléments dans les catalogues d'équipement de processus – Partie 10: Liste de propriétés (LOP) pour l'échange électronique de données pour la mesure et le contrôle de processus industriels – Principes essentiels*

IEC 62337, *Mise en service des systèmes électriques, de mesure et de commande dans l'industrie de transformation – Phases et jalons spécifiques*

IEC 62381, *Systèmes d'automatisation pour les procédés industriels – Essais d'acceptation en usine (FAT), essais d'acceptation sur site (SAT) et essais d'intégration sur site (SIT)*

IEC 62424, *Représentation de l'ingénierie de commande de processus – Demandes sous forme de diagrammes P&I et échange de données entre outils P&ID et outils PCE-CAE*

IEC 82079-1, *Établissement des instructions d'utilisation – Structure, contenu et présentation – Partie 1: Principes généraux et exigences détaillées*

ISO 10006, *Systèmes de management de la qualité – Lignes directrices pour le management de la qualité dans les projets*

ISO 10628, *Schémas de procédé pour les unités de fabrication/de production – Règles générales*

### **3 Termes, définitions, termes abrégés et acronymes**

#### **3.1 Termes et définitions**

Pour les besoins du présent document, les termes et définitions suivants s'appliquent.

##### **3.1.1**

##### **activité**

plus petit élément de travail identifié dans un projet

[SOURCE: ISO 10006:2003, 3.1]

##### **3.1.2**

##### **document**

ensemble d'informations fixe et structuré destiné à être perçu par les personnes et qui peut être géré et échangé comme un bloc entre utilisateurs et systèmes

[SOURCE: IEC 61355-1:2008, 3.2, modifiée – notes supprimées pour une meilleure compréhension.]

##### **3.1.3**

##### **type de document**

type de document défini en fonction du contenu spécifique de ses informations et de la forme de présentation

[SOURCE: IEC 61355-1:2008, 3.6, modifiée – note supprimée pour une meilleure compréhension.]

##### **3.1.4**

##### **demande de document**

document qui demande de préparer ou de fournir un ensemble de documents

**3.1.5****documentation**

ensemble de documents liés à un sujet donné

[SOURCE: IEC 61355-1:2008, 3.5, modifiée – notes supprimées pour une meilleure compréhension.]

**3.1.6****autorisation d'export**

autorisation d'une autorité pour transporter par exemple des produits d'embargo depuis le pays d'origine vers le pays de destination prévu

**3.1.7****identificateur**

attribut associé à un objet pour le distinguer sans ambiguïté d'autres objets dans un domaine spécifique

[SOURCE: IEC/ISO 81346-1:2009, 3.10]

**3.1.8****industrie de transformation**

industrie qui utilise des techniques de réactions et de séparations chimiques, ou de mélange afin de créer de nouveaux produits, de modifier des produits existants ou de traiter des déchets, et qui inclut les types suivants d'industries: chimie, pétrochimie, traitement des déchets, industrie du papier, ciment, etc. Elle exclut en revanche les secteurs tels que la fabrication d'équipements/machines ou autres industries similaires. Les industries soumises à des exigences particulières et/ou à validation, etc., sont également exclues

[SOURCE: IEC 62337: 2012, 3.13]

**3.1.9****projet**

somme des activités commerciales, techniques et autres relatives à un objet spécifique

[SOURCE: IEC 61355-1:2008, 3.12 modifiée – définition adaptée pour respecter les Directives ISO/IEC, Partie 2.]

**3.1.10****paquetage de travaux**

sous-ensemble d'un projet formant un groupe d'activités ayant des caractéristiques communes telles que le but, le thème, l'objet, le responsable, le cadre temporel, etc.

**3.2 Termes abrégés et acronymes**

|      |                                                                                        |
|------|----------------------------------------------------------------------------------------|
| DCS  | Distributed control system (Système de commande distribué)                             |
| DLOP | Device list of properties (Liste de propriétés d'appareils)                            |
| E&I  | Electrical and instrumentation (Systèmes électriques et instruments de fonctionnement) |
| ESD  | Emergency shutdown system (Système d'arrêt d'urgence)                                  |
| Ex-i | Intrinsic safety "i" (Sécurité intrinsèque «i» selon l'IEC 60079-11)                   |
| FAT  | Factory acceptance test (Essai de réception en usine)                                  |
| I/O  | Input/output (Entrée/sortie (E/S))                                                     |
| ID   | Identifier (Identificateur)                                                            |
| IT   | Information technology (Technologies de l'information (TI))                            |
| OLOP | Operating list of properties (Liste de propriétés fonctionnelles)                      |

|      |                                                                                            |
|------|--------------------------------------------------------------------------------------------|
| P&ID | Piping and instrumentation diagram (Schéma instruments de fonctionnement et des conduites) |
| PLC  | Programmable logic controller (Contrôleur logique programmable)                            |
| SAT  | Site acceptance test (Essai de réception sur site)                                         |
| SIF  | Safety instrumented function (Fonction instrumentée de sécurité)                           |
| SIL  | Safety integrity level (Niveau d'intégrité de la sécurité)                                 |
| SIS  | Safety instrumented system (Système instrumenté de sécurité)                               |
| SIT  | Site integration test (Essai d'intégration sur site)                                       |
| SRS  | Safety requirement specification (Spécification des demandes de sécurité)                  |

## 4 Conformité

### 4.1 Document

La conformité d'un document avec la présente norme internationale peut être déclarée si les conditions suivantes sont remplies:

Le nom du type de document doit être indiqué sur le document respectif. Si le document contient plusieurs pages, le nom du type de document peut être indiqué sur la page de garde uniquement. Le nom du type de document défini dans la présente norme doit être utilisé.

De plus, une référence à la présente norme internationale doit être effectuée en étroite relation avec l'usage. Une note de bas ou une note de fin peut être utilisée à cet effet.

En outre, le document final doit contenir tous les contenus obligatoires définis dans la présente norme internationale au minimum. Si les données ne sont pas disponibles ou complètement disponibles au moment où le document est publié, le document peut prétendre à la conformité avec la présente norme s'il est clairement marqué que l'information manquante sera donnée plus tard. Une note générale déclarant que le document est en cours de préparation peut être utilisée.

### 4.2 Demande de document

La conformité d'une demande de document avec la présente Norme internationale peut être déclarée si les conditions suivantes sont remplies:

Le nom du type de document défini dans la présente norme doit être utilisé.

De plus, une référence à la présente Norme internationale doit être effectuée en étroite relation avec l'usage. Une note de bas ou une note de fin peut être utilisée à cet effet.

## 5 Types de document

Le Tableau 1 énumère les types de documents ainsi que leurs propriétés ci-dessous.

- "Nom du type de document" indique le nom relatif au type de document.
- "Description" est la description brève du type d'informations qui doit être fourni par le type de document.
- "Contenu obligatoire" indique les informations obligatoires incluses dans le type de document.
- "DCC" indique un code de classification de type de document relatif aux types de documents conformément à l'IEC 61355-1. Le code de classification de type de document indiqué n'est donné qu'à titre informatif puisque l'IEC 61355 peut laisser d'autres classifications ouvertes à l'utilisateur.

- "Identificateur" est un nombre qui, conjointement avec le DCC, est utilisé dans la présente norme pour faire référence aux éléments.
- "Exemple" montre où un exemple est accessible.

**Tableau 1 – Types de documents (1 de 14)**

| Nom du type de document                 | Description                                                                                                                                                                                                                                                             | Contenu obligatoire                                                                                                                                                                                                 | DCC (informative) | Identificateur | Exemple    |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|------------|
| Liste des documents                     | Liste officielle du contenu d'un paquetage de documents ou d'une documentation.                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>- Numéro du dessin / du document</li> <li>- Nombre de pages</li> <li>- Indice de révision</li> <li>- Code de désignation de document</li> <li>- Titre du document</li> </ul> | AB                | 001            | Figure B.1 |
| Liste des points résiduels              | Liste de toutes les tâches restant à exécuter.                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>- ID de la tâche</li> <li>- Description de la tâche</li> <li>- Propriétaire de la tâche</li> <li>- Date d'échéance</li> <li>- Priorité</li> <li>- Statut</li> </ul>          | BB                | 001            | Figure B.2 |
| Plan structurel des projets             | Liste structurée des principaux paquetages de travaux. Elle dispose d'une structure arborescente qui couvre tous les travaux nécessaires à l'exécution du domaine d'application des projets et comprend tous les livrables. L'utilisation est décrite dans l'ISO 10006. | Voir ISO 10006                                                                                                                                                                                                      | BD                | 001            |            |
| Plan de la communication                | Accord contraignant concernant les moyens autorisés d'informations et de partenaires, y compris les règles relatives au contenu et à la fréquence. Pour plus de détails, voir ISO 10006.                                                                                | Voir ISO 10006                                                                                                                                                                                                      | BD                | 002            |            |
| Plan d'exécution du projet              | Plan d'exécution pour confirmer le projet sur tout le domaine d'application.                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>- Domaine d'application</li> <li>- Calendrier</li> <li>- Listes des documents</li> <li>- Organisation</li> <li>- Communication plan</li> </ul>                               | BD                | 003            |            |
| Plan de mobilisation de la main d'œuvre | Calendrier constitué de diagrammes à barres avec ressources humaines et qualifications associées. Pour plus de détails relatifs à la planification des ressources, voir ISO 10006.                                                                                      | Voir ISO 10006<br><br><ul style="list-style-type: none"> <li>- Nom de la ressource</li> <li>- Ressources temporelles</li> </ul>                                                                                     | BE                | 001            | Figure B.3 |



Tableau 1 (2 de 14)

| Nom du type de document                               | Description                                                                                                                                                                                                                            | Contenu obligatoire                                                                                                                                                                                                                                                                                                 | DCC (informative) | Identificateur | Exemple    |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|------------|
| Agenda                                                | Représentation des dates de début et de fin des activités à partir de l'organigramme des tâches et des étapes principales selon l'IEC 62337.                                                                                           | <ul style="list-style-type: none"> <li>- Activité définie</li> <li>- Division d'activités en sous-activités, si nécessaire (par exemple études préliminaires, ingénierie, fabrication, essais, répartition, montage, mise en service, etc.)</li> <li>- Date de début et date de fin pour chaque activité</li> </ul> | BE                | 002            |            |
| Liste de l'équipement avec les interdictions d'export | Liste de matériels nécessitant une autorisation d'export.                                                                                                                                                                              | <ul style="list-style-type: none"> <li>- Type de l'équipement</li> <li>- Référence à la restriction à l'export applicable</li> </ul>                                                                                                                                                                                | BF                | 001            |            |
| Feuille de postes PLT                                 | Fiche technique avec des données pour une boucle d'instruments nécessaire à l'exploitation et à la maintenance. Le document est généralement utilisé pour transférer des données entre les différentes phases du cycle de vie complet. | <ul style="list-style-type: none"> <li>- ID</li> <li>- Fonction</li> <li>- Description</li> <li>- Plage de mesure</li> <li>- Emplacement</li> <li>- Données de processus</li> <li>- Données d'instruments</li> </ul>                                                                                                | DA                | 001            | Figure B.4 |
| Système d'étiquetage                                  | Système de codage pour les objets au sein d'un complexe ou d'une installation.                                                                                                                                                         | <ul style="list-style-type: none"> <li>- Domaine d'application du système d'étiquetage</li> <li>- Règles de codage</li> </ul>                                                                                                                                                                                       | DB                | 001            |            |
| Instructions d'essai et d'entretien                   | Liste des activités recommandées d'essais et de maintenance.                                                                                                                                                                           | <ul style="list-style-type: none"> <li>- Description des activités recommandées</li> <li>- Objets affectés</li> <li>- Fréquence</li> </ul>                                                                                                                                                                          | DC                | 001            | Figure B.5 |
| Manuel d'utilisation                                  | Instructions du constructeur destinées à la manutention et à l'utilisation prévues d'un appareil ou d'un système conformément à l'IEC 82079-1.                                                                                         | Voir IEC 82079-1                                                                                                                                                                                                                                                                                                    | DC                | 002            |            |
| Instructions d'essai et d'entretien                   | Liste des travaux d'essai et de maintenance légalement exigés ou nécessaires.                                                                                                                                                          | <ul style="list-style-type: none"> <li>- Description des activités requises</li> <li>- Objets affectés</li> <li>- Fréquence</li> <li>- Désignation et titre de la loi ou de la réglementation applicable</li> </ul>                                                                                                 | DZ                | 001            | Figure B.6 |

**Tableau 1 (3 de 14)**

| Nom du type de document                                                                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Contenu obligatoire                                                                                                                                                                                                                                                             | DCC (informative) | Identificateur | Exemple    |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|------------|
| Exigences générales de conception                                                           | Règles de conception obligatoires adaptées des exigences spécifiques au projet ainsi que des exigences et règles juridiques pertinentes.                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>- Domaine d'application</li> <li>- Description des règles</li> <li>- Désignation et titre de la loi ou de la réglementation applicable</li> </ul>                                                                                        | EC                | 001            |            |
| Liste des consommateurs électriques                                                         | Liste tabulée avec tous les consommateurs électriques.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>- ID de la charge</li> <li>- Type de charge (c'est-à-dire moteur, etc.)</li> <li>- Description</li> <li>- Puissance assignée</li> <li>- Courant assigné</li> <li>- Tension assignée</li> </ul>                                           | EC                | 002            | Figure B.7 |
| Concept d'éclairage                                                                         | Guide de conception de l'éclairage en conformité avec les règles et les normes applicables en accordant une attention au concept de sécurité. En général, le concept est plus détaillé que les exigences générales de conception.                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>- Domaine d'application</li> <li>- Désignation et titre de la loi ou de la réglementation applicable</li> <li>- Règles de conception pour l'éclairage</li> </ul>                                                                         | EC                | 003            |            |
| Concept pour l'équipement de communication                                                  | Guide de conception en conformité avec les règles et les normes applicables pour les systèmes électriques tels que: <ul style="list-style-type: none"> <li>– système d'alerte</li> <li>– système d'alarme incendie</li> <li>– système d'alarme et de signalisation</li> <li>– systèmes de communication générale</li> <li>– systèmes informatiques</li> <li>– systèmes de sécurité</li> <li>– systèmes de vidéosurveillance, etc.</li> </ul> En général, le concept est plus détaillé que les exigences générales de conception. | <ul style="list-style-type: none"> <li>- Domaine d'application</li> <li>- Désignation et titre de la loi ou de la réglementation applicable</li> <li>- Règles de conception pour l'équipement de communication</li> </ul>                                                       | EC                | 004            |            |
| Concept de protection contre la foudre, la mise à la terre et le câblage des équipotentiels | Guide de conception en conformité avec les règles et les normes applicables pour la conception de protection contre la foudre, la mise à la terre et le câblage des équipotentiels prenant les conditions locales en compte. En général, le concept est plus détaillé que les exigences générales de conception.                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>- Domaine d'application</li> <li>- Désignation et titre de la loi ou de la réglementation applicable</li> <li>- Règles de conception pour la protection contre la foudre, la mise à la terre et le câblage des équipotentiels</li> </ul> | EC                | 005            |            |

Tableau 1 (4 de 14)

| Nom du type de document                                             | Description                                                                                                                                                                                                                                                                                                                                                            | Contenu obligatoire                                                                                                                                                                                                                                | DCC (informative) | Identificateur | Exemple    |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|------------|
| Concept de protection anticorrosion cathodique                      | Guide de conception en conformité avec les règles et les normes applicables pour la conception d'un système de protection anticorrosion cathodique prenant les conditions locales en compte. En général, le concept est plus détaillé que les exigences générales de conception.                                                                                       | <ul style="list-style-type: none"> <li>- Domaine d'application</li> <li>- Désignation et titre de la loi ou de la réglementation applicable</li> <li>- Règles de conception pour la protection anticorrosion cathodique</li> </ul>                 | EC                | 006            |            |
| Concept pour le chauffage électrique et la tuyauterie des appareils | Guide de conception en conformité avec les règles et les normes applicables pour la conception d'un système de chauffage électrique et de tuyauterie des appareils prenant les conditions locales en compte. En général, le concept est plus détaillé que les exigences générales de conception.                                                                       | <ul style="list-style-type: none"> <li>- Domaine d'application</li> <li>- Désignation et titre de la loi ou de la réglementation applicable</li> <li>- Règles de conception pour le chauffage électrique et la tuyauterie des appareils</li> </ul> | EC                | 007            |            |
| Liste des circuits de chauffage                                     | Liste de tous les circuits de chauffage.                                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>- ID</li> <li>- Equipement chauffé</li> <li>- Type de câble chauffant</li> <li>- Température de maintenance</li> <li>- Tête du câble</li> <li>- Longueur</li> <li>- Puissance</li> </ul>                    | EC                | 008            | Figure B.8 |
| Spécification des exigences                                         | Ce document comprend les exigences nécessaires d'équipements E&I décrivant la tâche, les conditions d'exploitation et les informations supplémentaires, par exemple en utilisant un sous-ensemble de la liste de propriétés fonctionnelles (OLOP) selon l'IEC 61987-10. Il s'agit généralement d'un apport technique de l'utilisateur dans le processus d'acquisition. | Voir IEC 61987-10 <ul style="list-style-type: none"> <li>- Conditions de base</li> <li>- Cas de procédé</li> <li>- Conditions d'exploitation pour la conception d'appareil</li> <li>- Matériel de procédé</li> <li>- Emplacement</li> </ul>        | EC                | 009            | Figure B.9 |

**Tableau 1 (5 de 14)**

| Nom du type de document       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Contenu obligatoire                                                                                                                                                                                                                                                                                                                                             | DCC (informative) | Identificateur | Exemple     |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-------------|
| Spécification de l'équipement | Cette fiche technique comprend des données décrivant une mise en œuvre particulière de l'équipement E&I spécifié par la spécification des exigences, par exemple en utilisant un sous-ensemble de la liste de propriétés d'appareil (DLOP) selon l'IEC 61987-10.<br>Il s'agit généralement de la base commune de l'utilisateur et du fabricant pour le processus d'acquisition et contient des données techniques du fabricant de l'offre. Les informations hors de la spécification des exigences peuvent être indiquées. | Voir IEC 61987-10<br>- ID<br>- Application<br>- Conception de fonctions et de systèmes<br>- Entrée<br>- Sortie<br>- Communication numérique<br>- Performance<br>- Conditions d'exploitation assignées<br>- Construction mécanique et électrique<br>- Opérabilité<br>- Alimentation électrique<br>- Certificats et approbation<br>- ID de la partie du composant | EC                | 010            | Figure B.10 |
| Liste de postes PLT           | Liste tabulée de tous les ID E&I.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | - ID<br>- Fonction<br>- Référence P&ID                                                                                                                                                                                                                                                                                                                          | EC                | 011            | Figure B.11 |
| Spécification technique       | Description complète de toutes les exigences pour la réalisation (par exemple d'un système d'automatisation).                                                                                                                                                                                                                                                                                                                                                                                                              | - Domaine d'application<br>- Exigences                                                                                                                                                                                                                                                                                                                          | EC                | 012            |             |
| Cahier des charges            | Définition du but de l'essai, de l'étendue et de l'exécution.                                                                                                                                                                                                                                                                                                                                                                                                                                                              | - Domaine d'application<br>- Documentation liée<br>- Fonction qui doit être soumise à l'essai<br>- Environnement d'essai<br>- Documentation relative aux résultats d'essais<br>- Procédure d'essai                                                                                                                                                              | EC                | 013            |             |
| Cahier des charges du montage | Liste des travaux requis pour le montage complet d'un système, d'une installation ou d'une unité y compris la quantité prévue.                                                                                                                                                                                                                                                                                                                                                                                             | - Domaine d'application<br>- Travaux exigés<br>- Quantités                                                                                                                                                                                                                                                                                                      | EC                | 014            | Figure B.12 |
| Cahier des charges du montage | Définition de la conception de buses pour des applications diverses (pressions, température, niveau, etc.).                                                                                                                                                                                                                                                                                                                                                                                                                | - Conception de buses                                                                                                                                                                                                                                                                                                                                           | EC                | 015            | Figure B.13 |

Tableau 1 (6 de 14)

| Nom du type de document                                          | Description                                                                                                                                                                                                                                      | Contenu obligatoire                                                                                                                      | DCC (informative) | Identificateur | Exemple |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|---------|
| Spécification des exigences utilisateur                          | Spécification brute de l'utilisateur, au regard du client, à détailler par la spécification technique.                                                                                                                                           | - Domaine d'application<br>- Exigences utilisateur                                                                                       | EC                | 016            |         |
| Spécification des demandes de sécurité (SRS)                     | Exigences pour la conception SIF conformément à l'IEC 61511.                                                                                                                                                                                     | Voir IEC 61511                                                                                                                           | EC (alt. QB)      | 017            |         |
| Etude du réseau électrique                                       | Analyse d'impact pour la distribution de puissance à cause d'un court-circuit. Des études complémentaires pourraient être ajoutées. (flux de charge, démarrage du moteur, harmoniques, sélectivité, paramètres d'appareils de protection, etc.). | - Domaine d'application<br>- L'emplacement du court-circuit est pris comme hypothèse<br>- Impact                                         | ED                | 001            |         |
| Calcul de dimension des câbles                                   | Calcul de dimensions des câbles en prenant en considération les exigences de pose, les conditions ambiantes et la topologie du réseau pour les conditions spécifiées de fonctionnement.                                                          | - Domaine d'application du calcul<br>- Exigences<br>- Topologie<br>- Conditions ambiantes prises comme hypothèse<br>- Résultat du calcul | ED                | 002            |         |
| Calcul de l'éclairage                                            | Calcul de la conception du système d'éclairage en prenant compte des conditions locales.                                                                                                                                                         | - Domaine d'application du calcul<br>- Exigences<br>- Conditions locales prises comme hypothèse                                          | ED                | 003            |         |
| Calcul de la protection anticorrosion cathodique                 | Calcul de conception du système de protection anticorrosion cathodique prenant les conditions locales en compte.                                                                                                                                 | - Domaine d'application du calcul<br>- Exigences<br>- Conditions ambiantes prises comme hypothèse<br>- Résultat du calcul                | ED                | 004            |         |
| Calcul du chauffage électrique et de la tuyauterie des appareils | Calcul de conception du chauffage électrique et de la tuyauterie des appareils prenant les conditions ambiantes et la topologie du système en compte.                                                                                            | - Domaine d'application du calcul<br>- Exigences<br>- Topologie<br>- Conditions ambiantes prises comme hypothèse<br>- Résultat du calcul | ED                | 005            |         |

**Tableau 1 (7 de 14)**

| Nom du type de document                                      | Description                                                                                                                                                                                                                     | Contenu obligatoire                                                                                                                                                                                                                                    | DCC (informative) | Identificateur | Exemple     |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-------------|
| Feuille de calcul Ex-i                                       | Calcul vérifiant que dans un circuit à type de protection Ex-i, tous les appareils fonctionnent dans la limite de leurs valeurs certifiées.                                                                                     | <ul style="list-style-type: none"> <li>- Domaine d'application du calcul</li> <li>- Exigences</li> <li>- Topologie</li> <li>- Conditions ambiantes prises comme hypothèse</li> <li>- Résultat du calcul</li> </ul>                                     | ED                | 006            | Figure B.14 |
| Inventaire des pertes de chaleur                             | Inventaire des pertes de chaleur des équipements électriques dans un commutateur, une baie et une salle de commande.                                                                                                            | <ul style="list-style-type: none"> <li>- Domaine d'application</li> <li>- Système cible</li> <li>- Emplacement</li> <li>- Groupement</li> <li>- Perte de chaleur</li> </ul>                                                                            | ED                | 007            | Figure B.15 |
| Schéma unifilaire de la distribution de l'énergie            | Dessin schématique simplifié de la distribution de puissance avec des symboles et des circuits graphiques – ne présentant aucun câblage de commande.                                                                            | <ul style="list-style-type: none"> <li>- Domaine d'application du schéma</li> <li>- Symboles et ID de la source d'alimentation</li> <li>- Symboles et ID du consommateur de puissance</li> <li>- Symboles et ID des circuits d'alimentation</li> </ul> | FA                | 001            | Figure B.16 |
| Schéma de structure SNCC, API                                | Dessin schématique simplifié des systèmes de commande et de leur topologie de réseau par des symboles graphiques – ne présentant aucun câblage secondaire.                                                                      | <ul style="list-style-type: none"> <li>- Domaine d'application du schéma</li> <li>- Symboles et ID du sous-système</li> <li>- Symboles et ID de l'interconnexion</li> </ul>                                                                            | FA                | 002            | Figure B.17 |
| Schéma instruments de fonctionnement et des conduites (P&ID) | Schéma conforme à l'ISO 10628 incluant les matériels de procédé de l'installation et les tuyauteries de raccordement. Illustration des matériels E&I selon les exigences spécifiques au projet et aux exigences de l'IEC 62424. | Voir ISO 10628                                                                                                                                                                                                                                         | FB                | 001            | Figure B.18 |

Tableau 1 (8 de 14)

| Nom du type de document                  | Description                                                                                                                                                                                                                             | Contenu obligatoire                                                                                                                                                                                                                                                                                                               | DCC (informative) | Identificateur | Exemple     |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-------------|
| Organigramme général                     | Schéma conforme à l'ISO 10628 incluant les matériels de procédé de l'installation et les tuyauteries de raccordement importantes. Illustration des matériels E&I importants selon les exigences spécifiques au projet.                  | Voir ISO 10628                                                                                                                                                                                                                                                                                                                    | FB                | 002            |             |
| Spécification de l'interface utilisateur | Cette spécification contient des normes graphiques détaillées et la hiérarchie de l'interface homme-machine, par exemple affichage du groupe, de la tendance, de l'alarme et de l'opérateur.                                            | <ul style="list-style-type: none"> <li>- Domaine d'application de la spécification</li> <li>- ID du système HMI cible</li> <li>- Désignation et spécifications de l'écran d'affichage</li> <li>- Hiérarchie des écrans d'affichage</li> </ul>                                                                                     | FC                | 001            |             |
| Description des fonctions                | Description orale de la tâche, de la fonction, de l'interface opérateur et du fonctionnement du circuit fermé de réglage ou de la commande en boucle ouverte comme la commande de séquence et de lots et les appareils de verrouillage. | <ul style="list-style-type: none"> <li>- Domaine d'application de la description</li> <li>- Cible</li> <li>- Descriptions fonctionnelles</li> </ul>                                                                                                                                                                               | FE                | 001            | Figure B.19 |
| Bloc fonctionnel                         | Description graphique des circuits fermés ou ouverts de réglage en suivant les règles données par exemple dans le diagramme de blocs fonctionnels de l'IEC 61131-3 avec des symboles selon l'IEC 60617.                                 | <ul style="list-style-type: none"> <li>- Symboles graphiques pour des objets représentant des fonctions</li> <li>- Symboles graphiques représentant des connexions ou des interrelations fonctionnelles</li> <li>- Bornes d'interface et désignations</li> <li>- Désignations de signaux</li> </ul>                               | FF                | 001            | Figure B.20 |
| Tableau cause-effet                      | Actionneurs et capteurs affectés à des colonnes et des rangées selon leur fonction, y compris leur fonction connexe de commutation et/ou d'alarme.                                                                                      | <ul style="list-style-type: none"> <li>- Domaine d'application du document</li> <li>- Identificateur de la cause (entrées)</li> <li>- Identificateur de l'effet (sorties)</li> <li>- Documents de référence</li> <li>- Description</li> <li>- Exigences de sécurité</li> <li>- Relation entre les causes et les effets</li> </ul> | FF                | 002            | Figure B.21 |

**Tableau 1 (9 de 14)**

| Nom du type de document               | Description                                                                                                                                                                                                                                                        | Contenu obligatoire                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DCC (informative) | Identificateur | Exemple     |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-------------|
| Liste des signaux                     | Liste de tous les signaux. Voir IEC 61082-1.                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>- ID</li> <li>- Description</li> <li>- Source</li> <li>- Cible</li> <li>- Type</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                    | FP                | 001            | Figure B.22 |
| Liste des E/S                         | Extrait à partir de la liste de signaux de tous les signaux provenant de et allant vers un système d'automation.                                                                                                                                                   | <ul style="list-style-type: none"> <li>- ID</li> <li>- Désignation d'entrée ou de sortie</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                 | FP                | 002            | Figure B.23 |
| Liste des points de déclenchement     | Liste tabulée de toutes les valeurs de processus résultant en une fonction de commutation de l'équipement E&I.                                                                                                                                                     | <ul style="list-style-type: none"> <li>- ID de la valeur de processus</li> <li>- Condition de déclenchement</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                              | FQ                | 001            | Figure B.24 |
| Liste des paramètres de configuration | Liste tabulée de tous les paramètres variables pour l'équipement E&I.                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>- ID de l'équipement</li> <li>- ID des paramètres</li> <li>- Valeur pour le paramètre</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                             | FQ                | 002            | Figure B.25 |
| Schéma de circuit                     | Dessin schématique de la voie de courant sans considération de la position spatiale et mécanique de l'équipement électrique. Voir IEC 61082-1.                                                                                                                     | <ul style="list-style-type: none"> <li>- Symboles graphiques représentant des objets</li> <li>- Symboles graphiques représentant les connexions entre les objets</li> <li>- Désignations de référence</li> <li>- Désignation de bornes</li> <li>- Conventions du niveau du signal (applicables aux signaux logiques)</li> <li>- Information nécessaire pour tracer les voies et les circuits (désignations de signaux, emplacement)</li> <li>- Informations supplémentaires nécessaires à la compréhension des fonctions</li> </ul> | FS                | 001            |             |
| Schéma des boucles                    | Représentation des fonctions matérielles et/ou logicielles d'une boucle de régulation par des symboles graphiques conformément à l'IEC 60617. Ce schéma montre les différents équipements selon leur ordre topologique, ainsi que le câblage y compris les bornes. | <ul style="list-style-type: none"> <li>- ID de la boucle</li> <li>- Symboles selon l'IEC 60617</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                           | FS                | 002            | Figure B.26 |



Tableau 1 (10 de 14)

| Nom du type de document                       | Description                                                                                                                                                                                                                                                                                                                                          | Contenu obligatoire                                                                                                                                                                                                   | DCC (informative) | Identificateur | Exemple     |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-------------|
| Plan des bus                                  | Représentation de tous les participants du bus y compris leur adresse de communication et la relation entre eux.                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>- ID du bus</li> <li>- ID du participant du bus</li> <li>- Leur adresse</li> <li>- Relation entre les participants</li> </ul>                                                  | FS                | 003            | Figure B.27 |
| Vue synoptique: cheminement des câbles        | Plan d'installation montrant les principaux chemins de câble dans le plan de mise sur pied.                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>- ID du chemin de câble</li> <li>- Emplacement</li> </ul>                                                                                                                      | LD (alt. LH)      | 001            |             |
| Tracé du cheminement du câble                 | Liste de câbles à un point défini sur un cheminement du câble.                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>- Emplacement</li> <li>- Liste des ID de câbles</li> </ul>                                                                                                                     | LD (alt. LH)      | 002            |             |
| Plan local E&I                                | Présentation des emplacements des matériels E&I dans le plan de mise sur pied.                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>- ID de l'équipement</li> <li>- Emplacement</li> </ul>                                                                                                                         | LD (alt. LH)      | 003            | Figure B.28 |
| Plan de l'alimentation en air des instruments | Présentation des principales conduites d'air de l'instrument et des équipements dans le plan de mise sur pied.                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>- ID de l'équipement</li> <li>- Emplacement</li> <li>- Représentation des conduites d'air</li> </ul>                                                                           | LD (alt. LH)      | 004            |             |
| Plan de mise sur pied                         | Représentation graphique des principaux équipements et structures dans une zone donnée dans un plan en vue de dessus à l'échelle. Au moins les contours de ces équipements sont affichés. D'autres vues peuvent être ajoutées.                                                                                                                       | <ul style="list-style-type: none"> <li>- ID et représentation d'un équipement ou d'une structure</li> <li>- Contour de l'équipement et de la structure</li> <li>- Emplacement</li> </ul>                              | LD (alt. LH)      | 005            |             |
| Plan d'installation                           | Document de construction pour l'éclairage, la mise à la terre, la protection contre la foudre, la protection cathodique, le traçage électrique, les chemins de câbles, etc. Le plan d'installation contient l'emplacement des composants individuels ou du groupe de composants et leur désignation avec le niveau de détail requis pour le montage. | <ul style="list-style-type: none"> <li>- Domaine d'application du schéma</li> <li>- ID et représentation d'un composant ou d'un groupe de composants</li> <li>- Leur représentation</li> <li>- Emplacement</li> </ul> | LD (alt. LH)      | 006            | Figure B.29 |
| Plan du passage des câbles                    | Reconnaissance de toutes les cloisons de câbles et qui contient:                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>- ID du câble</li> <li>- Position</li> </ul>                                                                                                                                   | LH                | 001            |             |

**Tableau 1 (11 de 14)**

| Nom du type de document       | Description                                                                                                                                                                                                                                              | Contenu obligatoire                                                                                                                                                                                                        | DCC (informative) | Identificateur | Exemple     |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-------------|
| Schéma de l'armoire           | Plan à l'échelle des équipements, borniers, chemins de câbles, etc. installés dans des armoires, pupitres de commande et équipements similaires.                                                                                                         | <ul style="list-style-type: none"> <li>- ID de l'armoire, de la console ou de matériels similaires</li> <li>- ID et représentation des composants dans l'armoire</li> <li>- Position d'un composant</li> </ul>             | LU                | 001            | Figure B.30 |
| Schéma des dispositions       | Disposition d'objets définissant l'utilisation des ressources d'objets avec la déclaration de la ressource d'objets et l'identification du consommateur de ressources (par exemple la disposition de signal d'une carte E/S multicanaux)                 | <ul style="list-style-type: none"> <li>- ID de l'objet</li> <li>- Ressource de l'objet</li> <li>- Déclaration de la ressource de l'objet</li> <li>- Consommateur de ressources</li> </ul>                                  | LU                | 002            |             |
| Schéma des bornes             | Représentation schématique de borniers, y compris la désignation de tous les fils connectés, câbles et bretelles pour chaque borne.                                                                                                                      | <ul style="list-style-type: none"> <li>- ID des objets connectés</li> </ul>                                                                                                                                                | MA                | 001            | Figure B.31 |
| Schéma croisé du câblage      | Schéma de raccordement des bornes entrantes et sortantes généralement d'une armoire de triage, y compris leurs raccordements croisés.                                                                                                                    | <ul style="list-style-type: none"> <li>- Domaine d'application du document</li> <li>- Signal entrant</li> <li>- Signal sortant</li> <li>- ID du terminal correspondant</li> </ul>                                          | MA                | 002            |             |
| Plan de conception du câblage | Plan de conception du câblage des instruments, des composants du système et de leurs alimentations auxiliaires. Le plan montre l'équipement, l'emplacement de toutes les bornes et le type de connexion entre les bornes pour tous les types de signaux. | <ul style="list-style-type: none"> <li>- Symboles graphiques conformément à l'IEC 60617 ou à un projet défini spécifique, représentant des composants E&amp;I</li> <li>- Interconnexions des composants E&amp;I</li> </ul> | MA                | 003            | Figure B.32 |
| Liste des câbles              | Liste de tous les câbles électriques.                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>- ID du câble</li> <li>- Type du câble</li> <li>- Section de câble</li> <li>- Tête du câble</li> <li>- Fin du câble</li> <li>- Longueur</li> </ul>                                  | MB                | 001            | Figure B.33 |
| Schéma du tracé des câbles    | Liste tabulée contenant la tête du câble, les tracés du cheminement du câble et la fin du câble dans le chemin d'un câble.                                                                                                                               | <ul style="list-style-type: none"> <li>- ID du câble</li> <li>- Tête du câble</li> <li>- Tracé du cheminement du câble</li> <li>- Fin du câble</li> </ul>                                                                  | MB                | 002            | Figure B.34 |

Tableau 1 (12 de 14)

| Nom du type de document                      | Description                                                                                                                                                                | Contenu obligatoire                                                                                                                                                                                                                       | DCC (informative) | Identificateur | Exemple     |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-------------|
| Bordereau des matériaux                      | Spécification et quantité de matériel en vrac.                                                                                                                             | <ul style="list-style-type: none"> <li>- Nom du matériel</li> <li>- Sa spécification</li> <li>- Sa quantité</li> </ul>                                                                                                                    | PA                | 001            | Figure B.35 |
| Liste des pièces détachées                   | Liste des pièces de rechange recommandées pour un but ou une période spécifique avec tous les détails nécessaires à l'approvisionnement.                                   | <ul style="list-style-type: none"> <li>- Numéro de référence de l'élément</li> <li>- Quantité</li> <li>- ID de la pièce détachée</li> <li>- Nom du fabricant ou du fournisseur de la pièce détachée</li> <li>- Nom de la pièce</li> </ul> | PB                | 001            | Figure B.36 |
| Liste d'appareils PLT                        | Liste tabulée de tous les instruments par ID                                                                                                                               | <ul style="list-style-type: none"> <li>- ID</li> <li>- type d'instrument</li> <li>- Etiquetage</li> </ul>                                                                                                                                 | PB                | 002            | Figure B.37 |
| Journal de bord du système                   | Liste détaillée de toutes les diffusions de matériel et de logiciel d'un système.                                                                                          | <ul style="list-style-type: none"> <li>- ID du matériel</li> <li>- Sa révision logicielle</li> </ul>                                                                                                                                      | PD                | 001            | Figure B.38 |
| Plan qualité                                 | Description des procédés fondamentaux dans les phases des projets sécurisant les exigences contractuelles en matière de qualité produit, santé, sécurité et environnement. | Voir ISO 9000:2005                                                                                                                                                                                                                        | QA                | 001            |             |
| Plan d'essai                                 | Vue d'ensemble des essais tels que fournis dans le contrat.                                                                                                                | <ul style="list-style-type: none"> <li>- Domaine d'application de l'essai</li> <li>- But</li> <li>- Cible</li> <li>- Document lié</li> </ul>                                                                                              | QA                | 002            |             |
| Liste des manquants                          | Liste d'essais effectués ayant des caractéristiques erronées ou étant incomplets et qui sont finalement non réparés.                                                       | <ul style="list-style-type: none"> <li>- Domaine d'application du document</li> <li>- Essais effectués ayant des caractéristiques erronées ou étant incomplets</li> </ul>                                                                 | QA                | 003            |             |
| Liste de contrôle                            | Liste de tous les essais.                                                                                                                                                  | <ul style="list-style-type: none"> <li>- Domaine d'application du document</li> <li>- Liste de tous les essais</li> </ul>                                                                                                                 | QA                | 004            |             |
| Plan de classification des zones dangereuses | Plan montrant les zones dangereuses et le matériel connexe selon l'IEC 60079-10-1.                                                                                         | <ul style="list-style-type: none"> <li>- Emplacement</li> <li>- Classification des zones</li> <li>- Équipement lié</li> <li>- Dimensions</li> </ul>                                                                                       | QB                | 001            |             |

**Tableau 1 (13 de 14)**

| Nom du type de document                          | Description                                                                                                               | Contenu obligatoire                                                                                                                                                                                                                                   | DCC (informative) | Identificateur | Exemple |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|---------|
| Concept de protection de l'alimentation          | Définition des mesures préventives pour les personnes, les équipements électriques et la disponibilité des installations. | <ul style="list-style-type: none"> <li>- ID des mesures préventives</li> <li>- But</li> <li>- procédure</li> </ul>                                                                                                                                    | QB                | 002            |         |
| Classification SIL                               | Classification SIL conformément à l'IEC 61511.                                                                            | <ul style="list-style-type: none"> <li>- Domaine d'application du document</li> <li>- ID de la boucle</li> <li>- Classification SIL</li> </ul>                                                                                                        | QB                | 003            |         |
| Fiche technique de sécurité (MSDS)               | Détails de supports chimiques utilisés, y compris l'ID, le nom et les principales propriétés physiques et chimiques.      | <ul style="list-style-type: none"> <li>- ID de matériel</li> <li>- Nom de la classe de matériels</li> <li>- Propriétés</li> <li>- Emplacement</li> <li>- Quantité</li> </ul>                                                                          | QB                | 004            |         |
| Certificat                                       | Preuve et certificat pour les propriétés spécifiques au type ou individuelles des appareils ou systèmes fournis.          | <ul style="list-style-type: none"> <li>- Désignation de l'appareil, système, ou projet cible</li> <li>- Type de la cible</li> <li>- Désignation et titre de la loi ou de la réglementation applicable</li> <li>- Approbation de l'émetteur</li> </ul> | QC                | 001            |         |
| Procès-verbal d'essai                            | Document vérifiant les caractéristiques d'essai d'un certain objet.                                                       | <ul style="list-style-type: none"> <li>- Date de l'essai</li> <li>- Signature de la personne chargée d'essai</li> <li>- ID d'un objet (type, numéro de série, etc.)</li> <li>- Valeurs mesurées</li> </ul>                                            | QC                | 002            |         |
| Documentation de réception                       | Certificat FAT, SAT ou SIT selon l'IEC 62381.                                                                             | <ul style="list-style-type: none"> <li>- Certificat conformément à l'IEC 62381</li> </ul>                                                                                                                                                             | QC                | 003            |         |
| Feuille d'essai pour appareillages de protection | Spécification des essais requis et confirmation d'une réalisation correcte.                                               | <ul style="list-style-type: none"> <li>- Domaine d'application du document</li> <li>- Désignation du document de plan d'essai</li> <li>- Liste des points résiduels</li> </ul>                                                                        | QC                | 004            |         |
| Contrôle SIL                                     | Vérification que la classification SIL requise est réalisée.                                                              | <ul style="list-style-type: none"> <li>- Domaine d'application du document</li> <li>- ID de la boucle</li> <li>- Classification SIL</li> <li>- Informations relatives au contrôle</li> </ul>                                                          | QC                | 005            |         |

**Tableau 1** (14 de 14)

| Nom du type de document | Description                                                                                                                                                               | Contenu obligatoire                                                                                                                                                                                              | DCC (informative) | Identificateur | Exemple     |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-------------|
| Schéma du montage       | Dessin schématique et détails fondamentaux de construction pour l'installation d'équipements E&I avec toutes les interconnexions et la nomenclature des matières requise. | <ul style="list-style-type: none"> <li>- Domaine d'application du document</li> <li>- ID et symbole d'un équipement E&amp;I</li> <li>- Représentation de l'interconnexion</li> <li>- Liste des pièces</li> </ul> | TC                | 001            | Figure B.39 |
| Dessin de montage       | Dessin avec les dimensions et les détails de raccordement principaux.                                                                                                     | <ul style="list-style-type: none"> <li>- Dimensions</li> <li>- Installation</li> <li>- Méthode d'assemblage</li> </ul>                                                                                           | TC                | 002            | Figure B.40 |

## Annexe A (informative)

### Noms des types de documents dans différentes langues

Le Tableau A.1 et le Tableau A.2 montrent les noms des types de documents dans différentes langues.

**Tableau A.1 – Noms des types de documents en anglais et en français (1 de 4)**

| Document kind                                                     | Type de document                                                                            | DCC | Identificateur |
|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----|----------------|
| List of documents                                                 | Liste des documents                                                                         | AB  | 001            |
| Punch list                                                        | Liste des points résiduels                                                                  | BB  | 001            |
| Work breakdown structure (WBS)                                    | Plan structurel des projets                                                                 | BD  | 001            |
| Communication plan                                                | Plan de la communication                                                                    | BD  | 002            |
| Project execution plan                                            | Plan d'exécution du projet                                                                  | BD  | 003            |
| Manpower mobilization plan                                        | Planning du personnel                                                                       | BE  | 001            |
| Time schedule                                                     | Agenda                                                                                      | BE  | 002            |
| Equipment list with export restriction                            | Liste de l'équipement avec les interdictions d'export                                       | BF  | 001            |
| Instrument data sheet                                             | Feuille de postes PLT                                                                       | DA  | 001            |
| Identification system                                             | Système d'étiquetage                                                                        | dB  | 001            |
| Test and maintenance recommendations                              | Instruction d'essai et d'entretien                                                          | DC  | 001            |
| Operating manual                                                  | Manuel d'utilisation                                                                        | DC  | 002            |
| Test and maintenance requirements                                 | Règlement d'essai et d'entretien                                                            | DZ  | 001            |
| General design requirements                                       | Spécification générale pour l'ingénierie                                                    | EC  | 001            |
| Electrical consumer list                                          | Liste des consommateurs électriques                                                         | EC  | 002            |
| Lighting concept                                                  | Concept d'éclairage                                                                         | EC  | 003            |
| Concept for communication equipment                               | Concept de communication de l'équipement                                                    | EC  | 004            |
| Lightning protection, grounding and equipotential bonding concept | Concept de protection contre la foudre, la mise à la terre et le câblage des équipotentiels | EC  | 005            |
| Cathodic corrosion protection concept                             | Concept de protection anticorrosion cathodique                                              | EC  | 006            |
| Electrical heat tracing concept                                   | Concept pour le chauffage électrique et la tuyauterie des appareils                         | EC  | 007            |
| Heating circuit list                                              | Liste des circuits de chauffage                                                             | EC  | 008            |

**Tableau A.1 (2 de 4)**

| Document kind                                           | Type de document                                                                     | DCC | Identificateur |
|---------------------------------------------------------|--------------------------------------------------------------------------------------|-----|----------------|
| Requirement specification                               | Spécification des exigences                                                          | EC  | 009            |
| Specification sheet                                     | Spécification de l'équipement                                                        | EC  | 010            |
| Loop list                                               | Liste de postes PLT                                                                  | EC  | 011            |
| Technical specification                                 | Cahier des charges                                                                   | EC  | 012            |
| Test specification                                      | Spécification de contrôle                                                            | EC  | 013            |
| Construction bill of quantities                         | Cahier des charges du montage                                                        | EC  | 014            |
| Specification E&I process connections                   | Spécification des connexions des processus PLT                                       | EC  | 015            |
| User requirement specification                          | Cahier des charges                                                                   | EC  | 016            |
| Safety requirement specification (SRS)                  | Spécification des demandes de sécurité                                               | EC  | 017            |
| Power supply system study                               | Etude du réseau électrique                                                           | ED  | 001            |
| Cable sizing calculation                                | Calcul de dimension des câbles                                                       | ED  | 002            |
| Illuminance calculation                                 | Calcul de l'éclairage                                                                | ED  | 003            |
| Calculation of the cathodic corrosion protection system | Calcul de la protection anticorrosion cathodique                                     | ED  | 004            |
| Calculation of the electrical heat tracing              | Calcul du chauffage électrique et de la tuyauterie des appareils                     | ED  | 005            |
| Ex-i calculation sheet                                  | Feuille de calcul Ex-i                                                               | ED  | 006            |
| Heat dissipation summary                                | Inventaire des pertes de chaleur                                                     | ED  | 007            |
| Electrical single line diagram                          | Schéma unifilaire de la distribution de l'énergie                                    | fa  | 001            |
| Structure diagram DCS/PLC/SIS                           | Schéma de structure SNCC, API                                                        | fa  | 002            |
| Piping and instrumentation diagram (P&ID)               | Schéma instruments de fonctionnement et des conduites (schéma de fonctionnement R&I) | fb  | 001            |
| Process flow diagram                                    | Schéma des procédés                                                                  | fb  | 002            |
| HMI specification                                       | Spécification de l'interface utilisateur                                             | fc  | 001            |
| Function description                                    | Description des fonctions                                                            | fe  | 001            |
| Function block diagram                                  | Diagramme fonctionnel                                                                | FF  | 001            |
| Cause & effect matrix                                   | Tableau cause-effet                                                                  | FF  | 002            |
| Signal list                                             | Liste des signaux                                                                    | FP  | 001            |
| I/O list                                                | Liste des E/S                                                                        | FP  | 002            |
| Trip point list                                         | Liste des points de déclenchement                                                    | FQ  | 001            |

**Tableau A.1** (3 de 4)

| Document kind                         | Type de document                              | DCC | Identificateur |
|---------------------------------------|-----------------------------------------------|-----|----------------|
| Configuration parameter list          | Liste des paramètres de configuration         | FQ  | 002            |
| Circuit diagram                       | Schéma électrique                             | FS  | 001            |
| Loop diagram                          | Schéma des boucles                            | FS  | 002            |
| Bus layout drawing                    | Plan des bus                                  | FS  | 003            |
| Main cable tray layout                | Vue synoptique: cheminement des câbles        | Ld  | 001            |
| Cable route section                   | Tracé du cheminement du câble                 | Ld  | 002            |
| Plot plan E&I                         | Plan local E&I                                | Ld  | 003            |
| Instrument air supply plot plan       | Plan de l'alimentation en air des instruments | Ld  | 004            |
| Plot plan                             | Plan de mise sur pied                         | Ld  | 005            |
| Arrangement drawing                   | Plan d'installation                           | Ld  | 006            |
| Allocation plan wall bushing          | Plan du passage des câbles                    | LH  | 001            |
| Cabinet layout drawing                | Schéma de l'armoire                           | LU  | 001            |
| Allocation plan                       | Schéma des dispositions                       | LU  | 002            |
| Terminal connection diagram           | Schéma des bornes                             | MA  | 001            |
| Cross wiring diagram                  | Schéma croisé du câblage                      | MA  | 002            |
| Conceptual wiring diagram             | Plan de conception du câblage                 | MA  | 003            |
| Cable list                            | Liste des câbles                              | MB  | 001            |
| Cable laying list                     | Schéma du tracé des câbles                    | MB  | 002            |
| Material take off                     | Bordereau des matériaux                       | PA  | 001            |
| Spare parts list                      | Liste des pièces détachées                    | PB  | 001            |
| Instrument index                      | Liste d'appareils PLT                         | PB  | 002            |
| System log book                       | Journal de bord du système                    | PD  | 001            |
| Quality plan                          | Plan qualité                                  | QA  | 001            |
| Test plan                             | Plan d'essai                                  | QA  | 002            |
| List of deficiencies                  | Liste des manquants                           | QA  | 003            |
| Check list                            | Liste d'essai                                 | QA  | 004            |
| Hazardous area classification drawing | Plan de classification des zones dangereuses  | QB  | 001            |
| Safety concept for power supply       | Concept des protections de l'alimentation     | QB  | 002            |
| SIL classification                    | Classification SIL                            | QB  | 003            |
| Material safety data sheet (MSDS)     | Fiche technique de sécurité                   | QB  | 004            |
| Certificate                           | Certificat                                    | QC  | 001            |
| Test report                           | Procès-verbal d'essai                         | QC  | 002            |



**Tableau A.1 (4 de 4)**

| Document kind                  | Type de document                                 | DCC | Identificateur |
|--------------------------------|--------------------------------------------------|-----|----------------|
| Acceptance documentation       | Documentation de réception                       | QC  | 003            |
| Test sheet for SIF             | Feuille d'essai pour appareillages de protection | QC  | 004            |
| SIL verification               | Contrôle SIL                                     | QC  | 005            |
| Installation drawing (hook-up) | Schéma du montage                                | TC  | 001            |
| Assembly drawing               | Dessin de montage                                | TC  | 002            |

**Tableau A.2 – Noms des types de documents en chinois et en allemand (1 de 3)**

| 文件种类              | Dokumentenart                                      | DCC | Identificateur |
|-------------------|----------------------------------------------------|-----|----------------|
| 文件列表              | Dokumentenliste                                    | AB  | 001            |
| 剩余工作清单            | Restpunktliste                                     | BB  | 001            |
| 工作分解结构            | Projektstrukturplan                                | BD  | 001            |
| 沟通计划              | Kommunikationsplan                                 | BD  | 002            |
| 项目实施计划            | Projektabwicklungsplan                             | BD  | 003            |
| 人力动员计划            | Personaleinsatzplan                                | BE  | 001            |
| 时间表               | Terminplan                                         | BE  | 002            |
| 限制出口设备清单          | Liste ausfuhrkritischer Ausrüstungen               | BF  | 001            |
| 仪表数据表             | PLT-Stellenblatt                                   | DA  | 001            |
| 标识系统 标识制          | Kennzeichnungssystem                               | dB  | 001            |
| 测试与维护建议           | Prüf- und Wartungsanleitung                        | DC  | 001            |
| 使用说明书             | Betriebsanleitung                                  | DC  | 002            |
| 测试与维护要求           | Prüf- und Wartungsvorschrift                       | DZ  | 001            |
| 总体设计要求            | Allgemeine Engineeringspezifikation                | EC  | 001            |
| 电气易耗品表            | Liste elektrischer Verbraucher                     | EC  | 002            |
| 照明概念设计大纲          | Beleuchtungskonzept                                | EC  | 003            |
| 通信设备概念设计大纲        | Konzept für Kommunikationseinrichtungen            | EC  | 004            |
| 防雷、接地与等电位连接概念设计大纲 | Konzept Blitzschutz, Erdung und Potentialausgleich | EC  | 005            |
| 阴极腐蚀防护概念设计大纲      | Konzept kathodischer Korrosionsschutz              | EC  | 006            |
| 电伴热概念设计大纲         | Konzept elektrische Begleitheizung                 | EC  | 007            |
| 加热电路列表            | Heizkreisliste                                     | EC  | 008            |
| 要求规范 需求规范         | Anforderungs Spezifikation                         | EC  | 009            |
| 规范明细表             | Geräte Spezifikation                               | EC  | 010            |
| 回路列表              | PLT-Stellenliste                                   | EC  | 011            |
| 技术规范              | Pflichtenheft                                      | EC  | 012            |
| 测试规范              | Prüfspezifikation                                  | EC  | 013            |

**Tableau A.2 (2 de 3)**

| 文件种类           | Dokumentenart                                           | DCC | Identificateur |
|----------------|---------------------------------------------------------|-----|----------------|
| 建设工程量清单        | Montage Leistungsverzeichnis                            | EC  | 014            |
| E&I过程连接规范      | Spezifikation PLT Prozessanschlüsse                     | EC  | 015            |
| 用户要求规范         | Lastenheft                                              | EC  | 016            |
| 安全要求规范（SRS）    | Spezifikation der Sicherheitsanforderungen              | EC  | 017            |
| 供电系统研究         | Netzberechnung Energieversorgung                        | ED  | 001            |
| 电缆选型计算         | Berechnung der Kabel Dimensionierung                    | ED  | 002            |
| 照度计算           | Berechnung der Beleuchtungsstärke                       | ED  | 003            |
| 阴极腐蚀防护系统计算     | Berechnung kath. Korrosionsschutzanlage                 | ED  | 004            |
| 电伴热计算          | Berechnung elektrischer Begleitheizung                  | ED  | 005            |
| Ex-i计算表        | Ex-i Berechnung                                         | ED  | 006            |
| 热耗散汇总表         | Zusammenstellung der Wärmeverluste                      | ED  | 007            |
| 电气单线图          | Übersichtsschaltplan der Energieversorgung              | fa  | 001            |
| DCS/PLC/SIS结构图 | Strukturdiagramm PLS/SPS/ESD                            | fa  | 002            |
| 管道仪表流程图（P&ID）  | Rohrleitungs- und Instrumentenfließbild (R&I-Fließbild) | fb  | 001            |
| 工艺流程图          | Verfahrensfließbild                                     | fb  | 002            |
| HMI规范          | Spezifikation Bedien- und Beobachtungsoberfläche        | fc  | 001            |
| 功能描述           | Funktionsbeschreibung                                   | fe  | 001            |
| 功能块图           | Funktionsplan                                           | FF  | 001            |
| 因果矩阵           | Ursache-Wirkungs Tabelle                                | FF  | 002            |
| 信号明细表          | Signalliste                                             | FP  | 001            |
| I/O明细表         | E/A-Liste                                               | FP  | 002            |
| 触发点明细表         | Grenzwertliste                                          | FQ  | 001            |
| 配置参数明细表        | Parameterliste                                          | FQ  | 002            |
| 线路图            | Stromlaufplan                                           | FS  | 001            |
| 回路图            | PLT-Stellenplan                                         | FS  | 002            |
| 总线配线图          | Bus Strukturplan                                        | FS  | 003            |
| 主电缆槽布置图        | Kabeltrassen Übersichtsplan                             | Ld  | 001            |
| 分段电缆部件表        | Kabeltrassenschnitt                                     | Ld  | 002            |
| E&I总图?         | Lageplan PLT                                            | Ld  | 003            |
| 仪表气源配置图        | Lageplan Instrumenten Luftversorgung                    | Ld  | 004            |
| 总图             | Aufstellungsplan                                        | Ld  | 005            |
| 布置图            | Installationsplan                                       | Ld  | 006            |

**Tableau A.2 (3 de 3)**

| 文件种类          | Dokumentenart                        | DCC | Identificateur |
|---------------|--------------------------------------|-----|----------------|
| 穿墙套管配置方案      | Belegungsplan Kabel-Wanddurchführung | LH  | 001            |
| 机柜布置图         | Schrankaufbauplan                    | LU  | 001            |
| 配置方案          | Belegungsplan                        | LU  | 002            |
| 端子接线图         | Anschlussplan                        | MA  | 001            |
| 交叉布线图         | Rangierplan                          | MA  | 002            |
| 接线示意图         | Strukturplan der Verdrahtung         | MA  | 003            |
| 电缆明细表         | Kabelliste                           | MB  | 001            |
| 电缆敷设明细表       | Kabelzugliste                        | MB  | 002            |
| 材料统计          | Materialauszug                       | PA  | 001            |
| 备件清单          | Ersatzteilliste                      | PB  | 001            |
| 仪表索引          | PLT-Gerätelliste                     | PB  | 002            |
| 系统运行记录；系统日志   | Systemspiegel                        | PD  | 001            |
| 质量计划          | Qualitätsplan                        | QA  | 001            |
| 测试计划          | Prüfplan                             | QA  | 002            |
| 缺陷清单          | Mängelliste                          | QA  | 003            |
| 检查表           | Prüfliste                            | QA  | 004            |
| 危险场所分类图       | Gefahrenzonenplan                    | QB  | 001            |
| 供电安全概念设计大纲    | Schutzkonzept Energieversorgung      | QB  | 002            |
| SIL分类         | SIL Einstufung                       | QB  | 003            |
| 材料安全数据表（MSDS） | Sicherheitsdatenblatt                | QB  | 004            |
| 证书            | Zertifikat                           | QC  | 001            |
| 试验报告          | Prüfprotokoll                        | QC  | 002            |
| 验收文件          | Abnahmedokumentation                 | QC  | 003            |
| SIF测试表        | Prüfblatt für Schutzeinrichtungen    | QC  | 004            |
| SIL验证         | SIL Überprüfung                      | QC  | 005            |
| 安装图           | Montageanordnung (Hook-up)           | TC  | 001            |
| 装配图           | Einbauzeichnung                      | TC  | 002            |

## **Annexe B** (informative)

### **Exemples**

Les figures de l'Annexe B sont des exemples de types de documents pour les projets relatifs aux systèmes électriques et aux instruments de fonctionnement dans l'industrie de transformation. Elles sont extraites de projets en cours et rendues anonymes au besoin et sont à ce titre reproduites telles quelles, et elles sont données à titre purement informatif à l'attention de l'utilisateur.

| Anglais  | Français    |
|----------|-------------|
| #Company | #Entreprise |
| Customer | Client      |

*IEC*

427/Smith/2010-11-10

## List of Documents

& EAB  
1 of 1

[illegible]

| Anglais                   | Français                            |
|---------------------------|-------------------------------------|
| #dep.                     | #département                        |
| No.                       | N°                                  |
| Company                   | Entreprise                          |
| Document designation      | Désignation du document             |
| Revision index            | Indice de révision                  |
| Date of rev.              | Date de révision                    |
| Docu status               | Statut du document                  |
| Document kind name        | Nom du type de document             |
| Document title            | Titre du document                   |
| Unit/name                 | Unité/nom                           |
| Drawing/ document no      | Numéro du dessin / du document      |
| Dispatch date             | Date de répartition                 |
| Distribution              | Distribution                        |
| Action                    | Action                              |
| Sheets                    | Feuilles                            |
| Company Ltd.              | Entreprise SARL                     |
| Conceptual wiring diagram | Plan de conception du câblage       |
| Feedwater temperature     | Température de l'eau d'alimentation |

**Figure B.1 – AB001 liste des documents**

|                       |                     |                   |              |
|-----------------------|---------------------|-------------------|--------------|
| <b># Company logo</b> |                     | Change state      | # released   |
|                       |                     | Change date       | # 2012-07-01 |
| <b>Customer</b>       | <b># Customer</b>   | Change note       |              |
| Document Title        | # PLC-System Unit 4 | DCC               | &EBB         |
| Document Type         | Punch list          | Language          | # EN         |
| Created by            | # Name1             | Version Index     | # A          |
| Checked by            | # Name2             | Total page number | # 1          |
| Document Number       | # AB123 123-4       | Department        | # department |

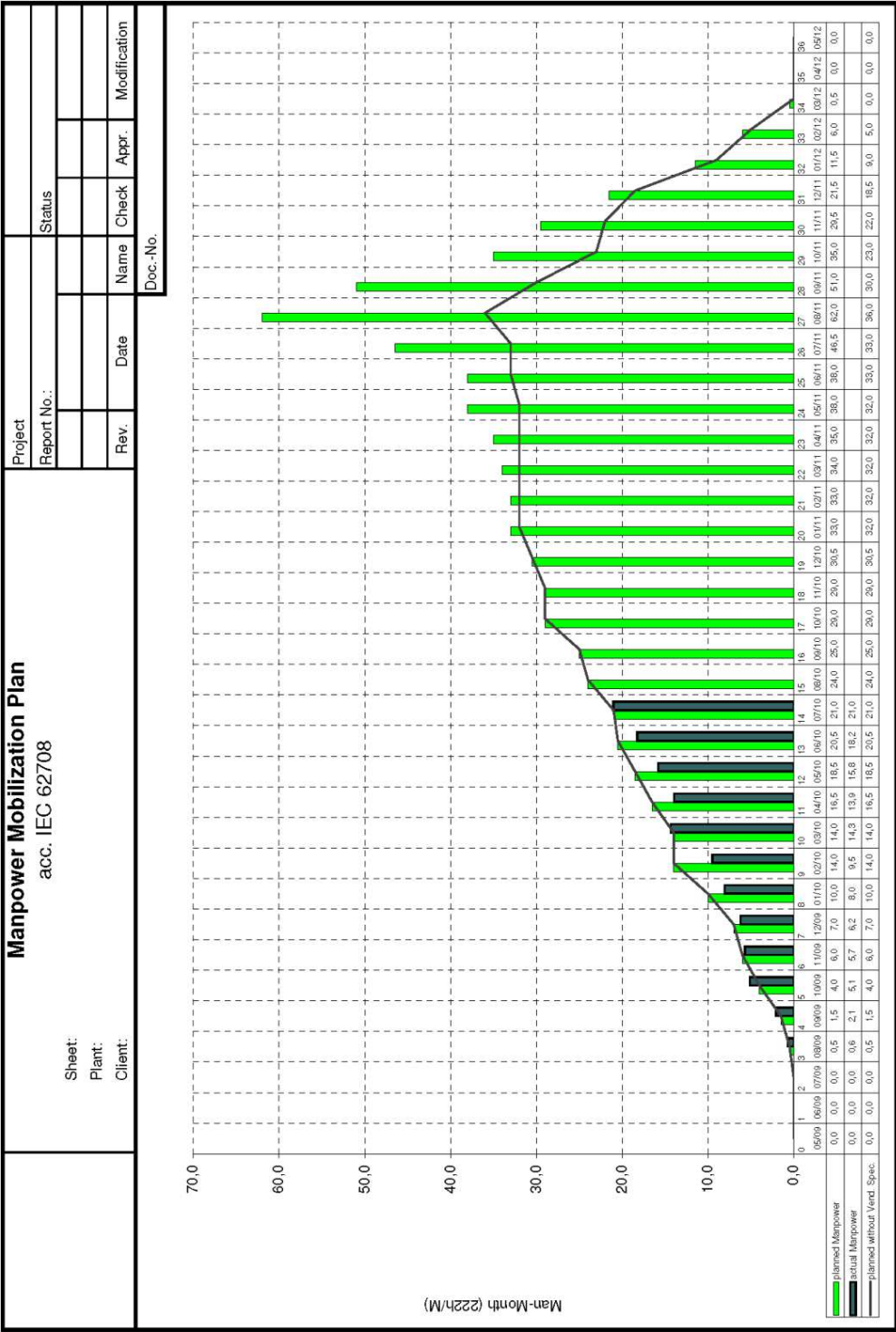
[illegible]

**Légende**

| <b>Anglais</b>                          | <b>Français</b>                                                       |
|-----------------------------------------|-----------------------------------------------------------------------|
| # Company logo                          | # Logo/Sigle de l'entreprise                                          |
| Change state                            | État de modification                                                  |
| # released                              | # publié                                                              |
| Change date                             | Date de modification                                                  |
| Customer                                | Client                                                                |
| #Customer                               | #Client                                                               |
| Change note                             | Note de modification                                                  |
| Document title                          | Titre du document                                                     |
| # PLC-system unit 4                     | # Système PLC, Unité 4                                                |
| Document type                           | Type de document                                                      |
| Punch list                              | Liste des points résiduels                                            |
| Language                                | Langue                                                                |
| Created by                              | Créé par                                                              |
| # Name1                                 | # Nom1                                                                |
| Version index                           | Indice de la version                                                  |
| Checked by                              | Vérifié par                                                           |
| # Name2                                 | # Nom2                                                                |
| Total page number                       | Nombre total de pages                                                 |
| Document Number                         | Numéro du document                                                    |
| Department                              | Département                                                           |
| # department                            | # département                                                         |
| Task ID                                 | ID de la tâche                                                        |
| Task owner                              | Propriétaire de la tâche                                              |
| Priority                                | Priorité                                                              |
| Task description                        | Description de la tâche                                               |
| Status                                  | Statut                                                                |
| Due date                                | Date d'échéance                                                       |
| Agree date                              | Date de l'accord                                                      |
| Complete date                           | Date d'achèvement                                                     |
| #company                                | #entreprise                                                           |
| High                                    | haute                                                                 |
| Nitrogen tank remote control loop check | Vérification de la boucle de régulation distante du réservoir d'azote |
| Partially completed                     | partiellement réalisée                                                |
| #company                                | #entreprise                                                           |
| Low                                     | basse                                                                 |
| Control room vacuum cleaning            | Nettoyage sous vide de la salle de commande                           |
| Open                                    | ouverte                                                               |

**Figure B.2 – BB001 liste des points résiduels**





File: BE001\_ManpowerMobilizationPlan.xls  
printed: 04.07.12

**Légende**

| <b>Anglais</b>              | <b>Français</b>                              |
|-----------------------------|----------------------------------------------|
| Manpower mobilization plan  | Plan de mobilisation de la main d'œuvre      |
| Project                     | Projet                                       |
| Report No.:                 | Rapport n°:                                  |
| Status                      | Statut                                       |
| Sheet:                      | Feuille:                                     |
| Plant:                      | Installation:                                |
| Client:                     | Client:                                      |
| Rev                         | Révision                                     |
| Date                        | Date                                         |
| Name                        | Nom                                          |
| Check                       | Vérification                                 |
| Appr.                       | Approbation                                  |
| Modification                | Modification                                 |
| Man-month (222h/M)          | Homme-mois (222 h/M)                         |
| Planned manpower            | Main d'œuvre planifiée                       |
| Actual manpower             | Main d'œuvre réelle                          |
| Planned without vend. spec. | Planifiée sans les spécifications du vendeur |

**Figure B.3 – BE001 plan de mobilisation de la main d'œuvre**

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| Installation area data                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                |                                 |                            |  |                      |       |                              |                                 |                      | R            |             |           |                       |                   |   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------|----------------------------|--|----------------------|-------|------------------------------|---------------------------------|----------------------|--------------|-------------|-----------|-----------------------|-------------------|---|
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | B51            | Installation location           | Outdoor, only antifreezing |  |                      |       | B57                          | Remote hazardous area class     | Zone 1, Group IIA    |              |             |           |                       |                   |   |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | B52            | Corrosive influence by (1)      | Coastal climate            |  |                      |       | B58                          | Remote area min. ign. temp.     | T3 (> 200 °C)        |              |             |           |                       |                   |   |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | B53            | Ambient temp. [min.](max.)      | -15.0                      |  | 40.0 °C              |       | B59                          | Max. allow. sound press. level  | 85 dB(A)             |              |             |           |                       |                   |   |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | B54            | Ambient work temp. [min.](max.) | -15.0                      |  | 40.0 °C              |       | B20                          | Remark (1)                      |                      |              |             |           |                       |                   |   |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | B55            | Max. relative humidity          |                            |  | 95.00 %              |       | B21                          | Remark (2)                      |                      |              |             |           |                       |                   |   |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | B57            | Altitude above sea level        |                            |  | 20.00 m              |       |                              |                                 |                      |              |             |           |                       |                   |   |
| Process data                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                |                                 |                            |  |                      |       | R                            | Process data (continued)        |                      |              | R           |           |                       |                   |   |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | B25            | Fluid                           | Water                      |  |                      |       | D65                          | Rel. dielectr. const. Epsilon r |                      |              |             |           |                       |                   |   |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B41            | Composition                     | H2O2                       |  |                      |       | D66                          | Electrical conductivity         | mS/cm                |              |             |           |                       |                   |   |
| 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B42            | Corrosive components            |                            |  |                      |       | D66                          | Isentropic exponent             |                      |              |             |           |                       |                   |   |
| 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B43            | Toxic components                |                            |  |                      |       | D43                          | Max. allowable pressure drop    | 0.50 bar             |              |             |           |                       |                   |   |
| 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B44            | Abrasive components             |                            |  |                      |       | D69                          | Remark (1)                      |                      |              |             |           |                       |                   |   |
| 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B45            | Suspended particles             |                            |  |                      |       | D60                          | Remark (2)                      |                      |              |             |           |                       |                   |   |
| 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B39            | Special fluid properties (1)    |                            |  |                      |       | D61                          | Remark (3)                      |                      |              |             |           |                       |                   |   |
| 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B40            | Special fluid properties (2)    |                            |  |                      |       |                              |                                 |                      |              |             |           |                       |                   |   |
| 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B46            | Water hazard class (WHC)        |                            |  |                      |       | Location data                |                                 |                      |              | R           |           |                       |                   |   |
| 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B47            | Indical of danger (57/543/EEC)  |                            |  |                      |       | B04                          | PI-Diagram / Sheet no.          | 13                   |              |             |           |                       |                   |   |
| 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B50            | Pollution restriction           |                            |  |                      |       | B80                          | Reference location              | 2"-P-13-76009-A3-3F  |              |             |           |                       |                   |   |
| 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B48            | Inline hazardous area           |                            |  |                      |       | B84                          | Pipe spec. selected             | A3-3F                |              |             |           |                       |                   |   |
| 21                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B26            | Phase                           | (L) liquid                 |  |                      |       | B97                          | Connection type                 | flanged              |              |             |           |                       |                   |   |
| 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Run case value |                                 |                            |  | min.                 | norm. | max.                         | unit                            | B14                  | Line(DN)(PN) | 2"          | CLASS 300 |                       |                   |   |
| 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B80            | Measuring range                 | 0.00                       |  | 11.00 m³/h           |       | B93                          | Connection facing               | RF, ANSI 16.5        |              |             |           |                       |                   |   |
| 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D60            | Mass flow rate                  | 3486.00                    |  | 3984.00 9960.00 kg/h |       | B92                          | Line material                   | Killed C.S. (A106-B) |              |             |           |                       |                   |   |
| 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D42            | Actual flow rate                | 3.50                       |  | 4.00 10.00 m³/h      |       | B64                          | Line diam. [inside](outside)    | 52.48 60.30 mm       |              |             |           |                       |                   |   |
| 26                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D61            | Actual flow [i.N.]              |                            |  | Nm³/h                |       | B15                          | Insulation [type](thickness)    |                      |              |             |           |                       |                   |   |
| 27                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D24            | Operating pressure p1           | 6.00                       |  | 7.00 9.00 bar a      |       | B66                          | Heating/cooling [trace](temp.)  |                      |              |             |           |                       |                   |   |
| 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D30            | Operating temperature t1        | 30.0                       |  | 30.0 30.0 °C         |       | B70                          | Design pressure [min.](max.)    | 27.00 bar a          |              |             |           |                       |                   |   |
| 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D33            | Operating density               | 996.00                     |  | 996.00 996.00 kg/m³  |       | B72                          | Design temp. [min.](max.)       | 260.0 °C             |              |             |           |                       |                   |   |
| 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D36            | Pressure [Boiling-](Critical-)  | 0.04                       |  | 220.00 bar a         |       | B98                          | Remark (1)                      |                      |              |             |           |                       |                   |   |
| 31                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D62            | Temp. [Boiling-](Condensation-) | 373.0                      |  | °C                   |       | B99                          | Remark (2)                      |                      |              |             |           |                       |                   |   |
| 32                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D10            | Density at ref. cond.           |                            |  |                      |       |                              |                                 | kg/Nm³               |              |             |           |                       |                   |   |
| 33                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D11            | Dyn. viscosity                  |                            |  |                      |       |                              |                                 | cP                   |              |             |           |                       |                   |   |
| 34                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D63            | Molecular weight                |                            |  |                      |       |                              |                                 | g/mol                |              |             |           |                       |                   |   |
| 35                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D64            | Compressibility factor (Z1/Zn)  |                            |  |                      |       |                              |                                 |                      |              |             |           |                       |                   |   |
| Loop functions                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |                                 |                            |  |                      |       |                              |                                 |                      |              |             |           |                       |                   |   |
| 37                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Req. functions |                                 | Add. functions             |  | Funct. set point     |       | Interlock                    |                                 | Funct. realis.       |              | PID No.     | Remark    | R                     |                   |   |
| 38                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | fC             |                                 |                            |  |                      |       |                              |                                 | DCS                  |              | 13          |           |                       |                   |   |
| Loop I/O list                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |                                 |                            |  |                      |       |                              |                                 |                      |              |             |           |                       |                   |   |
| 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Signal-ID      |                                 | Realisation                |  | Design class         |       | Ex. prot.                    |                                 | Type of signal       |              | Signal rate |           | Signal characteristic | SIL               | R |
| 41                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -              |                                 | DCS                        |  |                      |       | EEEx i                       |                                 | analogue signal      |              | 4...20 mA   |           | Syst. powered         | linear increasing |   |
| Loop elements                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |                                 |                            |  |                      |       |                              |                                 |                      |              |             |           |                       |                   |   |
| 43                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Tag no.        |                                 | Description                |  | Part no.             |       | Calibr. range [lower](upper) |                                 | Signal type          |              | SIL         |           | Remark                | R                 |   |
| 44                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | FE7608         |                                 | Onifice plate assembly     |  | KFAA001              |       | 0.0 \ 500.0 mbar             |                                 |                      |              |             |           |                       |                   |   |
| 45                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | FT7608         |                                 | Flow dP-transmitter        |  | KFEA001              |       | 0.0 \ 500.0 mbar             |                                 | analogue signal      |              |             |           |                       |                   |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |                                 |                            |  |                      |       |                              |                                 |                      |              |             |           |                       |                   |   |
| <div style="display: flex; justify-content: space-between;"> <div> <p><b>Instrument data sheet</b></p> <p>acc. IEC 62708</p> </div> <div> <p>Code IEC 62708 / Doc templates</p> <p>Plant</p> <p>Unit</p> <p>Loop Identific. <b>F7608</b></p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> <p>R Date</p> <p>Doc-ID-Code:</p> </div> <div> <p>Client Doc-ID:</p> <p>CC UA</p> </div> <div> <p>Page 1 / 1</p> </div> </div> |                |                                 |                            |  |                      |       |                              |                                 |                      |              |             |           |                       |                   |   |

**Légende**

| <b>Anglais</b>                  | <b>Français</b>                                      |
|---------------------------------|------------------------------------------------------|
| Installation area data          | Données relatives à la zone d'installation           |
| Installation location           | Emplacement de l'installation                        |
| Outdoor, only antifreezing      | Extérieure, anti-congelant uniquement                |
| Remote hazardous area class     | Classe de la zone dangereuse distante                |
| Zone 1, Group IIA               | Zone 1, Groupe IIA                                   |
| Corrosive influence by (1)      | Influence corrosive par (1)                          |
| Coastal climate                 | Climat côtier                                        |
| Remote area min. ign. temp.     | Température minimale d'inflammation de zone distante |
| Ambient temp. [min ]\[max]      | Température ambiante [min ]\[max]                    |
| Max. allow. Sound. press level  | Maximum autorisé. Niveau de pression acoustique      |
| Ambient work temp.[min]\[max]   | Température de fonctionnement ambiante [min]\[max]   |
| Remark (1)                      | Remarque (1)                                         |
| Max relative humidity           | Humidité relative maximale                           |
| Remark (2)                      | Remarque (2)                                         |
| Altitude above sea level        | Altitude au-dessus du niveau de la mer               |
| Process data                    | Données de processus                                 |
| Process data (continued)        | Données de processus (suite)                         |
| Fluid                           | Fluide                                               |
| Water                           | Eau                                                  |
| Rel. dielectr. const. Epsilon r | Constante diélectrique relative. Epsilon r           |
| Composition                     | Composition                                          |
| Electrical conductivity         | Conductivité électrique                              |
| Corrosive components            | Composants corrosifs                                 |
| Isentropic exponent             | Exposant isentropique                                |
| Toxic components                | Composants toxiques                                  |
| Max allowable pressure drop     | Perte de charge maximale autorisée                   |
| 050 bar                         | 050 bar                                              |
| Abrasive components             | Composants abrasifs                                  |
| Remark (1)                      | Remarque (1)                                         |
| Suspended particles             | Particules en suspension                             |
| Remark (2)                      | Remarque (2)                                         |
| Special fluid properties (1)    | Propriétés particulières des fluides (1)             |
| Remark (3)                      | Remarque (3)                                         |
| Special fluid properties (2)    | Propriétés particulières des fluides (2)             |
| Water hazard class (WIHC)       | Classe de pollution des eaux (WHC)                   |
| Location data                   | Données de l'emplacement                             |
| Indicat.of danger (67/548/EEC)  | Indication de danger (67/548/EEC)                    |
| PI-diagram / sheet no.          | Diagramme PI / feuille n°.                           |
| Pollution restriction           | Restriction de pollution                             |
| Reference location              | Emplacement de référence                             |
| Inline hazardous area           | Zone dangereuse en ligne                             |

| Anglais                              | Français                                       |
|--------------------------------------|------------------------------------------------|
| Pipe spec. selected                  | Spécifications du conduit sélectionnées        |
| Phase                                | Phase                                          |
| (L) liquid                           | (L) liquide                                    |
| Connection type                      | Type de connexion                              |
| Flanged                              | A brides                                       |
| Runcase value                        | Valeur «Runcase»                               |
| Min.                                 | Minimale                                       |
| Norm.                                | Normale                                        |
| Max.                                 | Maximale                                       |
| Unit                                 | Unité                                          |
| Line[DN]\[PN]                        | Ligne [DN]\[PN]                                |
| CLASS 300                            | CLASSE 300                                     |
| Measuring range                      | Plage de mesure                                |
| Connection facing                    | Face de la connexion                           |
| Mass flow rate                       | Débit-masse                                    |
| Line material                        | Matériau de la ligne                           |
| Killed C S (A106-B)                  | Acier au carbone calmé (A106-B)                |
| Actual flow rate                     | Débit réel                                     |
| Line diam. [inside]\[outside]        | Diamètre de la ligne [intérieure]\[extérieure] |
| Actual flow [i.N] Nm <sup>3</sup> /h | Débit réel [i.N] Nm <sup>3</sup> /h            |
| Insulation [type]\[thickness]        | Isolation [type]\[épaisseur]                   |
| Operating pressure p1                | Pression de service p1                         |
| Bar a                                | Bar a                                          |
| Heating/cooling [trace]\[temp]       | Chauffage/refroidissement [trace]\[temp]       |
| Operating temperature t1             | Température de service t1                      |
| Design pressure [min.]\[max.]        | Pression de conception [min.]\[max.]           |
| Operating density                    | Masse volumique de travail                     |
| Design temp. [min.]\[max.]           | Température de conception [min.]\[max.]        |
| Pressure [boiling-]\[critical-]      | Pression [ébullition]\[critique-]              |
| Remark (1)                           | Remarque (1)                                   |
| Remark (2)                           | Remarque (2)                                   |
| Temp. [boiling-]\[condensation-]     | Température [ébullition-]\[condensation-]      |
| Density at ref.cond                  | Masse volumique aux conditions de référence    |
| Dyn. viscosity                       | Viscosité dynamique                            |
| Molecular weight                     | Masse moléculaire                              |
| Compressibility factor (Z1/Zn)       | Facteur de compressibilité (Z1/Zn)             |
| Loop functions                       | Fonctions de la boucle                         |
| Req. functions                       | Fonctions demandées                            |
| Add. functions                       | Fonctions complémentaires                      |
| Funct. set point                     | Valeur de consigne de la fonction              |
| Interlock                            | Verrouillage                                   |
| Funct. realis.                       | Réalisation de la fonction                     |
| PID No.                              | N° du PID                                      |

| Anglais                              | Français                                           |
|--------------------------------------|----------------------------------------------------|
| Remark                               | Remarque                                           |
| Loop I/O list                        | Liste des E/S de la boucle                         |
| Signal-ID                            | ID du signal                                       |
| Realization                          | Réalisation                                        |
| Design class                         | Classe de conception                               |
| Ex.prot.                             | Protection Ex.                                     |
| Type of signal                       | Type de signal                                     |
| Signal rate                          | Débit signal                                       |
| Signal characteristic                | Caractéristique du signal                          |
| SIL                                  | SIL                                                |
| Analogue signal                      | Signal analogique                                  |
| Syst. powered                        | Système alimenté                                   |
| Linear increasing                    | croissance linéaire                                |
| Loop elements                        | Éléments de la boucle                              |
| Tag no.                              | N° de l'étiquette                                  |
| Description                          | Description                                        |
| Part no.                             | No. de la pièce                                    |
| Calibr. range [lower]\[upper]        | Plage de l'étalonnage<br>[inférieure]\[supérieure] |
| Signal type                          | Type de signal                                     |
| Remark                               | Remarque                                           |
| Orifice plate assembly               | Assemblage de diaphragmes                          |
| Flow dP-transmitter                  | Émetteur dP de flux                                |
| Code: IEC 62708 / Doc templates      | Code: IEC 62708 / modèles de doc                   |
| Plant                                | Installation                                       |
| Unit                                 | Unité                                              |
| Instrument data sheet acc. IEC 62708 | Feuille de postes PLT selon IEC 62708              |
| Loop identific.: F7608               | Identification de boucle: F7608                    |
| Date                                 | Date                                               |
| Client Doc -ID                       | ID du document du client                           |
| Doc-ID-Code:                         | Code-ID du document:                               |

**Figure B.4 – DA001 feuille de postes PLT**

| #Company#                                                                                                                                                                                                                                                                   |          | #Customer#           |                                          | #IC Dep#                                                               |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------|------------------------------------------|------------------------------------------------------------------------|--------------------------|
| Preventive maintenance has the task of checking the I&C components case sensitive or at specified intervals.<br>This contributes significantly to the availability of the I&C system and therewith the plant.<br>This service is required for the system components listed. |          |                      |                                          |                                                                        |                          |
| Type                                                                                                                                                                                                                                                                        | DCS Part | Equipment            | Task                                     | Frequency                                                              |                          |
|                                                                                                                                                                                                                                                                             |          |                      |                                          |                                                                        |                          |
| Test                                                                                                                                                                                                                                                                        |          | Emerg. Push Button   | Emergency Shut Down                      | once a year                                                            |                          |
|                                                                                                                                                                                                                                                                             |          |                      |                                          |                                                                        |                          |
|                                                                                                                                                                                                                                                                             |          |                      |                                          |                                                                        |                          |
| Maintenance                                                                                                                                                                                                                                                                 |          | Digital Input Module | #Company# Order Number 1E1234-1BH02-0AA0 | replacement with spare part and fixing                                 | general device I&C alarm |
| Maintenance                                                                                                                                                                                                                                                                 |          | SMART Actuator       | #Company# Order Number 1A3210-1AA2-0AB0  | upload of device diagnostic data, task according to detail information | device maintenance alarm |
| Maintenance                                                                                                                                                                                                                                                                 |          | pH-Analyzer          | #Company# Order Number 1A3210-1AA2-0AB0  | calibration                                                            | once a month             |
| Maintenance                                                                                                                                                                                                                                                                 |          | SMART Actuator       | #Company# Order Number 1A3210-1AA2-0AB0  | visual on-site inspection                                              | once a year              |
| Maintenance                                                                                                                                                                                                                                                                 |          | DCS Server 123       | #Engineering Software#                   | update                                                                 | twice a year             |
| Maintenance                                                                                                                                                                                                                                                                 |          | DCS Server 345       | #DCS System Software#                    | patch                                                                  | case sensitive           |
| Maintenance                                                                                                                                                                                                                                                                 |          | DCS Server 345       | #Malware Protection Software'            | malware protection                                                     | daily                    |

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Maintenance recommendations

 Test and Maintenance Recommendations  
 Rev 1.0 & EDC  
 page 1 of 1

**Légende**

| Anglais                                                                                                                                                                                                                                                               | Français                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #Company#                                                                                                                                                                                                                                                             | #Entreprise#                                                                                                                                                                                                                                                                                   |
| #Customer#                                                                                                                                                                                                                                                            | #Client#                                                                                                                                                                                                                                                                                       |
| #IC Dep#                                                                                                                                                                                                                                                              | #IC Dep#                                                                                                                                                                                                                                                                                       |
| Preventive maintenance has the task of checking the I&C components case sensitive or at specified intervals. This contributes significantly to the availability of the I&C system and therewith the plant. This service is required for the system components listed. | La maintenance préventive a pour tâche de vérifier les composants I&C sensibles à la casse ou à des intervalles spécifiés. Cela contribue de manière significative à la disponibilité du système I&C et donc de l'installation. Ce service est requis pour les composants du système énumérés. |
| Type                                                                                                                                                                                                                                                                  | Type                                                                                                                                                                                                                                                                                           |
| DCS part                                                                                                                                                                                                                                                              | Pièce DCS                                                                                                                                                                                                                                                                                      |
| Equipment                                                                                                                                                                                                                                                             | Équipement                                                                                                                                                                                                                                                                                     |
| Task                                                                                                                                                                                                                                                                  | Tâche                                                                                                                                                                                                                                                                                          |
| Frequency                                                                                                                                                                                                                                                             | Fréquence                                                                                                                                                                                                                                                                                      |
| Test                                                                                                                                                                                                                                                                  | Essai                                                                                                                                                                                                                                                                                          |
| Emerg. push button                                                                                                                                                                                                                                                    | Bouton poussoir d'urgence                                                                                                                                                                                                                                                                      |
| Emergency Shutdown                                                                                                                                                                                                                                                    | Arrêt d'urgence                                                                                                                                                                                                                                                                                |
| Once a year                                                                                                                                                                                                                                                           | Une fois par an                                                                                                                                                                                                                                                                                |
| Maintenance                                                                                                                                                                                                                                                           | Maintenance                                                                                                                                                                                                                                                                                    |
| Digital input module                                                                                                                                                                                                                                                  | Module d'entrée numérique                                                                                                                                                                                                                                                                      |
| #Company # order number                                                                                                                                                                                                                                               | #Entreprise # Numéro de la commande                                                                                                                                                                                                                                                            |
| Replacement with spare part and fixing                                                                                                                                                                                                                                | Remplacement par des pièces détachées et montage                                                                                                                                                                                                                                               |
| General device I&C alarm                                                                                                                                                                                                                                              | Alarme générale I&C de l'appareil                                                                                                                                                                                                                                                              |
| SMART actuator                                                                                                                                                                                                                                                        | Actionneur SMART                                                                                                                                                                                                                                                                               |
| Upload of device diagnostic data, task according to detail information                                                                                                                                                                                                | Télé-versement des données de diagnostic des appareils, tâche selon le détail d'informations                                                                                                                                                                                                   |
| Device maintenance alarm                                                                                                                                                                                                                                              | Alarme de maintenance des appareils                                                                                                                                                                                                                                                            |
| pH-analyzer                                                                                                                                                                                                                                                           | Analyseur pH                                                                                                                                                                                                                                                                                   |
| Calibration                                                                                                                                                                                                                                                           | Étalonnage                                                                                                                                                                                                                                                                                     |
| Once a month                                                                                                                                                                                                                                                          | Une fois par mois                                                                                                                                                                                                                                                                              |
| Visual on-site inspection                                                                                                                                                                                                                                             | Inspection visuelle sur site                                                                                                                                                                                                                                                                   |
| Once a year                                                                                                                                                                                                                                                           | Une fois par an                                                                                                                                                                                                                                                                                |
| DCS Server 123                                                                                                                                                                                                                                                        | Serveur DCS 123                                                                                                                                                                                                                                                                                |
| #Engineering software#                                                                                                                                                                                                                                                | #Logiciel d'ingénierie#                                                                                                                                                                                                                                                                        |
| Update                                                                                                                                                                                                                                                                | Mise à jour                                                                                                                                                                                                                                                                                    |
| Twice a year                                                                                                                                                                                                                                                          | Deux fois par an                                                                                                                                                                                                                                                                               |
| DCS server 345                                                                                                                                                                                                                                                        | Serveur DCS 345                                                                                                                                                                                                                                                                                |
| #DCS system software#                                                                                                                                                                                                                                                 | #Logiciel du système DCS#                                                                                                                                                                                                                                                                      |
| Patch                                                                                                                                                                                                                                                                 | Patch («correctif»)                                                                                                                                                                                                                                                                            |
| Case sensitive                                                                                                                                                                                                                                                        | Sensible à la casse                                                                                                                                                                                                                                                                            |
| #Malware protection software                                                                                                                                                                                                                                          | #Logiciel de protection contre les programmes malveillants                                                                                                                                                                                                                                     |
| Malware protection                                                                                                                                                                                                                                                    | protection contre les programmes malveillants                                                                                                                                                                                                                                                  |
| Daily                                                                                                                                                                                                                                                                 | Quotidiennement                                                                                                                                                                                                                                                                                |
| Maintenance recommendations                                                                                                                                                                                                                                           | Recommandations de maintenance                                                                                                                                                                                                                                                                 |

**Figure B.5 – DC001 instructions d'essai et d'entretien**



|                       |  |                   |              |
|-----------------------|--|-------------------|--------------|
| <b># Company logo</b> |  | Change state      | # released   |
|                       |  | Change date       | # 2012-07-01 |
|                       |  | Change note       |              |
|                       |  | DCC               | &EDZ         |
|                       |  | Language          | # EN         |
|                       |  | Version Index     | # A          |
|                       |  | Total page number | # 1          |
|                       |  | Department        | # department |

[illegible]

**Légende**

| <b>Anglais</b>                                                                            | <b>Français</b>                                                                                                  |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| # Company logo                                                                            | # Sigle de l'entreprise                                                                                          |
| Change state                                                                              | État de modification                                                                                             |
| # Released                                                                                | # Publié                                                                                                         |
| Change date # 2012-07-01                                                                  | Date de modification # 2012-07-01                                                                                |
| Customer                                                                                  | Client                                                                                                           |
| # Customer                                                                                | # Client                                                                                                         |
| Change note                                                                               | Note de modification                                                                                             |
| Document title                                                                            | Titre du document                                                                                                |
| # PLC-system unit 4                                                                       | # Système PLC, unité 4                                                                                           |
| Document type                                                                             | Type de document                                                                                                 |
| Test and maintenance requirements                                                         | Instructions d'essai et d'entretien                                                                              |
| Language                                                                                  | Langue                                                                                                           |
| Created by                                                                                | Créé par                                                                                                         |
| # Name1                                                                                   | # Nom1                                                                                                           |
| Version vndx                                                                              | Indice de la version                                                                                             |
| Checked by                                                                                | Vérifié par                                                                                                      |
| # Name2                                                                                   | # Nom2                                                                                                           |
| Total page number                                                                         | Nombre total de pages                                                                                            |
| Document number                                                                           | Numéro du document                                                                                               |
| Department                                                                                | Département                                                                                                      |
| # Department                                                                              | # Département                                                                                                    |
| Affected object                                                                           | Objet affecté                                                                                                    |
| Description of required activity                                                          | Description de l'activité requise                                                                                |
| Law or regulation                                                                         | Loi ou réglementation                                                                                            |
| Document                                                                                  | Document                                                                                                         |
| Title/designation                                                                         | Titre/désignation                                                                                                |
| Frequency                                                                                 | Fréquence                                                                                                        |
| Emergency push button ammonia storage system                                              | Bouton poussoir d'urgence – Système de stockage d'ammoniac                                                       |
| SIL functional proof testing                                                              | Essais de preuve fonctionnelle SIL                                                                               |
| Functional safety of electrical/electronic/programmable electronic safety-related systems | Sécurité fonctionnelle des systèmes électriques/électroniques/électroniques programmables relatifs à la sécurité |
| Once a year                                                                               | Une fois par an                                                                                                  |

**Figure B.6 – DZ001 règlement d'essai et d'entretien**

## EL\_CONSUMERLIST

Print:

| Identification                                                                                                                                                                                                                                                                | Designation                                                                                                                                   | Part No. | Power |        | Voltage |       | Normal operation | Emergency supply in connection | Speed |          | Type of construction | Mechanical protection | Frame size | Delivery with |                      | Ready to order                | Distribution panel identification | R |       |        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------|-------|--------|---------|-------|------------------|--------------------------------|-------|----------|----------------------|-----------------------|------------|---------------|----------------------|-------------------------------|-----------------------------------|---|-------|--------|
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          | P 100 | P req. | Current | Strom |                  |                                | A     | V        |                      |                       |            | rpm           | var-able             |                               |                                   |   | mach- | to     |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          | kw    | kW     |         |       |                  |                                |       |          |                      |                       |            | Direction     | mission              |                               |                                   |   | chine | Status |
| 1                                                                                                                                                                                                                                                                             | Consumer type                                                                                                                                 |          | 3     | 4      | 5       | 6     | 7                | 8                              | 9     | 10       | 11                   | 12                    | 13         | 14            | 15                   | 16                            | 17                                |   |       |        |
| 180E303-EM01                                                                                                                                                                                                                                                                  | CONDENSER II - AIR-COOLER FAN                                                                                                                 |          | 15.00 | 480    | Yes     | Yes   | Yes              | 3600                           | No    | MV 1     | IP 54                | Yes                   | No         | No            | +C221A               | *                             |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               | LV Motor                                                                                                                                      | EMBA001  | 18.50 | 35.42  |         |       |                  | Left (cw)                      |       | Coupling | Ex d                 |                       |            |               |                      | C181/180/LAND D               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               | LV Motor                                                                                                                                      | EMBA001  | 22.00 |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
| 180E303-EM02                                                                                                                                                                                                                                                                  | CONDENSER II - AIR-COOLER FAN                                                                                                                 |          | 15.00 | 480    | Yes     | Yes   | Yes              | 3600                           | No    | MV 1     | IP 54                | Yes                   | No         | No            | +C221B               | *                             |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               | LV Motor                                                                                                                                      | EMBA001  | 18.50 | 35.42  |         |       |                  | Left (cw)                      |       | Coupling | Ex d                 |                       |            |               |                      | C181/180/LAND D               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               | LV Motor                                                                                                                                      | EMBA001  | 22.00 |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
| 180E303-EM03                                                                                                                                                                                                                                                                  | CONDENSER II - AIR-COOLER FAN                                                                                                                 |          | 15.00 | 480    | Yes     | Yes   | Yes              | 3600                           | No    | MV 1     | IP 54                | Yes                   | No         | No            | +C221A               | *                             |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               | LV Motor                                                                                                                                      | EMBA001  | 18.50 | 35.42  |         |       |                  | Left (cw)                      |       | Coupling | Ex d                 |                       |            |               |                      | C181/180/LAND D               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               | LV Motor                                                                                                                                      | EMBA001  | 22.00 |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
| 180E303-EM04                                                                                                                                                                                                                                                                  | CONDENSER II - AIR-COOLER FAN                                                                                                                 |          | 15.00 | 480    | Yes     | Yes   | Yes              | 3600                           | No    | MV 1     | IP 54                | Yes                   | No         | No            | +C221B               | *                             |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               | LV Motor                                                                                                                                      | EMBA001  | 18.50 | 35.42  |         |       |                  | Left (cw)                      |       | Coupling | Ex d                 |                       |            |               |                      | C181/180/LAND D               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               | LV Motor                                                                                                                                      | EMBA001  | 22.00 |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
| 180E3460A-100-EC06                                                                                                                                                                                                                                                            | PRECEPTAGLE 480VAC/60A/3PH/4W/FE/EX                                                                                                           |          | 40.00 | 480    | No      | No    | No               | 0                              | No    |          | IP 54                | No                    | No         | No            | +C221B               | *                             |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               | Pow.outlet                                                                                                                                    | E-S20001 | 50.00 | 75.26  |         |       |                  |                                |       |          | Ex d                 |                       |            |               | SERVICE OUTLET (ROD) |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               | Pow.outlet                                                                                                                                    | E-S20001 | 50.00 |        |         |       |                  |                                |       |          |                      |                       |            |               |                      | C181/180/LAND D               |                                   |   |       |        |
| 180E3460A-180-EC08                                                                                                                                                                                                                                                            | PRECEPTAGLE 480VAC/60A/3PH/4W/FE/EX                                                                                                           |          | 40.00 | 480    | No      | No    | No               | 0                              | No    |          | IP 54                | No                    | No         | No            | +C221B               | *                             |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               | Pow.outlet                                                                                                                                    | E-S20001 | 50.00 | 75.26  |         |       |                  |                                |       |          | Ex d                 |                       |            |               | SERVICE OUTLET (ROD) |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               | Pow.outlet                                                                                                                                    | E-S20001 | 50.00 |        |         |       |                  |                                |       |          |                      |                       |            |               |                      | C181/180/LAND D/ED3 PUMP AREA |                                   |   |       |        |
| Column 5: P100 = Mechanical power at the shaft at 100% plant capacity<br>Freq. = Mechanical power required (P100 + Safety margin specified by machinery/ process division)<br>PN = Rated output (calculated by electrical or to be provided by supplier, if motor is ordered) | Column 8: Direction of rotation when facing drive end of motor.<br>Column 15: D = for design<br>0 = for order<br>I = As built<br>B = As built |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |
|                                                                                                                                                                                                                                                                               |                                                                                                                                               |          |       |        |         |       |                  |                                |       |          |                      |                       |            |               |                      |                               |                                   |   |       |        |

**Légende**

| <b>Anglais</b>                    | <b>Français</b>                                    |
|-----------------------------------|----------------------------------------------------|
| Print:                            | Imprimé:                                           |
| Identification                    | Identification                                     |
| Designation                       | Désignation                                        |
| Power                             | Puissance                                          |
| Voltage V                         | Tension V                                          |
| Normal in operation               | Normal en fonctionnement                           |
| Emergency supply                  | Alimentation de secours                            |
| Connected                         | Connectée                                          |
| In operation                      | En fonctionnement                                  |
| Speed                             | Vitesse                                            |
| rpm                               | rpm                                                |
| Variable                          | Variable                                           |
| Direction                         | Direction                                          |
| Type of construction              | Type de construction                               |
| Transmission                      | Émission                                           |
| Mechanical protection             | Protection mécanique                               |
| Ex-protection                     | Protection Ex                                      |
| Frame size                        | Taille de la trame                                 |
| Delivery                          | Livraison                                          |
| With machine                      | Avec machine                                       |
| To machine supplier               | Au fournisseur de machine                          |
| Ready to order                    | Prêt à commander                                   |
| Status                            | Statut                                             |
| Distribution panel identification | Identification du panneau de distribution          |
| Remark                            | Remarque                                           |
| Consumer type                     | Type de consommateur                               |
| Part-no.                          | N°. de la pièce                                    |
| Building identification           | Identification du bâtiment                         |
| CONDENSER II – AIRCOOLER FAN      | CONDENSEUR II – VENTILATEUR<br>REFROIDISSEUR D'AIR |
| Yes                               | Oui                                                |
| No                                | Non                                                |
| Coupling                          | Couplage                                           |
| LV motor                          | Moteur LV                                          |
| Left (ccw)                        | Gauche (ccw)                                       |
| FEEDER TYPE::                     | FEEDER TYPE:: (type de la ligne<br>d'alimentation) |
| LV MOTOR                          | MOTEUR LV                                          |
| SOURCE::                          | SOURCE::                                           |
| STATUS::                          | STATUS:: ( Statut)                                 |
| VENDOR::                          | VENDOR:: (Vendeur)                                 |
| PECULIARITY::                     | PARTICULARITÉ::                                    |
| RECEPTACLE                        | PRISE                                              |
| SERVICE OUTLET (RCD)              | PRISE DE SERVICE (RCD)                             |

| Anglais                                                                                            | Français                                                                                                                                   |
|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Pow.outlet                                                                                         | Prise électrique                                                                                                                           |
| Column 3:                                                                                          | Colonne 3:                                                                                                                                 |
| P100 = mechanical power at the shaft at 100 % plant capacity                                       | P100 = puissance mécanique au niveau de l'arbre à 100 % de la capacité de production                                                       |
| Preq. = mechanical power required (P100 + Safety margin specified by machinery / process division) | Pré-requis = puissance mécanique requise (P100 + Marge de sécurité spécifiée par la machinerie / la division des processus)                |
| PN = rated output (calculated by electrical or to be provided by supplier, if motor is ordered)    | PN = puissance de sortie assignée (calculée par la division électrique ou doit être fournie par le fournisseur, si le moteur est commandé) |
| Column 8: direction of rotation when facing drive end of motor                                     | Colonne 8: sens de rotation si face à l'extrémité motrice du moteur                                                                        |
| Column 15:                                                                                         | Colonne 15:                                                                                                                                |
| D = for design                                                                                     | D = pour conception                                                                                                                        |
| I = for inquiry                                                                                    | I = pour demande de renseignements                                                                                                         |
| O =for order                                                                                       | O = pour commande                                                                                                                          |
| B = as built                                                                                       | B = comme construit                                                                                                                        |
| Code:                                                                                              | Code:                                                                                                                                      |
| Plant                                                                                              | Installation                                                                                                                               |
| Unit                                                                                               | Unité                                                                                                                                      |
| Electrical CONSUMER LIST acc IEC 62708                                                             | Liste des consommateurs électriques selon IEC 62708                                                                                        |
| Date                                                                                               | Date                                                                                                                                       |
| Doc.-ID-Code                                                                                       | Code-ID du document                                                                                                                        |
| Client Doc.-ID:                                                                                    | ID du document du client:                                                                                                                  |
| Basic                                                                                              | Basique                                                                                                                                    |

**Figure B.7 – EC002 liste des consommateurs électriques**

[illegible]

### Process Temperature

|      |                    |                     |                  |     |        |     |      |      |      |   |    |    |    |    |     |     |     |     |     |      |      |       |      |            |            |           |     |
|------|--------------------|---------------------|------------------|-----|--------|-----|------|------|------|---|----|----|----|----|-----|-----|-----|-----|-----|------|------|-------|------|------------|------------|-----------|-----|
| 01   | C12 CSO300010D4N0  | C12/CSO300010D      | N01              | 50  | 2'     | 60  | 28.1 | 30.9 | 3    | 2 | 0  | 0  | 6  | 10 | 8   | 50  | -20 | 30  | 150 | 20   | 55   | 15.2  | 22.5 | 1          | 35.0       | 43 HKT26J | 240 |
| 02   | C12 CSO304101N01   | C12/CSO304101       | N01              | 15  | 1/2"   | 21  | 10   | 20.1 | 3    | 1 | 0  | 4  | 5  | 4  | 50  | -20 | 30  | 150 | 20  | 90   | 8.5  | 12.5  | 1    | 12.0       | 28 HKT25J  | 240       |     |
| 03   | C12 HGS30120N01    | C12/IHGS31201D      | N01              | 50  | 2'     | 60  | 10.9 | 14.6 | 7    | 0 | 2  | 4  | 6  | 10 | 50  | -20 | 40  | 150 | 20  | 78   | 15.2 | 22.5  | 1    | 22.0       | 27 HKT26J  | 240       |     |
| 04   | C12 HGS31202N01    | C12/IHGS31202       | N01              | 40  | 1 1/2" | 48  | 3.7  | 5.4  | 2    | 0 | 0  | 0  | 1  | 2  | 50  | -20 | 40  | 150 | 20  | 73   | 13.2 | 14.0  | 1    | 7.0        | 11 HKT25J  | 240       |     |
| 05   | 3-LEE-I/ C1221-N01 | C12/ML331205-N01    | C12/IHL331205    | N01 | 150    | 6'  | 168  | 21.2 | 24.7 | 2 | 2  | 0  | 4  | 4  | 60  | -20 | 40  | 150 | 30  | 82   | 34.4 | 44.0  | 1    | 35.0       | 41 HKT21Sj | 240       |     |
| 06   | C12 ML331206DN01   | C12/IHL331206D      | N01              | 150 | 6'     | 168 | 22.1 | 23.1 | 0    | 1 | 12 | 0  | 5  | 60 | -20 | 40  | 110 | 30  | 82  | 34.4 | 44.0 | 1     | 45.0 | 41 HKT21Sj | 240        |           |     |
| 07   | 3-LEE-I/ C1222-N01 | C12/ML331206DN02    | C12/IHL331206D   | N02 | 150    | 6'  | 168  | 22.1 | 28.1 | 0 | 1  | 12 | 0  | 4  | 60  | -20 | 40  | 110 | 30  | 82   | 34.4 | 44.0  | 1    | 46.0       | 39 HKT21Sj | 240       |     |
| 07   | C12 ML331206DN02   | ML331206D           | N02              | 50  | 2'     | 60  | 0    | 5.1  |      |   |    |    |    | 60 | -20 | 40  | 110 | 30  | 82  | 17.0 | 25.2 | 1     |      | 9 HKT28J   | 240        |           |     |
| 08   | 3-LEE-I/C12.21-N01 | C12 3-LEE-I/ML33114 | C12/IHL33114D    | N01 | 400    | 16  | 406  | 0.8  |      | 3 | 0  | 0  | 0  | 8  | 50  | -20 | 40  | 180 | 10  | 72   | 9.9  | 15.0  | 1    | 27.0       | 42 HKT25J  | 240       |     |
| 08.1 | C12 D3103-N01      | D3103               | N01              | 400 | 16     | 406 |      |      | 0    | 0 | 0  | 0  | 0  | 0  | 50  | -20 | 40  | 180 | 10  | 10   | 50.1 | 286.0 | 12   |            | 12 HKT28J  | 240       |     |
| 09   | 3-LEE-I/ C1223-N01 | C12/ML331202-N01    | C12/IHL331202    | N01 | 50     | 2'  | 60   | 4.2  | 4.6  | 3 | 1  | 0  | 2  | 2  | 4   | 50  | -20 | 40  | 180 | 10   | 70   | 11.4  | 15.0 | 1          | 11.0       | 10 HKT25J | 240 |
| 10   | C12 ML331210-N01   | C12/IHL331210       | N01              | 15  | 1/2"   | 21  | 10.4 |      | 1    | 0 | 0  | 0  | 7  | 50 | -20 | 40  | 150 | 30  | 85  | 10.7 | 13.0 | 1     | 30.0 | 18 HKT25J  | 240        |           |     |
| 11   | C12 OQ335102DN01   | C12/IOG335102D      | N01              | 80  | 3'     | 89  | 9    | 25.3 | 6    | 4 | 8  | 0  | 6  | 5  | 50  | -20 | 40  | 150 | 40  | 85   | 29.6 | 30.0  | 1    | 30.0       | 39 HKT21Sj | 240       |     |
| 12   | C12 OQ335102DN02   | C12/IOG335102D      | N02              | 80  | 3'     | 89  | 9.3  | 31.4 | 4    | 4 | 8  | 0  | 7  | 5  | 50  | -20 | 40  | 150 | 40  | 85   | 29.6 | 30.0  | 1    | 30.0       | 43 HKT21Sj | 240       |     |
| 13   | 3-LEE-I/C12.22-N01 | C12 WQ335114N01     | C12/IWQ335114N01 | N01 | 80     | 3'  | 89   | 15.5 | 14.1 | 0 | 0  | 0  | 4  | 3  | 50  | -20 | 50  | 150 | 40  | 85   | 29.6 | 30.0  | 1    | 19.0       | 19 HKT21Sj | 240       |     |
| 13.2 | C12 WQ335106N01    | WQ335106            | N01              | 80  | 3'     | 89  | 6.2  | 9.5  | 5    | 2 | 2  | 0  | 5  | 50 | -20 | 50  | 150 | 40  | 85  | 29.6 | 30.0 | 1     | 17.0 | 21 HKT21Sj | 240        |           |     |
| 14   | C12 ML335101-N01   | C12/IHL335101       | N01              | 25  | 1'     | 34  | 43.3 |      | 6    | 0 | 0  | 0  | 1  | 16 | 3   | 50  | -20 | 30  | 150 | 30   | 88   | 13.6  | 21.0 | 1          | 52 HKT28J  | 240       |     |
| 15   | C12 ML335101-N02   | C12/IHL335101       | N02              | 25  | 1'     | 34  | 42.2 |      | 0    | 0 | 0  | 0  | 1  | 11 | 3   | 50  | -20 | 30  | 150 | 30   | 88   | 13.6  | 21.0 | 1          | 59 HKT28J  | 240       |     |
| 16   | Reverse            |                     |                  |     |        |     |      |      |      |   |    |    |    |    |     |     |     |     |     |      |      |       |      |            |            |           |     |
| 17   | 3-LEE-I/ C1223-N01 | C12 WQ335114N01     | C12/IWQ335114N01 | N01 | 80     | 3'  | 89   | 6.9  | 4    | 1 | 0  | 0  | 2  | 2  | 60  | -20 | 50  | 150 | 40  | 85   | 26.2 | 30.0  | 1    | 4.0        | 15 HKT21Sj | 240       |     |
| 17.1 | C1223-N01          | WQ335115N01         | WQ335115         | N01 | 80     | 3'  | 89   | 7.2  | 1    | 1 | 0  | 0  | 2  | 2  | 60  | -20 | 50  | 150 | 40  | 85   | 26.2 | 30.0  | 1    | 4.0        | 15 HKT21Sj | 240       |     |
| 18   | C13 CSO304102N01   | C13/CSO304102       | N01              | 25  | 1'     | 34  | 30   | 38.5 | 1    | 0 | 0  | 0  | 8  | 11 | 6   | 50  | -20 | 30  | 150 | 20   | 78   | 10.9  | 14.0 | 1          | 32.0       | 43 HKT25J | 240 |
|      | C13 ML32217P-N01   | C13/ML32217P        | N01              | 50  | 2'     | 60  | 18   | 41.7 | 0    | 2 | 6  | 0  | 11 | 5  | 50  | -20 | 40  | 150 | 30  | 79   | 18.9 | 21.0  | 1    | 40.0       | 57 HKT28J  | 240       |     |

**Légende**

| <b>Anglais</b>                  | <b>Français</b>                           |
|---------------------------------|-------------------------------------------|
| Date                            | Date                                      |
| Chk'd                           | Vérifié                                   |
| Rev                             | Rév                                       |
| Description                     | Description                               |
| CLIENT                          | CLIENT                                    |
| DATE                            | DATE                                      |
| DOCUMENT                        | Document                                  |
| Heating circuit list            | Liste des circuits de chauffage           |
| Rev no                          | Rév n°                                    |
| H.C. no. 5 °C                   | H.C. n°. 5 °C                             |
| H.C. no. Hold                   | H.C. no. Attente                          |
| JB no.                          | Numéro de la boîte de jonction            |
| Reserve                         | Réservé                                   |
| Distribution box no.            | Numéro de boîte de distribution           |
| Distribution box                | Boîte de distribution                     |
| Unit                            | Unité                                     |
| INDICATION pipe/instrument name | INDICATION Nom du conduit/de l'instrument |
| LENG Acc Requ.[m]               | LONGUEUR selon Requ.[m]                   |
| LENGTH Acc Iso [m]              | LONGUEUR selon Iso [m]                    |
| VAL [pc.]                       | VAL [pc.]                                 |
| Reduc. [pc.]                    | Réduction [pc.]                           |
| Tee [pc.]                       | Té [pc.]                                  |
| Coupl                           | Couplage                                  |
| SUPP Alt [pc.]                  | SUPP Alt [pc.]                            |
| SUPP [pc.]                      | SUPP [pc.]                                |
| Elbow [pc.]                     | Coude [pc.]                               |
| INSUL [mm]                      | ISOLATION [mm]                            |
| TEMP. [°C]                      | TEMPÉRATURE. [°C]                         |
| _amb                            | _ambiante                                 |
| Oper.                           | De service                                |
| _max allow                      | _maximale autorisée                       |
| _hold                           | _d'attente                                |
| P_NOM. [W/m/m <sup>2</sup> ]    | P_NOM. [W/m/m <sup>2</sup> ]              |
| req. _hold                      | requis _d'attente                         |
| actual                          | réelle                                    |
| LAY. [fold]                     | CHEMIN [fold]                             |
| LENG. [m]                       | LONGUEUR [m]                              |
| TOTAL LENG                      | LONGUEUR TOTALE                           |
| HEATING cable TYPE              | Type de câble chauffant                   |
| Process temperature             | Température de processus                  |

**Figure B.8 – EC008 liste des circuits de chauffage**

Print:

| Installation area data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                 |                            |         |                |               |                                            |                                |                      |               | R                   |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------|---------|----------------|---------------|--------------------------------------------|--------------------------------|----------------------|---------------|---------------------|---------------------------|--|--|--|------|--|---------------------------|--|----------------|--|--|--|-------|--|--|--|------------------------|--|--|--|------|--|--|--|--|--|--|--|----------|--|---------|--|--|--|--|--|----------------|--|--------|--|---|------|-----------------|--|-----|-----|------|-------|
| B51                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Installation location           | Outdoor, only antifreezing |         |                | B67           | Remote hazardous area class                | Zone 1, Group IIA              |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B52                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Corrosive influence by (1)      | Coastal climate            |         |                | B68           | Remote area min. ign. temp.                | T3 (> 200 °C)                  |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B53                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Ambient temp. [min.](max.)      | -15.0                      | 40.0    | °C             | B69           | Max. allow. sound press. level             | 85 dB(A)                       |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B54                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Ambient work temp. [min.](max.) | -15.0                      | 40.0    | °C             | B20           | Remark (1)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Max. relative humidity          | 95.00 %                    |         |                | B21           | Remark (2)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B57                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Altitude above sea level        | 20.00 m                    |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| Process data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |                            |         |                | R             | Process data (continued)                   |                                |                      |               |                     | R                         |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Fluid                           | Water                      |         |                | D53           | Molecular weight                           |                                |                      |               | g/mol               |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B41                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Composition                     | H2O2                       |         |                | D54           | Compressibility factor (Z1/Zn)             |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Corrosive components            |                            |         |                | D55           | Rel. dielectr. const. Epsilon r            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B43                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Toxic components                |                            |         |                | D56           | Electrical conductivity                    |                                |                      |               | mS/cm               |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Abrasive components             |                            |         |                | D66           | Isentropic exponent                        |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Suspended particles             |                            |         |                | D43           | Max. allowable pressure drop               |                                |                      |               | 0.50 bar            |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B39                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Special fluid properties (1)    |                            |         |                | D59           | Remark (1)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Special fluid properties (2)    |                            |         |                | D60           | Remark (2)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B46                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Water hazard class (WHC)        |                            |         |                | Location data |                                            |                                |                      |               | R                   |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B47                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Indicat. of danger (67549/EEC)  |                            |         |                | B04           | PI-Diagram / Sheet no.                     |                                |                      |               | 13                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Pollution restriction           |                            |         |                | B60           | Reference location                         |                                |                      |               | 2°-P-13-76009-A3-3F |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Inline hazardous area           |                            |         |                | B84           | Pipe spec. selected                        |                                |                      |               | A3-3F               |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| B26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Phase                           | (L) liquid                 |         |                | B97           | Connection type                            |                                |                      |               | flanged             |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| Runcase value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                 |                            |         | min.           | norm.         | max.                                       | unit                           | B14                  | Line [DN](PN) | 2"                  | CLASS 300                 |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| D50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Mass flow rate                  | 3496.00                    | 3984.00 | 9960.00        | kg/h          | B93                                        | Connection facing              | RF, ANSI 16.5        |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| D42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Actual flow rate                | 3.50                       | 4.00    | 10.00          | m³/h          | B92                                        | Line material                  | Killed C.S. (A106-B) |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| D51                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Actual flow [L.N.]              |                            |         |                | Nm³/h         | B94                                        | Line diam. [inside](outside)   | 52.48                | 60.30         | mm                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| D24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Operating pressure p1           | 6.00                       | 7.00    | 9.00           | bar a         | B15                                        | Insulation [type](thickness)   |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| D30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Operating temperature t1        | 30.0                       | 30.0    | 30.0           | °C            | B66                                        | Heating/cooling [trace](temp.) |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| D33                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Operating density               | 996.00                     | 996.00  | 996.00         | kg/m³         | B70                                        | Design pressure [min.](max.)   | 27.00 bar a          |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| D36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Pressure [Boiling](Critical)    | 0.04                       | 220.00  | bar a          | B72           | Design temp. [min.](max.)                  | 260.0 °C                       |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| D52                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Temp. [Boiling](Condensation)   | 373.0                      |         |                | °C            | B98                                        | Remark (1)                     |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| D10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Density at rel. cond.           |                            |         |                | kg/Nm³        | B99                                        | Remark (2)                     |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| D11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Dyn. viscosity                  |                            |         |                | cP            |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| Component process design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                 |                            |         |                | R             | Component process design (continued)       |                                |                      |               |                     | R                         |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Manufacturer                    |                            |         |                | N93           | Flow element type                          |                                |                      |               | flange orifice      |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Manufacturer model no.          |                            |         |                | N10           | Cleaning requirement                       |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N03                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Type of construction            |                            |         |                | T44           | Design max. flow                           |                                |                      |               | 11.00 m³/h          |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N08                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Compon. conn. [style](stand.)   | flanged                    |         |                | N04           | Calibration range [lower](upper)           | 0.0                            | 500.0                |               | mbar                |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N43                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Compon. conn. [DN](PN)          | 2"                         |         |                | T45           | Max. calculated pressure loss              |                                |                      |               | bar a               |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Facing compon. conn.            | RF, ANSI 16.5              |         |                | N12           | Remark (1)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Material body/process conn.     | 316 L                      |         |                | N13           | Remark (2)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N97                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Material meas. cell (wetted)    |                            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N58                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Plate thickness                 |                            |         |                |               |                                            |                                |                      |               | mm                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N59                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Orifice bore type               |                            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Orifice inlet edge style        |                            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N89                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Beta d/D Bore dia.              |                            |         |                |               |                                            |                                |                      |               | mm                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Plate outside diameter          |                            |         |                |               |                                            |                                |                      |               | mm                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N95                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Clearance [up.](downstream)     |                            |         |                |               |                                            |                                |                      |               | mm                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N92                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Vent/drain hole size            |                            |         |                |               |                                            |                                |                      |               | mm                  |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| Mechanical design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                 |                            |         |                | R             | Additional accessories / Material part no. |                                |                      |               |                     | R                         |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N94                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Stampings                       |                            |         |                | N87           |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| T47                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Installation position           |                            |         |                | T51           |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N78                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Flow direction                  | horizontal                 |         |                | T52           |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| T17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Internal connection style       |                            |         |                | T53           |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| T48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Tap conn. [type](size)          | --                         |         |                | N60           |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| T49                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Material tapping conn.          |                            |         |                | N37           | Remark (1)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| T50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Material lining                 |                            |         |                | N38           | Remark (2)                                 |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| F01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                 |                            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Remark (1)                      |                            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| N26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Remark (2)                      |                            |         |                |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| <table border="1"> <tr> <td colspan="4">Requirement Specification</td> <td colspan="2">Code</td> <td colspan="2">IEC 62708 / Doc templates</td> </tr> <tr> <td colspan="4">acc. IEC 62708</td> <td colspan="2">Plant</td> <td colspan="2"></td> </tr> <tr> <td colspan="4">Orifice plate assembly</td> <td colspan="2">Unit</td> <td colspan="2"></td> </tr> <tr> <td colspan="4"></td> <td colspan="2">Part no.</td> <td colspan="2">KFAA001</td> </tr> <tr> <td colspan="4"></td> <td colspan="2">TAG Identific.</td> <td colspan="2">FE7608</td> </tr> <tr> <td>R</td> <td>Date</td> <td>Client Doc.-ID:</td> <td></td> <td>CC:</td> <td>UA:</td> <td>Page</td> <td>1 / 1</td> </tr> </table> |                                 |                            |         |                |               |                                            |                                |                      |               |                     | Requirement Specification |  |  |  | Code |  | IEC 62708 / Doc templates |  | acc. IEC 62708 |  |  |  | Plant |  |  |  | Orifice plate assembly |  |  |  | Unit |  |  |  |  |  |  |  | Part no. |  | KFAA001 |  |  |  |  |  | TAG Identific. |  | FE7608 |  | R | Date | Client Doc.-ID: |  | CC: | UA: | Page | 1 / 1 |
| Requirement Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |                            |         | Code           |               | IEC 62708 / Doc templates                  |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| acc. IEC 62708                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                 |                            |         | Plant          |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| Orifice plate assembly                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                 |                            |         | Unit           |               |                                            |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                 |                            |         | Part no.       |               | KFAA001                                    |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                 |                            |         | TAG Identific. |               | FE7608                                     |                                |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |
| R                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Date                            | Client Doc.-ID:            |         | CC:            | UA:           | Page                                       | 1 / 1                          |                      |               |                     |                           |  |  |  |      |  |                           |  |                |  |  |  |       |  |  |  |                        |  |  |  |      |  |  |  |  |  |  |  |          |  |         |  |  |  |  |  |                |  |        |  |   |      |                 |  |     |     |      |       |



**Légende**

| <b>Anglais</b>                        | <b>Français</b>                                      |
|---------------------------------------|------------------------------------------------------|
| Installation area data                | Données relatives à la zone d'installation           |
| Installation location                 | Emplacement de l'installation                        |
| Outdoor, only antifreezing            | Extérieure, anti-congelant uniquement                |
| Remote hazardous area class           | Classe de la zone dangereuse distante                |
| Zone I, Group IIA                     | Zone I, Groupe IIA                                   |
| Corrosive influence by (I)            | Influence corrosive par (I)                          |
| Coastal climate                       | Climat côtier                                        |
| Remote area min. ign. temp            | Température minimale d'inflammation de zone distante |
| Ambient temp. [min.]\[max]            | Température ambiante [min.]\[max]                    |
| Max. allow. sound press level         | Niveau maximal autorisé de la pression sonore        |
| Ambient work.temp[min]\[max]          | Température de fonctionnement ambiante [min]\[max]   |
| Remark (1)                            | Remarque (1)                                         |
| Max. relative humidity                | Humidité relative maximale                           |
| Remark (2)                            | Remarque (2)                                         |
| Altitude above sea level              | Altitude au-dessus du niveau de la mer               |
| Process data                          | Données de processus                                 |
| Process data (continued)              | Données de processus (suite)                         |
| Fluid                                 | Fluide                                               |
| Water                                 | Eau                                                  |
| Molecular weight                      | Masse moléculaire                                    |
| g/mol                                 | g/mol                                                |
| Composition                           | Composition                                          |
| Compressibility factor ( $Z_1/Z_n$ )° | Facteur de compressibilité ( $Z_1/Z_n$ )             |
| Corrosive components                  | Composants corrosifs                                 |
| Rel. dielectr. const. Epsilon r       | Constante diélectrique relative. Epsilon r           |
| Toxic components                      | Composants toxiques                                  |
| Electrical conductivity               | Conductivité électrique                              |
| Abrasive components                   | Composants abrasifs                                  |
| Isentropic exponent                   | Exposant isentropique                                |
| Suspended particles                   | Particules en suspension                             |
| Max. allowable pressure drop          | Perte de charge maximale autorisée                   |
| Special fluid properties(1) (2)       | Propriétés particulières des fluides (1) (2)         |
| Water hazard class (WHC)              | Classe de pollution des eaux (WHC)                   |
| Location data                         | Données de l'emplacement                             |
| Indicat. of danger (67/548/EEC)       | Indication de danger (67/548/EEC)                    |
| PI-diagram/sheet no.                  | Diagramme PI/feuille n°.                             |
| Pollution restriction                 | Restriction de pollution                             |
| Reference location                    | Emplacement de référence                             |
| Inline hazardous area                 | Zone dangereuse en ligne                             |
| Pipe spec selected                    | Spécifications du conduit sélectionnées              |
| Phase                                 | Phase                                                |

| Anglais                                  | Français                                             |
|------------------------------------------|------------------------------------------------------|
| (L) liquid                               | (L) liquide                                          |
| Connection type                          | Type de connexion                                    |
| Flanged                                  | A brides                                             |
| Runcase value                            | Valeur «Runcase»                                     |
| Min.                                     | Minimale                                             |
| Norm.                                    | Normale                                              |
| Max.                                     | Maximale                                             |
| Unit                                     | Unité                                                |
| Line[DN]\[PN]                            | Ligne [DN]\[PN]                                      |
| CLASS 300                                | CLASSE 300                                           |
| Mass flow rate                           | Débit-masse                                          |
| Connection facing                        | Face de la connexion                                 |
| Actual flow rate                         | Débit réel                                           |
| Line material                            | Matériau de la ligne                                 |
| Killed C.S. (A106-B)                     | Acier au carbone calmé (A106-B)                      |
| Actual flow [i.N.]                       | Flux réel [i.N.]                                     |
| Line diam.[inside]\[outside]             | Diamètre de la ligne [intérieure]\[extérieure]       |
| Operating pressure p1                    | Pression de service p1                               |
| Insulation [type]\[thickness]            | Isolation [type]\[épaisseur]                         |
| Operating temperature t1                 | Température de service t1                            |
| Heating cooling [trace]\[temp.]          | Chauffage refroidissement [trace]\[temp.]            |
| Operating density ([kg/m <sup>3</sup> ]) | Masse volumique de travail ([kg/m <sup>3</sup> ])    |
| Design pressure [min.]\[max.]            | Pression de conception [min.]\[max.]                 |
| Pressure [Boiling-]\[Critical-]          | Pression [Ébullition]\[Critique-]                    |
| Design temp. [min.]\[max.]               | Température de conception [min.]\[max.]              |
| Temp [Boiling-]\[Condensation-]          | Température [Ébullition]\[Condensation-]             |
| Remark (1)                               | Remarque (1)                                         |
| Density at ref.cond.                     | Masse volumique aux conditions de référence          |
| Remark (2)                               | Remarque (2)                                         |
| Dyn. viscosity                           | Viscosité dynamique                                  |
| Component process design                 | Conception de la transformation du composant         |
| Component process design (continued)     | Conception de la transformation du composant (suite) |
| Manufacturer                             | Fabricant                                            |
| Flow element type                        | Type d'élément de flux                               |
| Flange orifice                           | Orifice à brides                                     |
| Manufacturer model no.                   | Modèle de fabricant n°.                              |
| Cleaning requirement                     | Exigence de nettoyage                                |
| Type of construction                     | Type de construction                                 |
| Design max.flow                          | Flux maximal de conception                           |
| Compon conn. [style]\[stand.]            | Connexion du composant [style]\[stand.]              |
| Calibration range [lower]\[upper]        | Plage de l'étalonnage [inférieure]\[supérieure]      |
| Compon conn. [DN]\[PN]                   | Connexion du composant [DN]\[PN]                     |

| Anglais                                   | Français                                                 |
|-------------------------------------------|----------------------------------------------------------|
| CLASS 300                                 | CLASSE 300                                               |
| Max calculated pressure loss              | Perte de charge maximale calculée                        |
| Facing compon.conn                        | Connexion du composant de face                           |
| Material body/process conn                | Matériau connexion corps/processus                       |
| Material meas.cell (wetted)               | Cellule de mesure du matériel (humide)                   |
| Plate thickness                           | Épaisseur de la plaque                                   |
| Orifice bore type                         | Type du passage d'orifice                                |
| Orifice inlet edge style                  | Style du bord de l'orifice d'entrée                      |
| Beta d/D Bore dia                         | Diamètre alésage Beta d/D                                |
| Plate outside diameter                    | Diamètre extérieur de la plaque                          |
| Clearance [up-]\[downstream]              | Distance dans l'air [amont-]\[aval]                      |
| Vent/drain hole\size                      | Purge/trou de drainage \ taille                          |
| Mechanical design                         | Conception mécanique                                     |
| Additional accessories/ material part no. | Accessoires supplémentaires / n° de la pièce du matériel |
| Stampings                                 | Estampages                                               |
| Installation position                     | Position de l'installation                               |
| Flow direction                            | Sens d'écoulement                                        |
| Horizontal                                | Horizontale                                              |
| Internal connection style                 | Style de connexion interne                               |
| Tap conn. [type]\[size] (N60)             | Raccords de piquage [type]\[taille] (N60)                |
| Material tapping conn                     | Raccords de piquage du matériel                          |
| Material lining                           | Garniture du matériel                                    |
| Code                                      | Code                                                     |
| Plant                                     | Installation                                             |
| Unit                                      | Unité                                                    |
| Part no                                   | No. de la pièce                                          |
| TAG Identific                             | Identification de l'étiquette                            |
| IEC 62708 / doc templates                 | IEC 62708 / modèles de doc                               |
| Requirement Specification acc. IEC 62708  | Spécification des exigences selon l'IEC 62708            |
| Orifice plate assembly                    | Assemblage de diaphragmes                                |
| Date                                      | Date                                                     |
| Client doc.-ID                            | ID du document du client                                 |
| Doc.-ID code:                             | Code-ID du document:                                     |

Figure B.9 – EC009 spécification des exigences

Print:

| Installation area data                                                                                                                                                                                                                                                                |                                 |                            |         |         |               |                                            |                                  |                      |               | R                   |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------|---------|---------|---------------|--------------------------------------------|----------------------------------|----------------------|---------------|---------------------|-----------|
| B51                                                                                                                                                                                                                                                                                   | Installation location           | Outdoor, only antifreezing |         |         | B67           | Remote hazardous area class                | Zone 1, Group IIA                |                      |               |                     |           |
| B52                                                                                                                                                                                                                                                                                   | Corrosive influence by (1)      | Coastal climate            |         |         | B68           | Remote area min. ign. temp.                | T3 (> 200 °C)                    |                      |               |                     |           |
| B53                                                                                                                                                                                                                                                                                   | Ambient temp. [min.](max.)      | -15.0                      | 40.0    | °C      | B69           | Max. allow. sound press. level             | 85 dB(A)                         |                      |               |                     |           |
| B54                                                                                                                                                                                                                                                                                   | Ambient work temp. [min.](max.) | -15.0                      | 40.0    | °C      | B20           | Remark (1)                                 |                                  |                      |               |                     |           |
| B55                                                                                                                                                                                                                                                                                   | Max. relative humidity          | 95.00 %                    |         |         | B21           | Remark (2)                                 |                                  |                      |               |                     |           |
| B57                                                                                                                                                                                                                                                                                   | Altitude above sea level        | 20.00 m                    |         |         |               |                                            |                                  |                      |               |                     |           |
| Process data                                                                                                                                                                                                                                                                          |                                 |                            |         |         | R             | Process data (continued)                   |                                  |                      |               |                     | R         |
| B25                                                                                                                                                                                                                                                                                   | Fluid                           | Water                      |         |         | D53           | Molecular weight                           |                                  |                      |               | g/mol               |           |
| B41                                                                                                                                                                                                                                                                                   | Composition                     | H2O2                       |         |         | D54           | Compressibility factor (Z1/Zn)             |                                  |                      |               |                     |           |
| B42                                                                                                                                                                                                                                                                                   | Corrosive components            |                            |         |         | D55           | Rel. dielectr. const. Epsilon r            |                                  |                      |               |                     |           |
| B43                                                                                                                                                                                                                                                                                   | Toxic components                |                            |         |         | D56           | Electrical conductivity                    |                                  |                      |               | mS/cm               |           |
| B44                                                                                                                                                                                                                                                                                   | Abrasive components             |                            |         |         | D66           | Isentropic exponent                        |                                  |                      |               |                     |           |
| B45                                                                                                                                                                                                                                                                                   | Suspended particles             |                            |         |         | D43           | Max. allowable pressure drop               |                                  |                      |               | 0.50 bar            |           |
| B39                                                                                                                                                                                                                                                                                   | Special fluid properties (1)    |                            |         |         | D59           | Remark (1)                                 |                                  |                      |               |                     |           |
| B40                                                                                                                                                                                                                                                                                   | Special fluid properties (2)    |                            |         |         | D60           | Remark (2)                                 |                                  |                      |               |                     |           |
| B46                                                                                                                                                                                                                                                                                   | Water hazard class (WHC)        |                            |         |         | Location data |                                            |                                  |                      |               | R                   |           |
| B47                                                                                                                                                                                                                                                                                   | Indicat. of danger (67549/EEC)  |                            |         |         | B04           | PI-Diagram / Sheet no.                     |                                  |                      |               | 13                  |           |
| B50                                                                                                                                                                                                                                                                                   | Pollution restriction           |                            |         |         | B60           | Reference location                         |                                  |                      |               | 2"-P-13-76009-A3-3F |           |
| B48                                                                                                                                                                                                                                                                                   | Inline hazardous area           |                            |         |         | B84           | Pipe spec. selected                        |                                  |                      |               | A3-3F               |           |
| B26                                                                                                                                                                                                                                                                                   | Phase                           | (L) liquid                 |         |         | B97           | Connection type                            |                                  |                      |               | flanged             |           |
| Run case value                                                                                                                                                                                                                                                                        |                                 |                            |         | min.    | norm.         | max.                                       | unit                             | B14                  | Line [DN](PN) | 2"                  | CLASS 300 |
| D50                                                                                                                                                                                                                                                                                   | Mass flow rate                  | 3496.00                    | 3984.00 | 9960.00 | kg/h          | B93                                        | Connection facing                | RF, ANSI 16.5        |               |                     |           |
| D42                                                                                                                                                                                                                                                                                   | Actual flow rate                | 3.50                       | 4.00    | 10.00   | m³/h          | B92                                        | Line material                    | Killed C.S. (A106-B) |               |                     |           |
| D51                                                                                                                                                                                                                                                                                   | Actual flow [L.N.]              |                            |         |         | Nm³/h         | B94                                        | Line diam. [inside](outside)     | 52.48                | 60.30         | mm                  |           |
| D24                                                                                                                                                                                                                                                                                   | Operating pressure p1           | 6.00                       | 7.00    | 9.00    | bar a         | B15                                        | Insulation [type](thickness)     |                      |               |                     |           |
| D30                                                                                                                                                                                                                                                                                   | Operating temperature t1        | 30.0                       | 30.0    | 30.0    | °C            | B66                                        | Heating/cooling [trace](temp.)   |                      |               |                     |           |
| D33                                                                                                                                                                                                                                                                                   | Operating density               | 996.00                     | 996.00  | 996.00  | kg/m³         | B70                                        | Design pressure [min.](max.)     | 27.00 bar a          |               |                     |           |
| D36                                                                                                                                                                                                                                                                                   | Pressure [Boiling](Critical)    | 0.04                       | 220.00  | bar a   | B72           | Design temp. [min.](max.)                  | 260.0 °C                         |                      |               |                     |           |
| D52                                                                                                                                                                                                                                                                                   | Temp. [Boiling](Condensation)   | 373.0                      |         |         | °C            | B98                                        | Remark (1)                       |                      |               |                     |           |
| D10                                                                                                                                                                                                                                                                                   | Density at ref. cond.           |                            |         |         | kg/Nm³        | B99                                        | Remark (2)                       |                      |               |                     |           |
| D11                                                                                                                                                                                                                                                                                   | Dyn. viscosity                  |                            |         |         | cP            |                                            |                                  |                      |               |                     |           |
| Component process design                                                                                                                                                                                                                                                              |                                 |                            |         |         | R             | Component process design (continued)       |                                  |                      |               |                     | R         |
| N01                                                                                                                                                                                                                                                                                   | Manufacturer                    | XYZ Company                |         |         | N93           | Flow element type                          |                                  |                      |               | flange orifice      |           |
| N02                                                                                                                                                                                                                                                                                   | Manufacturer model no.          | 678-BD                     |         |         | N10           | Cleaning requirement                       |                                  |                      |               |                     |           |
| N03                                                                                                                                                                                                                                                                                   | Type of construction            | ISO 5167                   |         |         | T44           | Design max. flow                           |                                  |                      |               | 11.00 m³/h          |           |
| N08                                                                                                                                                                                                                                                                                   | Compon. conn. [style](stand.)   | flanged                    |         |         | ANSI B16.5    | N04                                        | Calibration range [lower](upper) | 0.0                  | 500.0         | mbar                |           |
| N43                                                                                                                                                                                                                                                                                   | Compon. conn. [DN](PN)          | 2"                         |         |         | CLASS 300     | T45                                        | Max. calculated pressure loss    | 0.5 bar a            |               |                     |           |
| N44                                                                                                                                                                                                                                                                                   | Facing compon. conn.            | RF, ANSI 16.5              |         |         | N12           | Remark (1)                                 |                                  |                      |               |                     |           |
| N09                                                                                                                                                                                                                                                                                   | Material body/process conn.     | 316 L                      |         |         | N13           | Remark (2)                                 |                                  |                      |               |                     |           |
| N97                                                                                                                                                                                                                                                                                   | Material meas. cell (wetted)    |                            |         |         |               |                                            |                                  |                      |               |                     |           |
| N58                                                                                                                                                                                                                                                                                   | Plate thickness                 | 4.50 mm                    |         |         |               |                                            |                                  |                      |               |                     |           |
| N59                                                                                                                                                                                                                                                                                   | Orifice bore type               | straight                   |         |         |               |                                            |                                  |                      |               |                     |           |
| N88                                                                                                                                                                                                                                                                                   | Orifice inlet edge style        | sharp edge                 |         |         |               |                                            |                                  |                      |               |                     |           |
| N89                                                                                                                                                                                                                                                                                   | Beta d/D Bore dia.              | 0.475                      | 24.9    | mm      |               |                                            |                                  |                      |               |                     |           |
| N90                                                                                                                                                                                                                                                                                   | Plate outside diameter          | 100 mm                     |         |         |               |                                            |                                  |                      |               |                     |           |
| N95                                                                                                                                                                                                                                                                                   | Clearance [up.](downstream)     | 700 mm                     |         |         |               |                                            |                                  |                      |               |                     |           |
| N92                                                                                                                                                                                                                                                                                   | Vent/drain hole size            | n.a.                       |         |         |               |                                            |                                  |                      |               |                     |           |
| Mechanical design                                                                                                                                                                                                                                                                     |                                 |                            |         |         | R             | Additional accessories / Material part no. |                                  |                      |               |                     | R         |
| N94                                                                                                                                                                                                                                                                                   | Stampings                       | Bore diameter/ material    |         |         | N87           |                                            |                                  |                      |               |                     |           |
| T47                                                                                                                                                                                                                                                                                   | Installation position           | horizontal                 |         |         | T51           |                                            |                                  |                      |               |                     |           |
| N78                                                                                                                                                                                                                                                                                   | Flow direction                  | horizontal                 |         |         | T52           |                                            |                                  |                      |               |                     |           |
| T17                                                                                                                                                                                                                                                                                   | Internal connection style       | n.a.                       |         |         | T53           |                                            |                                  |                      |               |                     |           |
| T48                                                                                                                                                                                                                                                                                   | Tap conn. [type](size)          | flange tap 1/2"            |         |         | N60           |                                            |                                  |                      |               |                     |           |
| T49                                                                                                                                                                                                                                                                                   | Material tapping conn.          |                            |         |         | N37           | Remark (1)                                 |                                  |                      |               |                     |           |
| T50                                                                                                                                                                                                                                                                                   | Material lining                 |                            |         |         | N38           | Remark (2)                                 |                                  |                      |               |                     |           |
| F01                                                                                                                                                                                                                                                                                   |                                 |                            |         |         |               |                                            |                                  |                      |               |                     |           |
| N25                                                                                                                                                                                                                                                                                   | Remark (1)                      |                            |         |         |               |                                            |                                  |                      |               |                     |           |
| N26                                                                                                                                                                                                                                                                                   | Remark (2)                      |                            |         |         |               |                                            |                                  |                      |               |                     |           |
| <div style="display: flex; justify-content: space-between;"> <div> <p><b>Specification Sheet</b><br/>acc. IEC 62708<br/>Orifice plate assembly</p> </div> <div> <p>Code IEC 62708 / Doc templates<br/>Plant<br/>Unit<br/>Part no. KFAA001<br/>TAG Identific. FE7608</p> </div> </div> |                                 |                            |         |         |               |                                            |                                  |                      |               |                     |           |
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**Légende**

| <b>Anglais</b>                   | <b>Français</b>                                      |
|----------------------------------|------------------------------------------------------|
| Installation area data           | Données relatives à la zone d'installation           |
| Installation location            | Emplacement de l'installation                        |
| Outdoor, only antifreezing       | Extérieure, anti-congelant uniquement                |
| Remote hazardous area class      | Classe de la zone dangereuse distante                |
| Zone I, Group IIA                | Zone I, Groupe IIA                                   |
| Corrosive influence by (1)       | Influence corrosive par (1)                          |
| Coastal climate                  | Climat côtier                                        |
| Remote area min. ign. temp       | Température minimale d'inflammation de zone distante |
| Ambient temp. [min.]\[max]       | Température ambiante [min.]\[max]                    |
| Max. allow. sound press level    | Niveau maximal autorisé de la pression sonore        |
| Ambient work.temp.[min]\[max]    | Température de fonctionnement ambiante [min]\[max]   |
| Remark (1)                       | Remarque (1)                                         |
| Max. relative humidity           | Humidité relative maximale                           |
| Remark (2)                       | Remarque (2)                                         |
| Altitude above sea level         | Altitude au-dessus du niveau de la mer               |
| Process data                     | Données de processus                                 |
| Process data (continued)         | Données de processus (suite)                         |
| Fluid                            | Fluide                                               |
| Water                            | Eau                                                  |
| Molecular weight                 | Masse moléculaire                                    |
| Composition                      | Composition                                          |
| Compressibility factor (Z1/Zn)   | Facteur de compressibilité (Z1/Zn)                   |
| Corrosive components             | Composants corrosifs                                 |
| Rel. dielectr. const. Epsilon r  | Constante diélectrique relative. Epsilon r           |
| Toxic components                 | Composants toxiques                                  |
| Electrical conductivity          | Conductivité électrique                              |
| Abrasive components              | Composants abrasifs                                  |
| Isentropic exponent              | Exposant isentropique                                |
| Suspended particles              | Particules en suspension                             |
| Max. allowable pressure drop     | Perte de charge maximale autorisée                   |
| Special fluid properties (1) (2) | Propriétés particulières des fluides (1) (2)         |
| Water hazard class (WHC)         | Classe de pollution des eaux (WHC)                   |
| Location data                    | Données de l'emplacement                             |
| Indicat. of danger (67/548/EEC)  | Indication de danger (67/548/EEC)                    |
| PI-diagram/sheet no.             | Diagramme PI/Feuille n°.                             |
| Pollution restriction            | Restriction de pollution                             |
| Reference location               | Emplacement de référence                             |
| Inline hazardous area            | Zone dangereuse en ligne                             |
| Pipe spec selected               | Spécifications du conduit sélectionnées              |
| Inline hazardous area            | Zone dangereuse en ligne                             |
| Pipe spec selected               | Spécifications du conduit sélectionnées              |

| Anglais                              | Français                                             |
|--------------------------------------|------------------------------------------------------|
| Phase                                | Phase                                                |
| (L) liquid                           | (L) liquide                                          |
| Connection type                      | Type de connexion                                    |
| Flanged                              | A brides                                             |
| Runcase value                        | Valeur «Runcase»                                     |
| Min.                                 | Minimale.                                            |
| Norm.                                | Normale                                              |
| Max.                                 | Maximale                                             |
| Unit                                 | Unité                                                |
| Line[DN]\[PN]                        | Ligne [DN]\[PN]                                      |
| CLASS 300                            | CLASSE 300                                           |
| Mass flow rate                       | Débit-masse                                          |
| Connection facing                    | Face de la connexion                                 |
| Actual flow rate                     | Débit réel                                           |
| Line material                        | Matériau de la ligne                                 |
| Killed C.S. (A106-B)                 | Acier au carbone calmé (A106-B)                      |
| Actual flow                          | Flux réel                                            |
| Line diam.[inside]\[outside]         | Diamètre de la ligne [intérieure]\[extérieure]       |
| Operating pressure p1                | Pression de service p1                               |
| Insulation [type]\[thickness]        | Isolation [type]\[épaisseur]                         |
| Operating temperature t1             | Température de service t1                            |
| Heating cooling [trace]\[temp.]      | Chauffage refroidissement [trace]\[temp.]            |
| Operating density                    | Masse volumique de travail                           |
| Design pressure [min.]\[max.]        | Pression de conception [min.]\[max.]                 |
| Pressure [boiling]\[critical]        | Pression [ébullition]\[critique]                     |
| Design temp. [min.]\[max.]           | Température de conception [min.]\[max.]              |
| Temp [boiling]\[condensation]        | Température [ébullition]\[condensation]              |
| Remark (1)                           | Remarque (1)                                         |
| Density at ref.cond.                 | Masse volumique aux conditions de référence          |
| Remark (2)                           | Remarque (2)                                         |
| Dyn. viscosity                       | Viscosité dynamique                                  |
| Component process design             | Conception de la transformation du composant         |
| Component process design (continued) | Conception de la transformation du composant (suite) |
| Manufacturer                         | Fabricant                                            |
| Flow element type                    | Type d'élément de flux                               |
| Flange orifice                       | Orifice à brides                                     |
| Manufacturer model no.               | Modèle de fabricant n°                               |
| Cleaning requirement                 | Exigence de nettoyage                                |
| Type of construction                 | Type de construction                                 |
| Design max.flow                      | Flux maximal de conception                           |
| Compon conn. [style]\[stand.]        | Connexion du composant [style]\[stand.]              |
| Calibration range [lower]\[upper]    | Plage de l'étalonnage [inférieure]\[supérieure]      |

| Anglais                                   | Français                                                 |
|-------------------------------------------|----------------------------------------------------------|
| Compon conn. [DN]\[PN]                    | Connexion du composant [DN]\[PN]                         |
| CLASS 300                                 | CLASSE 300                                               |
| Max calculated pressure loss              | Perte de charge maximale calculée                        |
| Facing compon.conn                        | Connexion du composant de face                           |
| Material body/process conn                | Matériau connexion corps /processus                      |
| Material meas.cell (wetted)               | Cellule de mesure du matériel (humide)                   |
| Plate thickness                           | Epaisseur de la plaque                                   |
| Orifice bore type                         | Type de passage d'orifice                                |
| Straight                                  | Direct                                                   |
| Orifice inlet edge style                  | Style du bord de l'orifice d'entrée                      |
| Sharp edge                                | Arête vive                                               |
| Beta d/D Bore dia                         | Diamètre d'alésage Beta d/D                              |
| Plate outside diameter                    | Diamètre extérieure de la plaque                         |
| Clearance [up-]\[downstream]              | Distance dans l'air [amont-]\[aval]                      |
| Vent/drain hole\size                      | Purge/trou de drainage \ taille                          |
| Mechanical design                         | Conception mécanique                                     |
| Additional accessories/ material part no. | Accessoires supplémentaires / n° de la pièce du matériel |
| Stampings                                 | Estampages                                               |
| Installation position                     | Position de l'installation                               |
| Flow direction                            | Direction du flux                                        |
| Horizontal                                | Horizontale                                              |
| Internal connection style                 | Style de connexion interne                               |
| Tap conn. [type]\[size]                   | Raccords de piquage [type]\[taille]                      |
| Material tapping conn                     | Raccords de piquage du matériel                          |
| Flange tap                                | Piquage à brides                                         |
| Material lining                           | Garniture du matériel                                    |
| Remark (1)                                | Remarque (1)                                             |
| Remark (2)                                | Remarque (2)                                             |
| Code                                      | Code                                                     |
| Plant                                     | Installation                                             |
| Unit                                      | Unité                                                    |
| Part no                                   | N° de la pièce                                           |
| TAG identific                             | Identification de l'étiquette                            |
| IEC 62708 / doc templates                 | IEC 62708 / modèles de documents                         |
| Specification sheet acc. IEC 62708        | Spécification de l'équipement selon l'IEC 62708          |
| Orifice plate assembly                    | Assemblage de diaphragmes                                |
| Date                                      | Date                                                     |
| Client doc.-ID                            | ID du document du client                                 |
| Doc.-ID code:                             | Code-ID du document:                                     |

Figure B.10 – EC010 spécification de l'équipement

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| 1                                         | Loop-<br>Identification | Service                    | PID No.         | Required functions        | Remark | R  | Date | R          |
|-------------------------------------------|-------------------------|----------------------------|-----------------|---------------------------|--------|----|------|------------|
| 2                                         | 1                       | 2                          | 3               | 4                         | 5      | 6  | 7    | 8          |
| 4                                         | A7602                   | Product to BL              | 14              | I                         |        |    |      |            |
| 5                                         | A7654                   | Heavies to BL              | 13              | E                         |        |    |      |            |
| 6                                         | F7608                   | Heavies to BL              | 13              | IC                        |        |    |      |            |
| 7                                         | F7609                   | E7608 MP Steam in          | 13              | IC                        |        |    |      |            |
| 8                                         | F7610                   | P7604 Min. flow            | 14              | IC                        |        |    |      |            |
| 9                                         | F7612                   | C7602 Recycle              | 14              | IC                        |        |    |      |            |
| 10                                        | F7613                   | Product to BL              | 14              | IC                        |        |    |      |            |
| 11                                        | F7651                   | P7603A Min. Flow           | 13              | B                         |        |    |      |            |
| 12                                        | F7652                   | P7603B Min. flow           | 13              | B                         |        |    |      |            |
| 13                                        | H7613                   | P7603 Off                  | 13              | S,SL                      |        |    |      |            |
| 14                                        | H7614                   | P7603 Off                  | 13              | S,SL                      |        |    |      |            |
| 15                                        | H7615                   | P7603 On / Off             | 13              | S,SH,SL                   |        |    |      |            |
| 16                                        | H7619                   | P7604 Off                  | 14              | S,SL                      |        |    |      |            |
| 17                                        | H7620                   | P7604 Off                  | 14              | S,SL                      |        |    |      |            |
| 18                                        | H7621                   | P7604 On / Off             | 14              | S,SH,SL                   |        |    |      |            |
| 19                                        | L7604                   | C7602 Bottom               | 13              | IC,AH,AL                  |        |    |      |            |
| 20                                        | L7605                   | D7603                      | 14              | IC,AH,AL                  |        |    |      |            |
| 21                                        | L7654                   | C7602 Bottom               | 13              | I                         |        |    |      |            |
| 22                                        | L7655                   | D7603                      | 14              | I                         |        |    |      |            |
| 23                                        | P7615                   | C7602 Top                  | 13              | IC,AH,AL                  |        |    |      |            |
| 24                                        | P7616                   | C7602 upper section        | 13              | DI,AH                     |        |    |      |            |
| 25                                        | P7617                   | C7602 lower section        | 13              | DI,AH                     |        |    |      |            |
| 26                                        | P7619                   | C7602 Bottom               | 13              | I                         |        |    |      |            |
| 27                                        | P7664                   | P7603A                     | 13              | I                         |        |    |      |            |
| 28                                        | P7665                   | P7603B                     | 13              | I                         |        |    |      |            |
| 29                                        | P7666                   | E7608 MP Steam in          | 13              | I                         |        |    |      |            |
| 30                                        | P7667                   | D7603                      | 14              | I                         |        |    |      |            |
| 31                                        | P7668                   | P7604A                     | 14              | I                         |        |    |      |            |
| 32                                        | P7669                   | P7604B                     | 14              | I                         |        |    |      |            |
| 33                                        | P7670                   | Product to BL              | 14              | I                         |        |    |      |            |
| 34                                        | T7614                   | E7610 Cooler out           | 13              | I                         |        |    |      |            |
| 35                                        | T7615                   | C7602 tray 1               | 13              | I                         |        |    |      |            |
| 36                                        | T7616                   | C7602 tray 6               | 13              | I                         |        |    |      |            |
| 37                                        | T7617                   | C7602 tray 28              | 13              | I                         |        |    |      |            |
| 38                                        | T7618                   | C7602 tray 48              | 13              | IC                        |        |    |      |            |
| 39                                        | T7619                   | E7608 Reboiler out         | 13              | I                         |        |    |      |            |
| 40                                        | T7620                   | C7602 Bottom               | 13              | I                         |        |    |      |            |
| 41                                        | T7621                   | E7609 Condenser out        | 14              | IC,AL                     |        |    |      |            |
| 42                                        | T7622                   | D7603                      | 14              | I                         |        |    |      |            |
| 43                                        | T7623                   | Product to BL              | 14              | I                         |        |    |      |            |
| 44                                        | T7630                   | C7602 tray 43              | 13              | I                         |        |    |      |            |
| 45                                        | T7631                   | C7602 tray 15              | 13              | I                         |        |    |      |            |
| 46                                        | T7632                   | C7602 tray 24              | 13              | I                         |        |    |      |            |
| 47                                        | T7669                   | Heavies to BL              | 13              | I                         |        |    |      |            |
| 48                                        | T7670                   | E7610 Cooling Water Return | 13              | I                         |        |    |      |            |
| 49                                        | T7671                   | E7610 Cooler in            | 13              | I                         |        |    |      |            |
| 50                                        | T7672                   | E7608 Reboiler in          | 13              | I                         |        |    |      |            |
| 51                                        | T7673                   | E7609 Condenser in         | 14              | I                         |        |    |      |            |
| 52                                        | T7675                   | E7611 Cooling Water Return | 14              | I                         |        |    |      |            |
| 53                                        | U7605                   | Shut Down C7602 Feed       | 13              | S                         |        |    |      |            |
| 54                                        | U7606                   | Shut down P7603            | 13              | S                         |        |    |      |            |
| 55                                        | U7608                   | Shut Down C7602 Recycle    | 14              | S                         |        |    |      |            |
| 56                                        | U7609                   | Shut down P7604            | 14              | S                         |        |    |      |            |
| 57                                        | U7610                   | Split range D7603          | 14              | C                         |        |    |      |            |
| 58                                        | U7612                   | C7602 Recycle              | 14              | C                         |        |    |      |            |
| 59                                        | U7613                   | Product to BL              | 14              | C                         |        |    |      |            |
| 60                                        | U7633                   | Delta T17631 / T17632      | 13              | C                         |        |    |      |            |
| 61                                        | V7602                   | E7609 Fan                  | 14              | S,ASH                     |        |    |      |            |
| 62                                        | Y7603                   | Heavies to BL              | 13              | C                         |        |    |      |            |
| 63                                        | Y7604                   | E7608 MP Condensate out    | 13              | C                         |        |    |      |            |
| 64                                        | Y7605                   | C7602 Bottom               | 13              | S,OH,OSL                  |        |    |      |            |
| <b>Loop list</b><br><b>acc. IEC 62708</b> |                         |                            |                 | Code<br>Plant<br>Unit     |        |    |      |            |
|                                           |                         |                            |                 | IEC 62708 / Doc templates |        |    |      |            |
| R                                         |                         | Date                       | Client Doc.-ID: |                           |        |    |      |            |
| Doc.-ID-Code:                             |                         |                            |                 | CC                        | EC     | JA | DE   | Page 1 / 2 |



**Légende**

| <b>Anglais</b>             | <b>Français</b>                          |
|----------------------------|------------------------------------------|
| Loop identification R      | Identification de la boucle R            |
| Service                    | Service                                  |
| PID no                     | N° du PID                                |
| Required functions         | Fonctions exigées                        |
| Remark                     | Remarque                                 |
| Date                       | Date                                     |
| Product to BL              | Produit au BL                            |
| Heavies to BL              | Produits lourds au BL                    |
| E7608 MP steam in          | E7608 MP vapeur à l'intérieur            |
| P7604A min flow            | P7604A flux min                          |
| C7602 recycle              | C7602 recyclage                          |
| P7603A min flow            | P7603A flux min                          |
| P7603B min flow            | P7603B flux min                          |
| P7603 off                  | P7603 désactivé                          |
| P7603 on/ off              | P7603 activé/ désactivé                  |
| C7602 bottom               | C7602 bas                                |
| C7602 top                  | C7602 haut                               |
| C7602 upper section        | C7602 section supérieure                 |
| C7602 lower section        | C7602 section inférieure                 |
| E7610 cooler out           | E7610 refroidisseur à l'extérieur        |
| C7602 tray 1               | C7602 chemin 1                           |
| C7602 tray 6               | C7602 chemin 6                           |
| C7602 tray 28              | C7602 chemin 28                          |
| C7602 tray 48              | C7602 chemin 48                          |
| E7608 reboiler out         | E7608 rebouilleur à l'extérieur          |
| E7609 condenser out        | E7609 condenseur à l'extérieur           |
| C7602 tray 43              | C7602 chemin 43                          |
| C7602 tray 15              | C7602 chemin 15                          |
| C7602 tray 24              | C7602 chemin 24                          |
| E7610 cooling water return | E7610 retour de l'eau de refroidissement |
| E7610 cooler in            | E7610 refroidisseur à l'intérieur        |
| E7608 reboiler in          | E7608 rebouilleur à l'intérieur          |
| E7609 condenser in         | E7609 condenseur à l'intérieur           |
| E7611 cooling water return | E7611 retour de l'eau de refroidissement |
| Shutdown C7602 feed        | Arrêt C7602 alimentation                 |
| Shutdown P7603             | Arrêt P7603                              |
| Shutdown C7602 recycle     | Arrêt C7602 recyclage                    |
| Shutdown P7604             | Arrêt P7604                              |
| Spilt range D7603          | En cascade D7603                         |
| C7602 recycle              | C7602 recyclage                          |
| Delta TI7631 / TI 7632     | Delta TI7631 / TI 7632                   |
| E7609 fan                  | E7609 ventilateur                        |
| E7608 MP condensate out    | E7608 MP condenseur à l'extérieur        |

| Anglais                   | Français                            |
|---------------------------|-------------------------------------|
| C7602 Bottom              | C7602 bas                           |
| Code                      | Code                                |
| Plant                     | Installation                        |
| Unit                      | Unité                               |
| IEC 62708 / doc templates | IEC 62708 / modèles de document     |
| Loop list acc. IEC 62708  | Liste de postes PLT selon IEC 62708 |
| Date                      | Date                                |
| Client doc.-ID            | ID du document du client            |
| Doc.-ID-code:             | Code-ID du document:                |

**Figure B.11 – EC011 liste de postes PLT**

| BILL OF MATERIALS |          |                                |      | Project<br>Revision |            | 00          |               |           |  |                         |  |            |     |     |  |
|-------------------|----------|--------------------------------|------|---------------------|------------|-------------|---------------|-----------|--|-------------------------|--|------------|-----|-----|--|
| INSTRUMENTATION   |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
|                   |          |                                |      | Bidder              |            |             |               |           |  |                         |  | Quantities |     |     |  |
|                   |          |                                |      | Actual              |            | Erection    |               |           |  | Units - Central Devices |  | 103        | 105 | 901 |  |
| Rev               | BoQ Item | Description                    | Unit | Total Quantity      | Unit Hours | Total Hours | Unit Rate USD | Total USD |  |                         |  |            |     |     |  |
| 54                |          | INSTRUMENTATION                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.00             |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.00.00          |          | GENERAL DESCRIPTION OF WORK    |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.00.00.0000     |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K1             |          | Process connection, direct     |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K1.00          |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K1.00.0000     |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K1.00.A110     |          | Direct mounted < 80 °C         | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K1.00.A120     |          | PI flanged, with flushing ring | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K1.00.A210     |          | Direct mounted > 80 °C         | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2             |          | Process connection, remote     |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K2.00          |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K2.00.0000     |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K2.00.G110     |          | P for gas service, above TP    | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2.00.G210     |          | P for gas service, below TP    | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2.00.G410     |          | P for reformer fire detection  | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2.00.GR10     |          | PI remote, above TP            | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2.00.G110     |          | P for gas, above, two TPs      | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2.00.L110     |          | P for liquid service, below TP | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2.00.L210     |          | P for liquid service, above TP | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2.00.P110     |          | P with purge gas connection    | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2.00.P120     |          | P for liquid, in box, below TP | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2.00.P310     |          | P for wet gas, in box above TP | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2.00.V110     |          | P for LP, < 800#, below TP     | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2.00.V210     |          | P for LPS, < 800#, above TP    | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K2.00.V310     |          | P for HPS, > 800# below TP     | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3             |          | Process connection, dP         |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K3.00          |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K3.00.0000     |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K3.00.G110     |          | dP for gas service, above TP   | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.G210     |          | dP for gas service, below TP   | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.GR10     |          | dPg for gas service, above TP  | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.GR20     |          | dPg for gas service, below TP  | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.L110     |          | dP for liquid, below TP        | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.L210     |          | dP for liquid, above TP        | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.L310     |          | dP with CC, above TP           | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.L410     |          | dP liquid, in box, below TP    | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.LR10     |          | dPs for liquid, above TP       | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.LR20     |          | dPg for liquid, below TP       | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.P110     |          | dP with purge gas, above TP    | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.P310     |          | dP wet gas, in box, above TP   | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.V110     |          | dP for LPS, below TP           | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K3.00.V210     |          | dP for LPS, above TP           | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4             |          | Sensors, final check           |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K4.00          |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K4.00.0000     |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K4.00.4110     |          | PT, capillary, with FR pipe    | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.4120     |          | PT, capillary, with tubing     | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.4210     |          | dPT, capillary, with FR pipe   | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.4710     |          | PT, capillary, with FR vessel  | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.4730     |          | dPT, capillary, with diaphragm | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.4810     |          | dPT, capillary, with FR vessel | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.4910     |          | TM flanged, with flushing ring | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.FA20     |          | F, annubar, opposite support   | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.FE10     |          | F, orifice                     | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.FN10     |          | F, magnetic, with ER           | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.FN20     |          | F, magnetic, with remote TM    | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.FU20     |          | F, ultrasonic                  | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.FV10     |          | F, variable                    | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.FV20     |          | Mass flow meter                | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.FVM0     |          | Variable micro flow            | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.L110     |          | LI, magnetic                   | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.L120     |          | LI, magnetic                   | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.L210     |          | LI measurement, flanged        | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.L220     |          | LI displacer, sandwich, pipe   | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.L230     |          | LI displacer, sandwich, vessel | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.L420     |          | LI fork, radar, capacity, etc  | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.L450     |          | LI pilot with indicator        | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.LD10     |          | LI direct, minus leg tubed     | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K4.00.T010     |          | TWI installation check         | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5             |          | Sensors, miscellaneous         |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K5.00          |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K5.00.0000     |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.K5.00.0020     |          | Local electrical device        | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5.00.0030     |          | Local push button              | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5.00.0040     |          | T, local, ambient              | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5.00.8020     |          | Flame scanner                  | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5.00.L910     |          | L, radioactive, stripper       | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5.00.L920     |          | L, radioactive, reactor        | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5.00.L930     |          | L, radioactive, vessel         | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5.00.T010     |          | TI, local                      | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5.00.T020     |          | TTM, one head                  | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5.00.T030     |          | TTM, two heads                 | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5.00.T040     |          | T, multi, with serial cable    | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5.00.T050     |          | T, multi, with home run cable  | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.K5.00.T080     |          | T, thermocouples for flare     | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.M4             |          | Actors, final check            |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.M4.00          |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.M4.00.0000     |          |                                |      |                     |            |             |               |           |  |                         |  |            |     |     |  |
| 54.M4.00.0110     |          | CV with positioner             | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.M4.00.0120     |          | CV with positioner and FBS     | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.M4.00.0130     |          | CV with positioner and SOL     | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.M4.00.0140     |          | CV with flare, FCS and FBS     | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |
| 54.M4.00.0150     |          | CV with R/C, solenoid and FBS  | nos  | 0.00                |            | 0.00        |               | 0.00      |  |                         |  |            |     |     |  |

**Légende**

| <b>Anglais</b>                 | <b>Français</b>                              |
|--------------------------------|----------------------------------------------|
| BILL OF QUANTITIES             | DEVIS QUANTITATIF                            |
| Project                        | Projet                                       |
| Revision                       | Révision                                     |
| INSTRUMENTATION                | INSTRUMENTS DE FONCTIONNEMENT                |
| Bidder                         | Soumissionnaire                              |
| Quantities                     | Quantités                                    |
| Units – central devices        | Unités – appareils centraux                  |
| Rev                            | Révision                                     |
| BoQ item                       | Article du devis quantitatif BoQ             |
| Description                    | Description                                  |
| Unit                           | Unité                                        |
| Actual total quantity          | Quantité totale réelle                       |
| Erection                       | Montage                                      |
| Unit hours USD                 | Unité heures USD                             |
| Total hours                    | Total heures                                 |
| Unit rate USD                  | Taux unitaire USD                            |
| Total USD                      | Total USD                                    |
| INSTRUMENTATION                | INSTRUMENTS DE FONCTIONNEMENT                |
| GENERAL DESCRIPTION OF WORK    | DESCRIPTION GÉNÉRALE DES TRAVAUX             |
| Process connection, direct     | Connexion de processus, directe              |
| Direct mounted < 80 °C         | Monté directement < 80 °C                    |
| PI flanged, with flushing ring | PI à brides, avec anneau de rinçage          |
| Direct mounted > 80 °C         | Monté directement > 80 °C                    |
| Process connection, remote     | Connexion de processus, distante             |
| P for gas service, above TP    | P pour service de gaz, au-dessus de TP       |
| P for gas service, below TP    | P pour service de gaz, en dessous de TP      |
| P for reformer fire detection  | P pour détection d'incendie de reformeur     |
| PI remote, above TP            | PI distant, au-dessus de TP                  |
| P for gas, above, two TPs      | P pour gaz, au-dessus de, deux TP            |
| P for liquid service, below TP | P pour service liquide, en dessous de TP     |
| P for liquid service, above TP | P pour service liquide, au-dessus de TP      |
| P with purge gas connection    | P avec une connexion de gaz de purge         |
| P for liquid, in box, below TP | P pour liquide, en boîte, en dessous de TP   |
| P for wet gas. in box above TP | P pour gaz humide, en boîte, au-dessus de TP |
| P for LP, < 900#, below TP     | P pour LP, < 900#, en dessous de TP          |
| P for LPS, < 900#, above TP    | P pour LPS, < 900#, au-dessus de TP          |
| P for HPS, > 900# below TP     | P pour HPS, > 900# en dessous de TP          |
| Process connection, dP         | Connexion de processus, dP                   |
| dP for gas service, above TP   | dP pour service de gaz, au-dessus de TP      |
| dP for gas service, below TP   | dP pour service de gaz, en dessous de TP     |
| dPg for gas service, above TP  | dPg pour service de gaz, au-dessus de TP     |
| dPg for gas service, below TP  | dPg pour service de gaz, en dessous de TP    |

| Anglais                        | Français                                      |
|--------------------------------|-----------------------------------------------|
| dP for liquid, below TP        | dP pour liquide, en dessous de TP             |
| dP for liquid, above TP        | dP pour liquide, au-dessus de TP              |
| dP with CC, above TP           | dP avec CC, au-dessus de TP                   |
| dP liquid, in box, below TP    | dP pour liquide, en boîte, en dessous de TP   |
| dP for liquid, above TP        | dP pour liquide, au-dessus de TP              |
| dPg for liquid, below TP       | dPg pour liquide, en dessous de TP            |
| dP with purge gas, above TP    | dP avec un gaz de purge, au-dessus de TP      |
| dP wet cas. in box, above      | dP pour gaz humide, en boîte, au-dessus de TP |
| dP for LPS, below TP           | dP pour LPS, en dessous de TP                 |
| dP for LPS, above TP           | dP pour LPS, au-dessus de TP                  |
| Sensors, final check           | Capteurs, vérification finale                 |
| PT, capillary, with FR pipe    | PT, tube capillaire, avec conduit FR          |
| PT, capillary, with tubus      | PT, tube capillaire, avec tube                |
| dPT, capillary, with FR pipe   | dPT, tube capillaire, avec conduit FR         |
| PT, capillary, with FR vessel  | PT, tube capillaire, avec récipient FR        |
| dPT, capillary, with diaphragm | dPT, tube capillaire, avec diaphragme         |
| dPT, capillary, with FR vessel | dPT, tube capillaire, avec récipient FR       |
| TM flanged, with flushing ring | TM à brides, avec anneau de rinçage           |
| F, annubar, opposite support   | F, Annubar, support opposé                    |
| F, orifice                     | F, orifice                                    |
| F, magnetic, with ER           | F, magnétique, avec ER                        |
| F, magnetic, with remote TM    | F, magnétique, avec TM distant                |
| F, ultrasonic                  | F, ultrasonique                               |
| F, variable                    | F, variable                                   |
| Mass flow meter                | Appareil de mesure de débit massique          |
| Variable micro flow            | Micro flux variable                           |
| LI, magnetic                   | LI, magnétique                                |
| LI measurement flanged         | Mesure LI à brides                            |
| LI displacer, sandwich, pipe   | LI piston auxiliaire, sandwich, conduit       |
| LI displacer, sandwich, vessel | LI piston auxiliaire, sandwich, récipient     |
| LI fork, radar, capacity, etc  | LI fourche, radar, capacité, etc.             |
| LI pilot with indicator        | LI pilote avec indicateur                     |
| LI direct, minus leg tubed     | LI direct, moins tronçon à tube               |
| TW installation check          | TW vérification de l'installation             |
| Sensors, miscellaneous         | Capteurs, divers                              |
| Local electrical device        | Appareil électrique local                     |
| Local push button              | Bouton poussoir local                         |
| T, local. ambient              | T, locale ambiante                            |
| Flame scanner                  | Viseur de flamme                              |
| L, radioactive, stripper       | L, radioactive, épuiseur                      |
| L, radioactive, reactor        | L, radioactive, réacteur                      |
| L, radioactive, vessel         | L, radioactive, récipient                     |
| TI, local                      | TI, local                                     |

| Anglais                              | Français                                 |
|--------------------------------------|------------------------------------------|
| TTM, one head                        | TTM, une tête                            |
| TTM, two heads                       | TTM, deux têtes                          |
| T, multi, with signal cable          | T, multiple, avec un câble signal        |
| T, multi, with home run cable        | T, multiple, avec colonne domotique      |
| T, thermocouples for flare           | T, thermocouples pour torche             |
| Actors, final check                  | Acteurs, vérification finale             |
| CV with positioner                   | CV avec positionneur                     |
| CV with positioner and FBS           | CV avec positionneur et FBS              |
| CV with positioner and SOL           | CV avec positionneur et SOL              |
| CV with tank, POS and FBS            | CV avec réservoir, POS et FBS            |
| XV with 5/2 solenoid and FBS         | XV avec solénoïde 5/2 et FBS             |
| EC014_ConstructionBill of Quantities | EC014_ Devis quantitatif de construction |

**Figure B.12 – EC014 cahier des charges du montage**

|              |                     |                   |
|--------------|---------------------|-------------------|
|              |                     |                   |
| Project No:  | Project No:         | Owner Project No: |
| Job Code:    | Job Code:           | Owner Job Code:   |
| Document No: | Owner Document No.: |                   |
|              |                     | Page 2 of 3       |

### Engineering specification for instrumentation

#### Process connections and measuring points

| Instrument tapping sizes                           |                         |                   |                                                       |
|----------------------------------------------------|-------------------------|-------------------|-------------------------------------------------------|
| Part 1 Connection on equipment                     |                         |                   |                                                       |
| Instrument type                                    | Equipment connection    | First block valve | Instrument connection                                 |
| <b>Pressure</b>                                    |                         |                   |                                                       |
| Pressure gauge / pressure switch                   | 1" nozzle               | 1"                | $\frac{1}{2}$ " male thread <sup>1)</sup>             |
| Diaphragm gauge / pressure switch                  | 2" nozzle               | 2"                | 2" flanged                                            |
| Pressure transmitter                               | 1" nozzle               | 1"                | $\frac{1}{2}$ " male thread <sup>1)</sup>             |
| Flanged pressure transmitter                       | 2" nozzle               | 2"                | 2" flanged                                            |
| Remote seal type pressure transmitter              | 2" nozzle               | 2"                | 2" wafer                                              |
| DP transmitter                                     | 1" nozzle               | 1"                | $\frac{1}{2}$ " (F) <sup>1)</sup>                     |
| Remote seal type DP transmitter                    | 3" nozzle <sup>3)</sup> | 3"                | 3" wafer <sup>3)</sup>                                |
| <b>Temperature</b>                                 |                         |                   |                                                       |
| Thermowell <sup>2)</sup>                           | 2" nozzle               | ---               | 2" flanged thermowell with $\frac{1}{2}$ " (F) thread |
| Gauge / RTD / thermocouple                         |                         |                   | $\frac{1}{2}$ " male thread                           |
| <b>Level</b>                                       |                         |                   |                                                       |
| Level gauges                                       | 1" nozzle               | 1"                | 1" flanged                                            |
| Magnetic level indicator                           | 2" nozzle               | 2"                | 2" flanged                                            |
| Level switch (external float switch, side mounted) | 1" nozzle               | 1"                | 1" flanged                                            |
| DP level transmitter                               | 1" nozzle               | 1"                | $\frac{1}{2}$ " (F) <sup>1)</sup>                     |
| Flanged level transmitter                          | 3" nozzle <sup>3)</sup> | 3" <sup>3)</sup>  | 3" flanged <sup>3)</sup>                              |
| Remote seal type level transmitter                 | 3" nozzle <sup>3)</sup> | 3" <sup>3)</sup>  | 3" wafer <sup>3)</sup>                                |
| Displacer level transmitter                        | 2" nozzle               | 2"                | 2" flanged                                            |
| Purge level transmitter                            | 1" nozzle               | $\frac{1}{2}$ "   | $\frac{1}{2}$ " (F) <sup>1)</sup>                     |
| Capacitive level transmitter                       | 2" nozzle               | ---               | 2" flanged                                            |
| Level switch (vibrating, capacitive)               | 2" nozzle               | ---               | 2" flanged                                            |
| Level switch (internal float)                      | 3" nozzle (min.)        | ---               | 3" flanged                                            |
| Stand pipe <sup>5)</sup>                           | 3" nozzle (min.)        | $\frac{1}{2}$ "   | ---                                                   |

|  |              |      |
|--|--------------|------|
|  | Doc. ID-Code | Rev. |
|  | ...          |      |

**Légende**

| Anglais                                            | Français                                                                  |
|----------------------------------------------------|---------------------------------------------------------------------------|
| Project no:                                        | N° du projet:                                                             |
| Owner project no:                                  | Maître d'ouvrage n°:                                                      |
| Job xode:                                          | Code tâche:                                                               |
| Owner job code                                     | Code tâche du propriétaire                                                |
| Document no:                                       | N° du document:                                                           |
| Owner document no.:                                | Propriétaire du document n°:                                              |
| Engineering specification for instrumentation      | Spécification d'ingénierie pour instruments de fonctionnement             |
| Process connections and measuring points           | Connexions des processus et points de mesure                              |
| Instrument tapping sizes                           | Dimensionnement des piquages d'instruments                                |
| Part 1 connection on equipment                     | Partie 1 connexion sur l'équipement                                       |
| Instrument type                                    | Type d'instrument                                                         |
| Equipment connection                               | Connexion de l'équipement                                                 |
| First block valve                                  | Première vanne de sectionnement                                           |
| Instrument connection                              | Connexion de l'instrument                                                 |
| Pressure                                           | Pression                                                                  |
| Pressure gauge / pressure switch                   | Manomètre / interrupteur à pression                                       |
| 1" nozzle                                          | Buse de 1" (1 pouce)                                                      |
| 1/2" male thread <sup>1)</sup>                     | Filetage mâle 1/2" <sup>1)</sup>                                          |
| Diaphragm gauge / pressure switch                  | Manomètre à membrane / interrupteur à pression                            |
| 2" nozzle                                          | Buse 2"                                                                   |
| 2" flanged                                         | 2" à brides                                                               |
| Pressure transmitter                               | Émetteur de pression                                                      |
| Flanged pressure transmitter                       | Émetteur de pression à brides                                             |
| Remote seal type pressure transmitter "            | Émetteur de pression de type scellement distant"                          |
| 2" wafer                                           | Galette 2"                                                                |
| DP transmitter                                     | DP émetteur                                                               |
| Remote seal type DP transmitter                    | Émetteur DP de type scellement distant                                    |
| 3" nozzle <sup>3)</sup>                            | Buse 3" <sup>3)</sup>                                                     |
| 3" wafer <sup>3)</sup>                             | Galette 3" <sup>3)</sup>                                                  |
| Temperature                                        | Température                                                               |
| Thermowell <sup>2)</sup>                           | Puits thermométrique <sup>2)</sup>                                        |
| 2" flanged thermowell with 1/2" (F) thread         | 2" Puits thermométrique à brides avec filetage 1/2" (F)                   |
| Gauge / RTD / thermocouple                         | Jauge / RTD / thermocouple                                                |
| 1/2" male thread                                   | 1/2" filetage mâle                                                        |
| Level                                              | Niveau                                                                    |
| Level gauges                                       | Jauges de niveau                                                          |
| 1" flanged                                         | 1" à brides                                                               |
| Magnetic level indicator                           | Indicateur de niveau magnétique                                           |
| Level switch (external float switch, side mounted) | Contacteur de niveau (interrupteur à flotteur externe, monté sur le côté) |



| Anglais                              | Français                                      |
|--------------------------------------|-----------------------------------------------|
| DP level transmitter                 | Émetteur de niveau DP                         |
| Flanged level transmitter            | Émetteur de niveau à brides                   |
| 3" nozzle <sup>3)</sup>              | buse 3" <sup>3)</sup>                         |
| 3" flanged <sup>3)</sup>             | 3" à brides <sup>3)</sup>                     |
| Remote seal type level transmitter   | Émetteur de niveau de type scellement distant |
| 3" wafer <sup>3)</sup>               | Galette 3" <sup>3)</sup>                      |
| Displacer level transmitter          | Émetteur de niveau du piston auxiliaire       |
| Purge level transmitter              | Émetteur de niveau de purge                   |
| Capacitive level transmitter         | Émetteur de niveau capacitif                  |
| Level switch (vibrating, capacitive) | Contacteur de niveau (vibrant, capacitif)     |
| Level switch (internal float)        | contacteur de niveau (flotteur interne)       |
| 3" nozzle (min)                      | Buse 3" (min)                                 |
| Stand pipe <sup>5)</sup>             | Colonne montante <sup>5)</sup>                |
| Rev.                                 | Révision                                      |

**Figure B.13 – EC015 spécification des connexions des processus PLT**

|              |                 |  |                      |  |           |     |
|--------------|-----------------|--|----------------------|--|-----------|-----|
| Company Logo | Site:           |  | Plant Complex:       |  | Building: |     |
|              | Process:        |  | Sub-Process:         |  | Page / of | 1/1 |
|              | Technical Item: |  | PCT Loop:            |  |           |     |
| Department   | PCT-Loop type   |  | Pressure transmitter |  |           |     |
| Version x.x  |                 |  |                      |  |           |     |

**Ex-i calculation sheet**  
Based on IEC 60079-11  
! Only valid for combinations with with one intrinsically-safe electrical apparatus !

| Explosion hazardous area classification | Zone | Explos.- Group | Temp. Class |
|-----------------------------------------|------|----------------|-------------|
|                                         | 1    | IIA            | T3          |

Vergleich der sicherheitsrelevanten Grenzwerte

| Intrinsically-safe electrical apparatus + cable             | Comparison | dedicated apparatus                     | Intrinsically safe? |     |
|-------------------------------------------------------------|------------|-----------------------------------------|---------------------|-----|
| U <sub>i</sub> (V)                                          | 40         | U <sub>0</sub> (V)                      | 27,6                | Yes |
| I <sub>i</sub> (mA)                                         | 100        | I <sub>0</sub> (mA)                     | 91                  | Yes |
| P <sub>i</sub> (mW)                                         | 2000       | P <sub>0</sub> (mW)                     | 630                 | Yes |
| L <sub>i</sub> - field device + L <sub>c</sub> cable (mH)   | 0,1        | L <sub>0</sub> (mH)                     | 3                   | Yes |
| C <sub>i</sub> - field device + C <sub>c</sub> - cable (nF) | 15         | C <sub>0</sub> (nF)                     | 83                  | Yes |
| Classification of the electrical circuit                    | Comparison | Explosion hazardous area classification | Certification ?     |     |
| Zone:                                                       | 1          | Zone:                                   | 1                   | Yes |
| Explos. - Group:                                            | IIC        | Explos. - Groupe:                       | IIA                 | Yes |
| T. - Class:                                                 | T4-T6      | T. - Class:                             | T3                  | Yes |

|                     |                    |                      |                                  |
|---------------------|--------------------|----------------------|----------------------------------|
| <b>Apparatus:</b>   | <b>Ex-i values</b> | <b>Manufacturer:</b> | XXX                              |
| U <sub>0</sub> (V)  | 27,6               | Type:                | 6ES7 134-7TD00-0AB0              |
| I <sub>0</sub> (mA) | 91                 | Attribute:           | II 2 G (1) GD EEx ib [ia] IIC T4 |
| P <sub>0</sub> (mW) | 630                | Conformity No.:      | KEMA 04 ATEX 1244                |
| L <sub>0</sub> (mH) | 3                  | Amendment No.:       |                                  |
| C <sub>0</sub> (nF) | 83                 | Ex.-Group:           | IIC                              |

|                          |     |                      |                     |
|--------------------------|-----|----------------------|---------------------|
| <b>Cable</b>             |     | <b>Manufacturer:</b> | XXX                 |
| L <sub>c</sub> (mH/100m) | 0,1 | Type:                | RD Y (St) Y 2x2x0,5 |
| C <sub>c</sub> (nF/100m) | 15  |                      |                     |
| Länge (m)                | 100 |                      |                     |

|                     |                    |                      |                      |
|---------------------|--------------------|----------------------|----------------------|
| <b>Apparatus:</b>   | <b>Ex-i values</b> | <b>Manufacturer:</b> | YYY                  |
| U <sub>i</sub> (V)  | 40                 | Type:                | BIB 562              |
| I <sub>i</sub> (mA) | 100                | Attribute:           | EEx ib d IIC T4-T6   |
| P <sub>i</sub> (mW) | 2000               | Conformity No.:      | PTB Nr. Ex-85.B.2007 |
| L <sub>i</sub> (mH) | 0 (ungefähr 0)     | Amendment No.:       |                      |
| C <sub>i</sub> (nF) | 0 (ungefähr 0)     | Zone:                | 1                    |
|                     |                    | Ex.-Group:           | IIC                  |
|                     |                    | T.-Class:            | T4-T6                |

**Comment:**

|             |  |                |  |           |  |            |
|-------------|--|----------------|--|-----------|--|------------|
| Name:       |  | Date:          |  | PCT Loop: |  | File Name: |
| Department: |  | Revision Date: |  | Revision: |  |            |
| Verified:   |  | Revision:      |  | Date:     |  |            |

**Légende**

| <b>Anglais</b>                                                                 | <b>Français</b>                                                                              |
|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Company logo department                                                        | Sigle de l'entreprise – département                                                          |
| Site:                                                                          | Site:                                                                                        |
| Plant complex:                                                                 | Complexe de l'installation:                                                                  |
| Building                                                                       | Bâtiment                                                                                     |
| Process:                                                                       | Processus:                                                                                   |
| Sub-Process                                                                    | Sous-processus                                                                               |
| Page /of                                                                       | Page /de                                                                                     |
| Technical Item::                                                               | Article technique::                                                                          |
| PCT loop                                                                       | Boucle PCT                                                                                   |
| PCT-loop type                                                                  | Type de boucle PCT                                                                           |
| Pressure transmitter                                                           | Émetteur de pression                                                                         |
| Version x.x                                                                    | Version x.x                                                                                  |
| Ex-i calculation sheet based on IEC 60079-11                                   | Feuille de calcul Ex-i sur la base de l' IEC 60079-11                                        |
| Only valid for combinations with one intrinsically-safe electrical apparatus ! | Uniquement valable pour les combinaisons avec un appareil électrique de sécurité intrinsèque |
| Explosion hazardous area classification                                        | Classification des zones dangereuses d'explosion                                             |
| Zone                                                                           | Zone                                                                                         |
| Explos.- group                                                                 | Groupe d'explosion                                                                           |
| Temp. class                                                                    | Classe de température                                                                        |
| Intrinsically-safe electrical apparatus + cable                                | Appareil électrique de sécurité intrinsèque + câble                                          |
| Comparison                                                                     | Comparaison                                                                                  |
| Dedicated apparatus                                                            | Appareillage dédié                                                                           |
| Intrinsically safe?                                                            | De sécurité intrinsèque?                                                                     |
| Yes                                                                            | Oui                                                                                          |
| Li – field device + Lc cable (mH)                                              | Li – appareil de terrain + câble Lc (mH)                                                     |
| Ci – field device + Cc cable (mF)                                              | Ci – appareil de terrain + câble Cc (mF)                                                     |
| Classification of the electrical circuit                                       | Classification du circuit électrique                                                         |
| Comparison                                                                     | Comparaison                                                                                  |
| Explosion hazardous area classification                                        | classification des zones dangereuses d'explosion                                             |
| Certification?                                                                 | Certification?                                                                               |
| Zone                                                                           | Zone                                                                                         |
| Explos. – group                                                                | Groupe d'explosion                                                                           |
| T. – class:                                                                    | T. – classe:                                                                                 |
| Apparatus:                                                                     | Appareillage:                                                                                |
| Ex-i values                                                                    | Valeurs Ex-i                                                                                 |
| Manufacturer:                                                                  | Fabricant:                                                                                   |
| Type:/                                                                         | Type:/                                                                                       |
| Attribute:                                                                     | Attribut:                                                                                    |
| Conformity no                                                                  | Conformité n°                                                                                |
| Amendment no.:                                                                 | Amendement n°.:                                                                              |

| Anglais            | Français            |
|--------------------|---------------------|
| Ex.-group:         | Groupe Ex:          |
| Non-hazardous area | Zone non dangereuse |
| Hazardous area     | Zone dangereuse     |
| Cable              | Câble               |
| Lc (mH/100m)       | Lc (mH/100m)        |
| Cc (mF/100m)       | Cc (mF/100m)        |
| Zone:              | Zone:               |
| Comment:           | Commentaire:        |
| Name               | Nom                 |
| Date               | Date                |
| PCT loop           | Boucle PCT          |
| File Name          | Nom du fichier      |
| Department:        | Département:        |
| Revision date      | Date de révision    |
| Revision:          | Révision:           |
| Verified:          | Vérifié:            |

**Figure B.14 – ED006 feuille de calcul Ex-i**

Rev.: 0, Dated at: XX.XX.XXXX

Printed at: 27/02/2012

| Heat Loss Calculation - UPS-Room                                                              |                                                                        |                    |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------|
| <b>UPS-System</b>                                                                             | Item No.: <b>UPS-1</b>                                                 | Location: MCC-Room |
| <b>Data:</b>                                                                                  | Rated Capacity                                                         | 150 kVA            |
|                                                                                               | Efficiency                                                             | 85 % *             |
| <b>Heat Loss Calculation:</b>                                                                 | Heat loss capacity = Rated Capacity * (1 - Efficiency)                 |                    |
|                                                                                               | <b>Total Heat loss capacity:</b>                                       | <b>22.5 kW</b>     |
| * efficiency of 85% due to the additional transformers at incoming outgoing of UPS considered |                                                                        |                    |
| <b>UPS-System</b>                                                                             | Item No.: <b>UPS-2</b>                                                 | Location: MCC-Room |
| <b>Data:</b>                                                                                  | Rated Capacity                                                         | 30 kVA             |
|                                                                                               | Efficiency                                                             | 85 %               |
| <b>Heat Loss Calculation:</b>                                                                 | Heat loss capacity = Rated Capacity * (1 - Efficiency)                 |                    |
|                                                                                               | <b>Total Heat loss capacity:</b>                                       | <b>4.5 kW</b>      |
| * efficiency of 85% due to the additional transformers at incoming outgoing of UPS considered |                                                                        |                    |
| <b>DC-System</b>                                                                              | Item No.: <b>DC-1</b>                                                  | Location: MCC-Room |
| <b>Data:</b>                                                                                  | Rated Capacity                                                         | 15 A               |
|                                                                                               | Efficiency                                                             | 85 %               |
|                                                                                               | Rated Voltage                                                          | 110 V              |
| <b>Heat Loss Calculation:</b>                                                                 | Heat loss capacity = Rated Capacity * Rated Voltage * (1 - Efficiency) |                    |
|                                                                                               | <b>Total Heat loss capacity:</b>                                       | <b>0.2475 kW</b>   |
| * efficiency of 85% due to the additional transformers at incoming of DC considered           |                                                                        |                    |
| <b>DC-System</b>                                                                              | Item No.: <b>DC-2</b>                                                  | Location: MCC-Room |
| <b>Data:</b>                                                                                  | Rated Capacity                                                         | 100 A              |
|                                                                                               | Efficiency                                                             | 85 %               |
|                                                                                               | Rated Voltage                                                          | 110 V              |
| <b>Heat Loss Calculation:</b>                                                                 | Heat loss capacity = Rated Capacity * Rated Voltage * (1 - Efficiency) |                    |
|                                                                                               | <b>Total Heat loss capacity:</b>                                       | <b>1.65 kW</b>     |
| * efficiency of 85% due to the additional transformers at incoming of DC considered           |                                                                        |                    |
| <b>GRAND TOTAL Heat Loss Capacity</b>                                                         | <b>UPS-Room</b>                                                        | <b>28.8975 kW</b>  |

**Légende**

| Anglais                                                                                        | Français                                                                                                                           |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Heat loss calculation – UPS-room                                                               | Calcul de la déperdition calorifique – salle UPS                                                                                   |
| UPS-system                                                                                     | Système UPS                                                                                                                        |
| Item no.: UPS-1                                                                                | Article n°:UPS-1                                                                                                                   |
| Location: MCC-room                                                                             | Emplacement: salle MCC                                                                                                             |
| Data:                                                                                          | Données:                                                                                                                           |
| Rated capacity 150 kVA                                                                         | Capacité assignée 150 kVA                                                                                                          |
| Efficiency 85 % *                                                                              | Efficacité 85 % *                                                                                                                  |
| Heat loss calculation: heat loss capacity = rated Capacity * (1 – efficiency)                  | Calcul de déperdition calorifique: capacité de la déperdition calorifique = capacité assignée * (1 – efficacité)                   |
| Total heat loss capacity: 22,5 kW                                                              | Capacité de la déperdition calorifique totale: 22,5 kW                                                                             |
| * Efficiency of 85 % due to the additional transformers at incoming outgoing of UPS considered | * Efficacité de 85 % en raison des transformateurs supplémentaires au niveau de l'entrée/sortie de l'UPS considéré                 |
| UPS-system                                                                                     | Système UPS                                                                                                                        |
| Item no.: UPS-2                                                                                | Article n°: UPS-2                                                                                                                  |
| Location: MCC-room                                                                             | Emplacement: salle MCC                                                                                                             |
| Data:                                                                                          | Données:                                                                                                                           |
| Rated capacity 30 kVA                                                                          | Capacité assignée 30 kVA                                                                                                           |
| Efficiency 85 %                                                                                | Efficacité 85 %                                                                                                                    |
| Heat loss calculation: heat loss capacity = rated capacity * (1 – efficiency)                  | Calcul de déperdition calorifique: capacité de la déperdition calorifique = capacité assignée * (1 – efficacité)                   |
| Total heat loss capacity: 4,5 kW                                                               | Capacité de la déperdition calorifique totale: 4,5 kW                                                                              |
| * Efficiency of 85 % due to the additional transformers at incoming outgoing of UPS considered | * Efficacité de 85 % en raison des transformateurs supplémentaires au niveau de l'entrée/sortie de l'UPS considéré                 |
| DCS-system                                                                                     | Système DCS                                                                                                                        |
| Item no.: DC-1                                                                                 | Article n°: DC-1                                                                                                                   |
| Location: MCC-room                                                                             | Emplacement: salle MCC                                                                                                             |
| Data:                                                                                          | Données:                                                                                                                           |
| Rated capacity 15 A                                                                            | Capacité assignée 15 A                                                                                                             |
| Efficiency 85 % *                                                                              | Efficacité 85 % *                                                                                                                  |
| Rated voltage 110 V                                                                            | Tension assignée 110 V                                                                                                             |
| Heat loss calculation: heat loss capacity = rated capacity * rated voltage *(1 – efficiency)   | Calcul de déperdition calorifique: capacité de la déperdition calorifique = capacité assignée * Tension assignée *(1 – efficacité) |
| Total heat loss capacity: 0,2475 kW                                                            | Capacité de la déperdition calorifique totale: 0,2475 kW                                                                           |
| Efficiency of 85% due to the additional transformers at incoming of DC considered              | Efficacité de 85% en raison des transformateurs supplémentaires au niveau de l'entrée du CC considéré                              |
| DCS-system                                                                                     | Système DCS                                                                                                                        |
| Item no.: DC-2                                                                                 | Article n°: DC-2                                                                                                                   |
| Location: MCC-room                                                                             | Emplacement: Salle MCC                                                                                                             |
| Data:                                                                                          | Données:                                                                                                                           |

| Anglais                                                                                      | Français                                                                                                                           |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Rated capacity 100 A                                                                         | Capacité assignée 100 A                                                                                                            |
| Efficiency 85 % *                                                                            | Efficacité 85 % *                                                                                                                  |
| Rated voltage 110 V                                                                          | Tension assignée 110 V                                                                                                             |
| Heat loss calculation: heat loss capacity = rated capacity * rated voltage *(1 – efficiency) | Calcul de déperdition calorifique: capacité de la déperdition calorifique = capacité assignée * tension assignée *(1 – efficacité) |
| Total heat loss capacity: 1,65 kW                                                            | Capacité de la déperdition calorifique totale: 1,65 kW                                                                             |
| Efficiency of 85% due to the additional transformers at incoming of DC considered            | Efficacité de 85% en raison des transformateurs supplémentaires au niveau de l'entrée du CC considéré                              |
| GRAND TOTAL Heat loss capacity                                                               | GRAND TOTAL Capacité de la déperdition calorifique                                                                                 |
| UPS-room                                                                                     | Salle UPS                                                                                                                          |

**Figure B.15 – ED007 inventaire des pertes de chaleur**





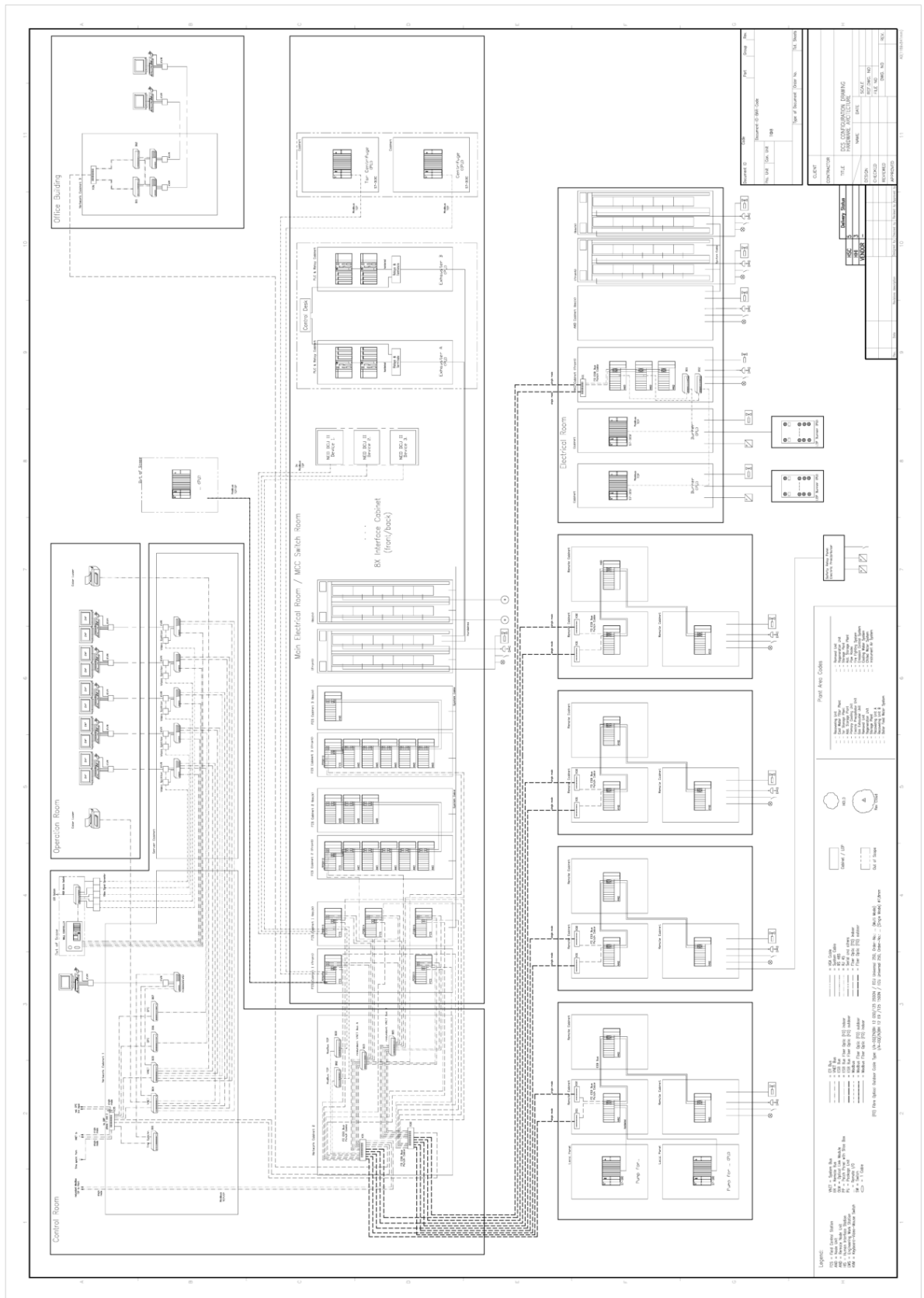
**Légende**

| <b>Anglais</b>                                             | <b>Français</b>                                                               |
|------------------------------------------------------------|-------------------------------------------------------------------------------|
| BUYER (ON HOLD)                                            | ACHETEUR (EN ATTENTE)                                                         |
| CONTRACTOR                                                 | ENTREPRENEUR                                                                  |
| Limit of engineering                                       | Limite d'ingénierie                                                           |
| Motor (up to) $\geq 160$ kW                                | Moteur (jusqu'à) $\geq 160$ kW                                                |
| Circuit breaker                                            | Disjoncteur                                                                   |
| Short circuit current relay thermal relay                  | Relais du courant de court-circuit – relais thermique                         |
| Contactor thermal relay                                    | Contacteur relais thermique                                                   |
| Fuse switch-disconnector (on-load isolating fuse switch)   | Fusible interrupteur-sectionneur (fusible interrupteur d'isolement en charge) |
| Switch-disconnector (on-load isolating switch)             | Interrupteur-sectionneur (interrupteur d'isolement en charge)                 |
| Miniature circuit breaker                                  | Disjoncteur miniature                                                         |
| Earth leakage circuit breaker                              | Disjoncteur à courant de défaut                                               |
| Earthing switch                                            | Interrupteur de mise à la terre                                               |
| Disconnecter (isolator)                                    | Sectionneur (isolateur)                                                       |
| Lightning arrestor (surgear)                               | Parafoudre                                                                    |
| Fuse                                                       | Fusible                                                                       |
| Fluorescent lamp                                           | Lampe fluorescente                                                            |
| Self contained emergency lighting luminaire                | Luminaire d'éclairage de secours indépendant                                  |
| Battery                                                    | Pile                                                                          |
| Reactive current compensation unit with/without controller | Unité de compensation de courant réactif avec / sans régulateur               |
| Diode limiter                                              | Limiteur à diode                                                              |
| Rectifier                                                  | Redresseur                                                                    |
| Battery charger                                            | Chargeur de pile                                                              |
| Converter with controller                                  | Convertisseur avec régulateur                                                 |
| Inverter                                                   | Onduleur                                                                      |
| AC / DC – transformer                                      | Transformateur c.a. / c.c.                                                    |
| Electronic switch                                          | Interrupteur électronique                                                     |
| Softstarter                                                | Démarrateur progressif                                                        |
| Insulation monitoring                                      | Surveillance de l'isolation                                                   |
| Over current relais                                        | Relai de surintensité                                                         |
| Short circuit current relais                               | Relai de courant de court-circuit                                             |
| Earth—failure relais                                       | Relai de Terre – défaillance                                                  |
| Short circuit current time relais                          | Relai retardé de courant de court-circuit                                     |
| Under voltage time relais                                  | Relai retardé de sous-tension                                                 |
| Over voltage time relais                                   | Relai retardé de surtension                                                   |
| Over voltage relais (earth-tailure)                        | Relai de surtension (terre-défaillance)                                       |
| Differential relais                                        | Relai différentiel                                                            |
| INT = interlocking                                         | INT = verrouillage                                                            |
| ATS = automatic transfer switch                            | ATS = commutateur de transfert automatique                                    |
| Automatic transfer switch with synchronisation check       | Commutateur de transfert automatique avec contrôle de la synchronisation      |
| Electronically programmable protection and                 | Protection électroniquement programmable et                                   |

| Anglais                                                                                        | Français                                                                                                               |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| control unit with bus connection                                                               | unité de commande avec le raccordement de bus                                                                          |
| Electronically programmable motor protection and control unit with bus connection              | Protection de moteur électroniquement programmable et unité de commande avec le raccordement de bus                    |
| Measuring-voltage transformer                                                                  | Mesure – transformateur de tension                                                                                     |
| Current transformer                                                                            | Transformateur de courant                                                                                              |
| Ammeter                                                                                        | Ampèremètre                                                                                                            |
| Voltmeter                                                                                      | Voltmètre                                                                                                              |
| Wattmeter                                                                                      | Wattmètre                                                                                                              |
| Cos phi meter                                                                                  | Appareil de mesure de cos phi                                                                                          |
| Frequency meter                                                                                | Fréquence-mètre                                                                                                        |
| Active power meter                                                                             | Appareil de mesure de la puissance active                                                                              |
| Reactive power meter                                                                           | Appareil de mesure de la puissance réactive                                                                            |
| Running — hour meter                                                                           | Horomètre                                                                                                              |
| Socket                                                                                         | Douille                                                                                                                |
| Sockets 380 V, 63 A                                                                            | Douilles 380 V, 63 A                                                                                                   |
| Generator                                                                                      | Générateur                                                                                                             |
| Motor                                                                                          | Moteur                                                                                                                 |
| Motor spare                                                                                    | Rechange moteur                                                                                                        |
| 2 Winding transformer                                                                          | 2 Transformateur à enroulements                                                                                        |
| Relay                                                                                          | Relai                                                                                                                  |
| (Number in the symbols indicates)                                                              | (Le numéro dans les symboles indique)                                                                                  |
| Thermal device                                                                                 | Appareil thermique                                                                                                     |
| Undervoltage relay                                                                             | Relais de sous-tension                                                                                                 |
| Instantaneous overcurrent relay                                                                | Relais de surintensité instantanée                                                                                     |
| Time delay overcurrent relay                                                                   | Relais de surintensité retardé                                                                                         |
| Liquid or gas pressure relay                                                                   | Relais de pression liquide ou de gaz                                                                                   |
| Bus bar duct                                                                                   | Conduit de barre omnibus                                                                                               |
| Drawable apparatus                                                                             | Appareillage pouvant être schématisé                                                                                   |
| Normally open / normally closed                                                                | Normalement ouvert / normalement fermé                                                                                 |
| Document ID                                                                                    | ID du document                                                                                                         |
| Code                                                                                           | Code                                                                                                                   |
| Part                                                                                           | Partie                                                                                                                 |
| Store location:                                                                                | Emplacement pour le stockage:                                                                                          |
| Document-ID-BAR-code                                                                           | Code à barres de l'ID du document                                                                                      |
| Store name                                                                                     | Nom du stockage                                                                                                        |
| Pro. unit                                                                                      | Pro. unité                                                                                                             |
| Con. unit                                                                                      | Con. unité                                                                                                             |
| Type of document                                                                               | Type de document                                                                                                       |
| Order no.                                                                                      | Commande n°                                                                                                            |
| Switchgear control and indication not shown in detail, detailed information during engineering | Commande d'appareillage de commutation et indication non détaillée, les informations détaillées seront lors de l'étude |
| HV-switchgear/LV-switchgear                                                                    | Appareillage de commutation HT/appareillage de commutation BT                                                          |
| Normal-lighting                                                                                | Éclairage normal                                                                                                       |

| Anglais                                                    | Français                                                     |
|------------------------------------------------------------|--------------------------------------------------------------|
| Emergency lighting                                         | Éclairage de secours                                         |
| Date                                                       | Date                                                         |
| Name                                                       | Nom                                                          |
| Drawn/prepared                                             | Dessiné/préparé                                              |
| Checked                                                    | Vérifié                                                      |
| Approved                                                   | Approuvé                                                     |
| Code                                                       | Code                                                         |
| Scale                                                      | Échelle                                                      |
| Status                                                     | Statut                                                       |
| Designation                                                | Désignation                                                  |
| PRELIMINARY SINGLE LINE DIAGRAM<br>ELECTRICAL POWER SUPPLY | ALIMENTATION ÉLECTRIQUE DU SCHÉMA<br>UNIFILAIRE PRÉLIMINAIRE |
| Consumer up to 250 kW                                      | Consommateur jusqu'à 250 kW                                  |
| Motors < 160 kW                                            | Moteurs < 160 kW                                             |
| Variable speed drives ≤250 kW                              | Variateurs de vitesse ≤250 kW                                |

**Figure B.16 – FA001 schéma unifilaire de la distribution de l'énergie**



**Légende**

| <b>Anglais</b>                                               | <b>Français</b>                                                               |
|--------------------------------------------------------------|-------------------------------------------------------------------------------|
| 3x Modbus TCP                                                | 3x Modbus TCP                                                                 |
| Network cabinet 1                                            | Armoire réseau 1                                                              |
| Network cabinet 2                                            | Armoire réseau 2                                                              |
| Network cabinet 3                                            | Armoire réseau 3                                                              |
| Time synchr                                                  | Synchronisation temporelle                                                    |
| Redundant ModBus TCP to plant                                | ModBus TCP redondant à l'installation                                         |
| Time synchr. from VNET to red. link OPC input                | Synchronisation temporelle de VNET vers L'entrée OPC de la liaison redondante |
| Single mode                                                  | Monomode                                                                      |
| To GRP phase 1 and 2                                         | vers GRP phase 1 et 2                                                         |
| FCS cabinet 3 (front)                                        | Armoire FCS 3 (avant)                                                         |
| FCS cabinet 3 (back)                                         | Armoire FCS 3 (arrière)                                                       |
| FCS cabinet 2 (front)                                        | Armoire FCS 2 (avant)                                                         |
| FCS cabinet 2 (back)                                         | Armoire FCS 2 (arrière)                                                       |
| FCS cabinet 1 (front)                                        | Armoire FCS 1 (avant)                                                         |
| FCS cabinet 1 (back)                                         | Armoire FCS 1 (arrière)                                                       |
| (front)                                                      | (avant)                                                                       |
| (back)                                                       | (arrière)                                                                     |
| NeoDCD II, device 3                                          | Ned DCD II, appareil 3                                                        |
| Ned DCD II, device 2                                         | Ned DCD II, appareil 2                                                        |
| Ned DCD II, device 1                                         | Ned DCD II, appareil 1                                                        |
| Video Splitter                                               | Répartiteur vidéo                                                             |
| ER bus                                                       | Bus ER                                                                        |
| VNET bus                                                     | Bus VNET                                                                      |
| ESB bus                                                      | Bus ESB                                                                       |
| ESB bus fibre optic (FO) indoor                              | Bus ESB fibre optique (FO) à l'intérieur                                      |
| ESB bus fibre optic (FO) outdoor                             | Bus ESB fibre optique (FO) à l'extérieur                                      |
| Modbus                                                       | Modbus                                                                        |
| Modbus fibre optic (FO) indoor                               | Modbus fibre optique (FO) à l'intérieur                                       |
| Modbus fibre optic (FO) outdoor                              | Modbus fibre optique (FO) à l'extérieur                                       |
| VGA Cable                                                    | Câble VGA                                                                     |
| System cable                                                 | Câble du système                                                              |
| RJ 45                                                        | RJ 45                                                                         |
| Serial and others                                            | Série et autres                                                               |
| FibreOptic (FO) indoor                                       | Fibre optique (FO) à l'intérieur                                              |
| Fibre optic (FO) outdoor                                     | Fibre optique (FO) à l'extérieur                                              |
| (FO) Fibre optical outdoor cable type                        | Type de câble fibre optique (FO) à l'extérieur                                |
| ECU universal 250, Order-no: ... (multi mode)                | ECU universel 250, commande n°: ... (multi-mode)                              |
| ECU universal 250, Order-no: ... (single mode) $\phi$ 7,8 mm | ECU universel 250, commande n°: ... (monomode) $\phi$ 7,8 mm                  |
| Local panel                                                  | Panneau local                                                                 |
| Single mode                                                  | Monomode                                                                      |

| Anglais                                         | Français                                                |
|-------------------------------------------------|---------------------------------------------------------|
| Removalunit                                     | Unité d'absorption                                      |
| Regeneration unit                               | Unité de régénération                                   |
| Storage plant                                   | Installation pour stockage                              |
| Add. storage plant                              | Autre Installation pour stockage                        |
| Pipe racks                                      | Baies des conduits                                      |
| Fire fighting system                            | Système de lutte contre l'incendie                      |
| Emission control system                         | Système antipollution                                   |
| Cooling water system                            | Circuit de refroidissement par eau                      |
| Chilled water wystem                            | Circuit d'eau réfrigérée                                |
| Instrument air system                           | Réseau air instrument                                   |
| Safety relay oanel                              | Panneau de relais de sécurité                           |
| Electric precipitator                           | Précipitateur électrique                                |
| LDP burner (PU)                                 | Brûleur LDP (PU)                                        |
| FD ESB bus patch cable                          | Cordon de raccordement pour Bus FD ESB                  |
| Remote cabinet                                  | Armoire distante                                        |
| Out of scope                                    | Hors du domaine d'application                           |
| Main electrical room/MCC swich room             | Salle électrique principale/salle de commutation MCC    |
| PLC & relay cabinet                             | Armoire PLC & relais                                    |
| Tar centrifuge (PU)                             | Centrifugeuse à goudron (PU)                            |
| Document ID                                     | ID du document                                          |
| Code                                            | Code                                                    |
| Part                                            | Partie                                                  |
| Document-ID-BAR-code                            | Code à barres de l'ID du document                       |
| Unit                                            | Unité                                                   |
| Type of document                                | Type de document                                        |
| Order no.                                       | Commande n°                                             |
| Client                                          | Client                                                  |
| Contractor                                      | Entrepreneur                                            |
| Title                                           | Fonction                                                |
| DCS CONFIGURATION DRAWING HARDWARE ARCHITECTURE | ARCHITECTURE MATÉRIELLE DU MONTAGE DE CONFIGURATION DCS |
| DESIGN                                          | CONCEPTION                                              |
| NAME                                            | NOM                                                     |
| DATE                                            | DATE                                                    |
| SCALE                                           | ÉCHELLE                                                 |
| REF. DWG. no.                                   | REF. SCHÉMA no.                                         |
| Name                                            | Nom                                                     |
| Date                                            | Date                                                    |
| CHECKED                                         | VÉRIFIÉ                                                 |
| REVIEWED                                        | RÉVISÉ                                                  |
| APPROVED                                        | APPROUVÉ                                                |
| FILE NO.                                        | FICHER N°                                               |
| DWG. NO.                                        | SCHÉMA N°                                               |
| Tot. sheets                                     | Total des feuilles                                      |

| Anglais                           | Français                               |
|-----------------------------------|----------------------------------------|
| Office building                   | Immeuble de bureaux                    |
| Relais & terminals                | Relais & terminaux                     |
| EXHAUSTER A (PU)                  | ÉVACUATEUR A (PU)                      |
| EXHAUSTER B (PU)                  | ÉVACUATEUR B (PU)                      |
| 8X interface cabinet (front/back) | Armoire à 8 interfaces (avant/arrière) |
| Burner (PU)                       | Brûleur (PU)                           |
| Wall controller                   | Contrôleurs de murs                    |
| Rgb matrix switch                 | Commutateur matriciel RVB              |
| LSD system                        | Système LSD                            |
| Video signal converter            | Convertisseur de signal vidéo          |
| Modbus TCP/IP                     | Modbus TCP/IP                          |
| Centrifuge ((PU)                  | Centrifugeuse ((PU)                    |

**Figure B.17 – FA002 schéma de structure SNCC, API**





**Légende**

| Anglais                                                                    | Français                                                                                                    |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| GENERAL NOTES:                                                             | NOTES GÉNÉRALES:                                                                                            |
| 1. CHARACTERISTIC DATA OF EQUIPMENT IS GIVEN IN THE EQUIPMENT LIST.        | 1. LES DONNÉES CARACTÉRISTIQUES DES ÉQUIPEMENTS SONT DONNÉES DANS LA LISTE D'ÉQUIPEMENTS.                   |
| 2. CHARACTERISTIC DATA OF DRIVES IS GIVEN IN THE ELECTRICAL CONSUMER LIST. | 2. LES DONNÉES CARACTÉRISTIQUES DES TRANSMISSIONS SONT DONNÉES DANS LA LISTE DES CONSOMMATEURS ÉLECTRIQUES. |
| MEDIUM PRESSURE STEAM                                                      | VAPEUR À PESSION MOYENNE                                                                                    |
| SEE PID UTILITIES DRAWING NO.50                                            | VOIR LE SCHÉMA FONCTIONNEL PID N° 50                                                                        |
| MEDIUM PRESSURE STEAM CONDENSATE                                           | CONDENSAT DE VAPEUR À PESSION MOYENNE                                                                       |
| SEE PID UTILITIES DRAWING NO.60                                            | VOIR LE SCHÉMA FONCTIONNEL PID N° 60                                                                        |
| COOLING WATER RETURN                                                       | RETOUR DE L'EAU DE REFROIDISSEMENT                                                                          |
| SEE PID UTILITIES DRAWING NO.30                                            | VOIR LE SCHÉMA FONCTIONNEL PID N° 30                                                                        |
| COOLING WATER SUPPLY                                                       | ALIMENTATION D'EAU DE REFROIDISSEMENT                                                                       |
| SEE PID UTILITIES DRAWING NO.20                                            | VOIR LE SCHÉMA FONCTIONNEL PID N° 20                                                                        |
| SEE PID UTILITIES DRAWING NO.80                                            | VOIR LE SCHÉMA FONCTIONNEL PID N° 80                                                                        |
| OILY WATER SEWER                                                           | ÉGOUT D'EAU MÉLANGÉE AUX HYDROCARBURES                                                                      |
| SEE PID UTILITIES DRAWING NO.70                                            | VOIR LE SCHÉMA FONCTIONNEL PID N° 70                                                                        |
| Document ID                                                                | ID du document                                                                                              |
| Code                                                                       | Code                                                                                                        |
| Part                                                                       | Partie                                                                                                      |
| Revision                                                                   | Révision                                                                                                    |
| Document-ID-BAR-code                                                       | Code à barres de l'ID du document                                                                           |
| Store location:                                                            | Emplacement pour le stockage:                                                                               |
| Store name                                                                 | Nom du stockage                                                                                             |
| Unit                                                                       | Unité                                                                                                       |
| Type of document                                                           | Type de document                                                                                            |
| Order no.                                                                  | Commande n°                                                                                                 |
| Tot. sheets                                                                | Total feuilles                                                                                              |
| Date                                                                       | Date                                                                                                        |
| Name                                                                       | Nom                                                                                                         |
| Designation                                                                | Désignation                                                                                                 |
| DISTILLATION COLUMN                                                        | COLONNE DE DISTILLATION                                                                                     |
| Drawn                                                                      | Dessiné                                                                                                     |
| Prepared                                                                   | Préparé                                                                                                     |
| Checked                                                                    | Vérifié                                                                                                     |
| Approved                                                                   | Approuvé                                                                                                    |
| Code                                                                       | Code                                                                                                        |
| Scale                                                                      | Échelle                                                                                                     |
| Status                                                                     | Statut                                                                                                      |
| NONE                                                                       | AUCUN                                                                                                       |
| Date                                                                       | Date                                                                                                        |

| Anglais              | Français                  |
|----------------------|---------------------------|
| Name                 | Nom                       |
| Drawn/prepared       | Dessiné/préparé           |
| Date                 | Date                      |
| Checked              | Vérifié                   |
| Approved             | Approuvé                  |
| Description          | Description               |
| Code                 | Code                      |
| P7603A/B BOTTOM PUMP | P7603A/B POMPE INFÉRIEURE |
| E7610 COOLER         | E7610 REFROIDISSEUR       |
| E7608 REBOILER       | E7608 REBOUILLEUR         |
| C7602 COLUMN         | C7602 COLONNE             |
| DIRECTLY FLANGED     | DIRECTEMENT BRIDÉ         |

**Figure B.18 – FB001 schéma instruments de fonctionnement et des conduites  
(schéma de fonctionnement R&I)**

# PLP DRUM LEVEL CONTROL (11HAD80DL001)

**Légende**

| Anglais                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Français                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LP DRUM LEVEL CONTROL (11HAD80DL001)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | CONTRÔLE DU NIVEAU DE TAMBOUR LP (11HAD80DL001)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>During operation the feed water flow to the boiler has to be adjusted in accordance with the generated steam flow. This will be done by means of controlling the boiler drum level, which balances the incoming feed water flow with the outgoing steam flow.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>Pendant le fonctionnement, le débit d'eau d'alimentation vers la chaudière doit être ajusté en fonction du flux de vapeur généré. Ceci se fera par des moyens de contrôle du niveau de batterie de la chaudière, ce qui équilibre le débit d'eau d'alimentation entrant avec le flux de vapeur sortant.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p>The drum level control generally compares the current value of drum level with its required level setpoint. Because of the typical dynamic behaviour of the drum level (e. g. increasing steam demand causes increasing drum level because of the decreasing steam pressure, which would entail an incorrect level control reaction), additionally to the level deviation a flow deviation is used dynamically between steam flow and feed water inlet flow (3-element control). But the flow deviation only can be activated if a minimum steam generation has been established. Cut in / cut out of the 3-element control function will be done automatically depending on the generated steam flow.</p> | <p>Le contrôle du niveau du tambour compare généralement la valeur courante de niveau tambour avec sa valeur de consigne de niveau requis. En raison du comportement dynamique typique du niveau de la batterie (par exemple, la demande croissante de vapeur provoque une augmentation du niveau du tambour en raison de la diminution de la pression de vapeur, ce qui entraînerait une réaction incorrecte de contrôle de niveau), en plus de la déviation de niveau, une déviation de flux est utilisée de façon dynamique entre le flux de vapeur et le flux d'entrée de l'eau d'alimentation (Contrôle à 3 éléments). Mais la déviation de flux ne peut être activée que si une génération minimale de vapeur a été établie. L'enclenchement ou l'arrêt de la fonction de commande à trois éléments sera faite automatiquement en fonction du débit de la vapeur générée.</p> |
| <p>During start-up a fill level respectively start level setpoint is switched on to ensure to accommodate the water swell of the evaporator during start-up within the permitted level limits of boiler drum. The setpoint variation during boiler start-up procedure is shown on sheet 3 (level setpoint '1 '). During establishing of the start-up level the drum level control is switched over to flow control for the fill flow until the start-up level has been met.</p>                                                                                                                                                                                                                               | <p>Lors du démarrage, un point de consigne de niveau de remplissage (respectivement de niveau de début) est activé pour s'assurer de prendre en charge la crue en eau de l'évaporateur pendant le démarrage dans les limites du niveau autorisé du corps de la chaudière. La variation du point de consigne pendant la procédure de démarrage de la chaudière est indiquée sur la feuille 3 (point de consigne de niveau '1 '). Pendant l'établissement du niveau de démarrage, le contrôle du niveau du tambour est commuté sur le contrôle de flux pour le flux de remplissage jusqu'à ce que le niveau de démarrage soit atteint.</p>                                                                                                                                                                                                                                            |
| <p>The total feed water flow to the boiler drum is limited to its maximum designed value by minimum selection. This limitation also is used temporarily in case of a load capability limitation, but at a lower flow level.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>Le débit total d'alimentation en eau vers le tambour de la chaudière est limité à sa valeur maximale de conception par la sélection minimale. Cette limitation est également utilisée momentanément dans le cas d'une limitation de la capacité de charge, mais à un niveau de débit plus faible.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p>During standstill of the plant the contained water within the condensate preheater (CPH) is locked between its inlet isolating valve and the boiler inlet valves to the LP drum. If during the standstill time and active controller the pressure of the locked water volume increases because of residual heat from the boiler into the CPH, the drum level control valve is opened temporarily to limit the pressure in the CPH to a certain margin below the lifting pressure of the CPH safety valve.</p>                                                                                                                                                                                              | <p>Pendant l'arrêt de l'installation, l'eau contenue dans le préchauffeur de condensat (CPH) est bloquée entre son robinet d'isolement d'admission et les soupapes d'admission de la chaudière vers le tambour LP. Si pendant le temps d'arrêt et l'activité du régulateur, la pression du volume d'eau bloquée augmente à cause de la chaleur résiduelle allant de la chaudière vers le CPH, la vanne de régulation du niveau du tambour est ouverte temporairement pour limiter la pression dans le CPH à une certaine marge en dessous de la pression de levée de la soupape de sécurité du CPH.</p>                                                                                                                                                                                                                                                                             |

| Anglais              | Français                  |
|----------------------|---------------------------|
| Check                | Vérification              |
| Index ~              | Indice ~                  |
| Modified             | Modifié                   |
| Date                 | Date                      |
| Name                 | Nom                       |
| Function description | Description des fonctions |

**Figure B.19 – FE001 description des fonctions**



**Légende**

| <b>Anglais</b> | <b>Français</b> |
|----------------|-----------------|
| PULSE          | IMPULSION       |
| AND            | AND             |
| NOT            | NOT             |
| OR             | OR              |
| IN             | ENTRÉE          |
| OUT            | SORTIE          |
| TIME           | TEMPS           |
| CLOSED         | FERMÉ           |
| Basic design   | Étude de base   |

**Figure B.20 – FF001 diagramme fonctionnel**

IEC



**Légende**

| Anglais                                                                                                              | Français                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LEGEND                                                                                                               | LÉGENDE                                                                                                                                                                           |
| Safety classification;                                                                                               | Classification de sécurité;                                                                                                                                                       |
| US = protection trips via DCS                                                                                        | US = déclenchement de la protection via DCS                                                                                                                                       |
| UZ = safety significant trips via HIMA safety PLC                                                                    | UZ = déclenchement important de la sécurité via le PLC de sécurité HIMA                                                                                                           |
| Legend:                                                                                                              | Légende:                                                                                                                                                                          |
| C = closed                                                                                                           | C = fermé                                                                                                                                                                         |
| O = open                                                                                                             | O = ouvert                                                                                                                                                                        |
| P = permissive to start / open, will not trip after start-up                                                         | P = permissif au démarrage / à l'ouverture, ne se déclenchera pas après le démarrage                                                                                              |
| S = stop                                                                                                             | S = stop                                                                                                                                                                          |
| R= run                                                                                                               | R= exécuter                                                                                                                                                                       |
| X = connection to function                                                                                           | X = connexion à la fonction                                                                                                                                                       |
| Note                                                                                                                 | Note                                                                                                                                                                              |
| Start-up bypass: if pump is not running, interlock is deactivated and will be activated 40 s after pump is running   | Tube de dérivation d'amorçage: si la pompe n'est pas en état de fonctionnement, le verrouillage est désactivé et sera activé 40 secondes après que la pompe est en fonctionnement |
| Close with falling edge, can be reopened                                                                             | Fermé avec le front descendant, peut être rouvert                                                                                                                                 |
| Alarm suppression                                                                                                    | Suppression de l'alarme                                                                                                                                                           |
| Tags related to this G-loop are named as YV, e.g YV2151, YVSH2161 or YVSL2161 belong to G2161                        | Les étiquettes liées à cette boucle G sont désignées comme YV, par exemple YV2151, YVSH2161 ou YVSL2161 appartiennent à G2161                                                     |
| If (AB21U0182 drain Absorber active OR AB21L01G2 SH activated) AND AB21M 2361 is running AB21Y0312 shall be closed   | Si (l'absorbeur de drainage AB21U0182 est actif OR AB21L01G2 SH est activé) ET AB21M 2361 fonctionne, alors AB21Y0312 doit être fermée                                            |
| If [AB21U0182 drain Absorber active ORAB21L0162 SH activated) AND AB21M2361 is NOT running AB21Y0312 shall be opened | Si (l'absorbeur de drainage AB21U0182 est actif OR AB21L0162 SH est activé) ET AB21M2361 NE fonctionne pas, alors AB21Y0312 doit être ouverte                                     |
| New cause & effect for LOS                                                                                           | Nouveau tableau cause & effet pour LOS                                                                                                                                            |
| COMMENTS                                                                                                             | COMMENTAIRES                                                                                                                                                                      |
| Tag is AB39YVSH 2161                                                                                                 | L'étiquette est AB39YVSH 2161                                                                                                                                                     |
| Tag is AB99YVSHI 2162                                                                                                | L'étiquette est AB99YVSHI 2162                                                                                                                                                    |
| Tag is AB89YVSH 2251                                                                                                 | L'étiquette est AB89YVSH 2251                                                                                                                                                     |
| Tag is ABB9YVSH 2262                                                                                                 | L'étiquette est ABB9YVSH 2262                                                                                                                                                     |
| Open interlock is prior to close interlock                                                                           | L'ouverture du verrouillage précède la fermeture du verrouillage                                                                                                                  |
| Breakdown means changing from run into stop                                                                          | La rupture signifie le changement de l'état exécution à l'état arrêt                                                                                                              |
| Process area                                                                                                         | Zone de processus                                                                                                                                                                 |
| Subprocess                                                                                                           | Sous-processus                                                                                                                                                                    |
| Description:                                                                                                         | Description:                                                                                                                                                                      |
| Building                                                                                                             | Bâtiment                                                                                                                                                                          |
| Business                                                                                                             | Métier                                                                                                                                                                            |
| Drawing no.                                                                                                          | Dessin n°                                                                                                                                                                         |

| Anglais                                          | Français                                                                 |
|--------------------------------------------------|--------------------------------------------------------------------------|
| AB89 product A absorbtion                        | AB89 absorption du produit A                                             |
| Industrial complex                               | Complexe industriel                                                      |
| Intended for site                                | Destiné au site                                                          |
| Somewhere                                        | Quelque part                                                             |
| Revised                                          | Révisé                                                                   |
| First issue                                      | Première émission                                                        |
| Gas outlet KA001 product A absorber              | Sortie de gaz KA001 absorbeur du produit A                               |
| x.x bar                                          | x.x bar                                                                  |
| Gas outlet KA001 product A absorber              | Sortie de gaz KA001 absorbeur du produit A                               |
| x.x bar                                          | x.x bar                                                                  |
| Overfill protection BA001 product A absorber     | Protection contre l'excès de métal BA001 absorbeur du produit A          |
| Binary                                           | Binaire                                                                  |
| BAQ03 product A solution dump vessel             | BAQ03 récipient de décharge de solution du produit A                     |
| x bar                                            | x bar                                                                    |
| Outlet valve PA001 product A solution pump       | Soupape d'évacuation – pompe de solution du produit A PA001              |
| Valve not opened                                 | Soupape non ouverte                                                      |
| Inlet valve PA001 product A solution pump        | Soupape d'introduction – pompe de solution du produit A PA001            |
| Valve not opened                                 | Soupape non ouverte                                                      |
| Dry run protection PA001 product A solution pump | Protection contre la marche à sec – pompe de solution du produit A PA001 |
| Binary                                           | Binaire                                                                  |
| Motor M2161 of PA001 product A solution pump     | Moteur M2161 de la pompe de solution du produit A PA001                  |
| Binary                                           | Binaire                                                                  |
| PA001 product A solution pump                    | Pompe de solution du produit A PA001                                     |
| Outlet Valve PA002 product A solution pump       | Soupape d'évacuation – pompe de solution du produit A PA002              |
| Valve not opened                                 | Soupape non ouverte                                                      |
| Inlet valve PA002 product A solution pump        | Soupape d'introduction – pompe de solution du Produit A PA002            |
| Valve not opened                                 | Soupape non ouverte                                                      |
| Dry run protection PA002 product A solution pump | Protection contre la marche à sec – pompe de solution du produit A PA002 |
| Binary                                           | Binaire                                                                  |
| Motor M2261 of PA002 product A solution pump     | Moteur M2261 de la pompe de solution du produit A PA002                  |
| Binary                                           | Binaire                                                                  |
| PA002 product A solution pump                    | Pompe de solution du produit A PA002                                     |
| Protection PA003 product A solution pump         | Protection – pompe de solution du produit A PA003                        |
| Dry run protection PA003 product A solution pump | Protection contre la marche à sec – pompe de solution du produit A PA003 |
| Binary                                           | Binaire                                                                  |
| Motor M2361 of PA003 product A solution pump     | Moteur M2361 de la pompe de solution du produit A PA003                  |

| Anglais                                            | Français                                                                       |
|----------------------------------------------------|--------------------------------------------------------------------------------|
| Binary                                             | Binaire                                                                        |
| PA003 product A solution pump                      | Pompe de solution du produit A PA003                                           |
| Protection PA004 product A solution pump           | Protection – pompe de solution du produit A PA004                              |
| Dry run protection PA004 product A solution pump   | Protection contre la marche à sec – pompe de solution du produit A PA004       |
| Binary                                             | Binaire                                                                        |
| Motor M2461 of PA004 product A solution pump       | Moteur M2461 de la pompe de solution du produit A PA004                        |
| Binary                                             | Binaire                                                                        |
| PA004 product A solution pump                      | Pompe de solution du produit A PA004                                           |
| Dump product A solution to dump vessel             | Solution de décharge du Produit A au récipient de décharge                     |
| Operator input                                     | Entrée opérateur                                                               |
| Outlet BA003 product A solution pump to PA001/2    | Conduite de dérivation – solution de décharge du Produit A BA003 au PA001/2    |
| Valve not opened                                   | Soupape non ouverte                                                            |
| Absorber to BA003 product A. sol. dump vessel      | Absorbeur au récipient de décharge de la solution du produit A BA003           |
| Closed                                             | Fermée                                                                         |
| Not closed                                         | Non fermée                                                                     |
| Control signal AB21Y0312                           | signal de commande AB21Y0312                                                   |
| Open                                               | Ouverte                                                                        |
| AB89Y0312 not opened and AB89Y0302 closed          | AB89Y0312 non ouverte et AB89Y0302 fermée                                      |
| Valves closed                                      | Soupapes fermées                                                               |
| PA003 product A sol. dump vessel pump              | Pompe de récipient de décharge de solution du produit A PA003                  |
| Running                                            | Fonctionne                                                                     |
| Product B -40 °C to KA001 product A absorber       | Produit B -40 °C à l'absorbeur du produit A KA001                              |
| x.x bar                                            | x.x bar                                                                        |
| Product A solution pumps not running               | Pompes de solution du produit A – ne fonctionnent pas                          |
| PA001/2 not running                                | PA001/2 ne fonctionne pas                                                      |
| Product A solution outlet BA001 product A absorber | Conduite de dérivation de solution du produit A – absorbeur du produit A BA001 |
| Valve not opened                                   | Soupape non ouverte                                                            |
| PA001 product A solution pump                      | Pompe de solution du produit A PA001                                           |
| Not running                                        | Ne fonctionne pas                                                              |
| PA002 product A solution pump                      | Pompe de solution du produit A PA002                                           |
| Not running                                        | Ne fonctionne pas                                                              |
| PA003 product A sol. dump vessel pump              | Pompe de récipient de décharge de solution du produit A PA003                  |
| Not running                                        | Ne fonctionne pas                                                              |
| Total plant shutdown                               | Arrêt total de l'installation                                                  |
| Total plant shutdown                               | Arrêt total de l'installation                                                  |
| Shutdown by DCS                                    | Arrêt par DCS                                                                  |
| Level high protection lean oil stripper column     | Colonne d'épuisement d'huile régénérée de                                      |

| Anglais                                               | Français                                                                                  |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------|
|                                                       | protection de niveau "haut"                                                               |
| Valves closed                                         | Soupapes fermées                                                                          |
| Level low protection lean oil stripper column         | Colonne d'épuisement de l'huile régénérée de protection de niveau "bas"                   |
| PA0005/6 not running                                  | PA0005/6 ne fonctionne pas                                                                |
| Level high protection lean oil stripper column        | Colonne d'épuisement de l'huile régénérée de protection de niveau "haut"                  |
| Binary                                                | Binaire                                                                                   |
| CAUSE & EFFECT MATRIX                                 | Tableau cause-effet                                                                       |
| 2010.09.19 new added for lean oil stripper            | 2010.09.19 nouvellement ajouté pour barboteur d'huile régénérée                           |
| Area                                                  | Zone                                                                                      |
| Unit                                                  | Unité                                                                                     |
| Tag no.                                               | N° de l'étiquette                                                                         |
| Func.                                                 | Fonction                                                                                  |
| SERVICE DESCRIPTION                                   | DESCRIPTION DE SERVICE                                                                    |
| TRIP POINT                                            | POINT DE DÉCLENCHEMENT                                                                    |
| FUNCTION                                              | Fonction                                                                                  |
| DELAY TIME (sec)                                      | TEMPS DE RETARD (sec)                                                                     |
| FAIL POSITION                                         | POSITION D'ÉCHEC                                                                          |
| TYPE                                                  | Type                                                                                      |
| CLASS                                                 | Classe                                                                                    |
| Total product A shutdown                              | Arrêt total du produit A                                                                  |
| Absorber to BA003 product A. sol. dump vessel         | Absorbeur au récipient de décharge de solution du produit A BA003                         |
| N2 to outlet BA003 product A. sol. dump vessel        | N2 vers récipient de décharge de solution du produit A BA003 de la conduite de dérivation |
| Offgas BA003pProduct A. sol. dump to L/O chiller      | Gaz désactivé – solution du produit A BA003 décharge au refroidisseur L/O                 |
| PA001 product A solution pump                         | Pompe de solution du produit A PA001                                                      |
| PA002 product A solution pump                         | Pompe de solution du produit A PA002                                                      |
| PA003 product A sol. dump vessel pump                 | Pompe de récipient de décharge de solution du produit A PA003                             |
| PA004 product A sol. dump vessel pump                 | Pompe de récipient de décharge de solution du produit A PA004                             |
| Outlet BA003 product A solution dump to PA001/2       | Solution du produit A BA003 de la conduite de dérivation, déchargée au PA001/2            |
| Product A solution outlet BA001 product A en absorber | Conduite de dérivation de solution du produit A – absorbeur du produit A en BA001         |
| MCB outlet BA002 absorber product B head vessel       | MCB conduite de dérivation – récipient principal du produit B BA002 de l'absorbeur        |
| Control signal ABB9Y0312                              | Signal de commande ABB9Y0312                                                              |
| Outlet PA001 product A solution pump                  | Pompe de solution du produit A PA001 de la conduite de dérivation                         |
| AB89Y03Q2 not closed and ABG9M2361 not running        | AB89Y03Q2 non fermée et ABG9M2361 ne fonctionne pas                                       |
| Motor switch for pump PA005                           | Contacteur de moteur pour pompe PA005                                                     |
| Motor switch for pump PA006                           | Contacteur de moteur pour pompe PA006                                                     |
| 20 barg steam on/off valve                            | Vapeur à 20 bar, soupape ouverte/fermée                                                   |

| Anglais                                                    | Français                                                                        |
|------------------------------------------------------------|---------------------------------------------------------------------------------|
| Control valve for the free flow to lean oil stripper       | Soupape de commande pour le flux libre vers le barboteur d'huile régénérée      |
| Control valve for the fresh product B to lean oil stripper | Soupape de commande pour le produit B frais vers le barboteur d'huile régénérée |
| Control valve for the flow to lean oil condenser           | Soupape de commande pour le flux vers le condenseur d'huile régénérée           |
| On/off valve for the flow to DS55WA002                     | Soupape ouverte/fermée pour le flux vers DS55WA002                              |
| INPUTS                                                     | ENTRÉES                                                                         |
| OUTPUTS                                                    | SORTIES                                                                         |

**Figure B.21 – FF002 tableau cause-effet**

| Loop identific.           |             | System                |               | Sub-system               |                      | I/O label           |                   | PI diagram            |      | Façade description |    | Calibration range [unit] |    | SIL class |    |
|---------------------------|-------------|-----------------------|---------------|--------------------------|----------------------|---------------------|-------------------|-----------------------|------|--------------------|----|--------------------------|----|-----------|----|
| 1                         | 2           | 3                     | 4             | 5                        | 6                    | 7                   | 8                 | 9                     | 10   | 11                 | 12 | 13                       | 14 | 15        | 16 |
| Loop identific.           | Realisation | Signal identification | Process group | Design class             | Explosion protection | Type of signal      | Signal rate       | Signal characteristic | Var. | R                  |    |                          |    |           |    |
| A7602                     | DCS         |                       |               | AQ7602                   | 14                   | Product to BL       |                   |                       |      |                    |    |                          |    |           |    |
| F7608                     | PV          |                       |               | Input standard           | EExi                 | analogue signal     | 4...20 mA HART    | Syst powered          |      |                    |    |                          |    |           |    |
| F7608                     | DCS         |                       |               | FT7608                   | 13                   | Heaves to BL        |                   | 0.0...500.0 mbar      |      |                    |    |                          |    |           |    |
| F7609                     | PV          |                       |               | Input standard           | EExi                 | analogue signal     | 4...20 mA HART    | Syst powered          |      |                    |    |                          |    |           |    |
| F7609                     | DCS         |                       |               | FT7609                   | 13                   | E7609 MF Steam in   |                   |                       |      |                    |    |                          |    |           |    |
| F7610                     | PV          |                       |               | Input standard           | EExi                 | analogue signal     | 4...20 mA HART    | Syst powered          |      |                    |    |                          |    |           |    |
| F7610                     | DCS         |                       |               | FT7610                   | 14                   | P7604 Min. flow     |                   |                       |      |                    |    |                          |    |           |    |
| F7612                     | PV          |                       |               | Input standard           | EExi                 | analogue signal     | 4...20 mA HART    | Syst powered          |      |                    |    |                          |    |           |    |
| F7612                     | DCS         |                       |               | FT7612                   | 14                   | C7602 Recycle       |                   |                       |      |                    |    |                          |    |           |    |
| F7613                     | PV          |                       |               | Input standard           | EExi                 | analogue signal     | 4...20 mA HART    | Syst powered          |      |                    |    |                          |    |           |    |
| F7613                     | DCS         |                       |               | FT7613                   | 14                   | Product to BL       |                   |                       |      |                    |    |                          |    |           |    |
| H7613                     | PV          |                       |               | Input standard           | EExi                 | analogue signal     | 4...20 mA HART    | Syst powered          |      |                    |    |                          |    |           |    |
| H7613                     | DCS         |                       |               | Input standard           | EExi                 | analogue signal     | 4...20 mA HART    | Syst powered          |      |                    |    |                          |    |           |    |
| H7615                     | L           |                       |               | Input standard           | EExi                 | binary signal       | contact pot. free |                       |      |                    |    |                          |    |           |    |
| H7615                     | DCS         |                       |               | Input standard           | EExi                 | P7603 On / Off      |                   |                       |      |                    |    |                          |    |           |    |
| H7615                     | H           |                       |               | Input standard           | EExi                 | binary signal       | contact pot. free |                       |      |                    |    |                          |    |           |    |
| H7615                     | DCS         |                       |               | Input standard           | EExi                 | P7603 On / Off      |                   |                       |      |                    |    |                          |    |           |    |
| H7619                     | L           |                       |               | Input standard           | EExi                 | binary signal       | contact pot. free |                       |      |                    |    |                          |    |           |    |
| H7619                     | DCS         |                       |               | Input standard           | EExi                 | P7604 Off           |                   |                       |      |                    |    |                          |    |           |    |
| H7620                     | L           |                       |               | Input standard           | EExi                 | binary signal       | contact pot. free |                       |      |                    |    |                          |    |           |    |
| H7620                     | DCS         |                       |               | Input standard           | EExi                 | P7604 Off           |                   |                       |      |                    |    |                          |    |           |    |
| H7621                     | L           |                       |               | Input standard           | EExi                 | binary signal       | contact pot. free |                       |      |                    |    |                          |    |           |    |
| H7621                     | DCS         |                       |               | Input standard           | EExi                 | P7604 On / Off      |                   |                       |      |                    |    |                          |    |           |    |
| H7621                     | L           |                       |               | Input standard           | EExi                 | binary signal       | contact pot. free |                       |      |                    |    |                          |    |           |    |
| H7621                     | DCS         |                       |               | Input standard           | EExi                 | P7604 On / Off      |                   |                       |      |                    |    |                          |    |           |    |
| L7604                     | H           |                       |               | Input standard           | EExi                 | binary signal       | contact pot. free |                       |      |                    |    |                          |    |           |    |
| L7604                     | DCS         |                       |               | Input standard           | EExi                 | C7602 Bottom        |                   |                       |      |                    |    |                          |    |           |    |
| L7605                     | PV          |                       |               | Input standard           | EExi                 | analogue signal     | 4...20 mA HART    | Syst powered          |      |                    |    |                          |    |           |    |
| L7605                     | DCS         |                       |               | Input standard           | EExi                 | D7603               |                   |                       |      |                    |    |                          |    |           |    |
| P7615                     | PV          |                       |               | Input standard           | EExi                 | analogue signal     | 4...20 mA HART    | Syst powered          |      |                    |    |                          |    |           |    |
| P7615                     | DCS         |                       |               | PT7615                   | 13                   | C7602 Top           |                   | bar a                 |      |                    |    |                          |    |           |    |
| P7616                     | PV          |                       |               | Input standard           | EExi                 | analogue signal     | 4...20 mA HART    | Syst powered          |      |                    |    |                          |    |           |    |
| P7616                     | DCS         |                       |               | PT7616                   | 13                   | C7602 upper section |                   | bar a                 |      |                    |    |                          |    |           |    |
| P7617                     | PV          |                       |               | Input standard           | EExi                 | analogue signal     | 4...20 mA HART    | Syst powered          |      |                    |    |                          |    |           |    |
| P7617                     | DCS         |                       |               | PT7617                   | 13                   | C7602 lower section |                   | bar a                 |      |                    |    |                          |    |           |    |
| P7617                     | PV          |                       |               | Input standard           | EExi                 | analogue signal     | 4...20 mA HART    | Syst powered          |      |                    |    |                          |    |           |    |
| IEC 62708 / Doc templates |             |                       |               |                          |                      |                     |                   |                       |      |                    |    |                          |    |           |    |
|                           |             |                       |               | Instrument specification |                      |                     |                   | Plant                 |      |                    |    | Realisation              |    |           |    |
|                           |             |                       |               | I/O signal list          |                      |                     |                   | DCS                   |      |                    |    |                          |    |           |    |
|                           |             |                       |               | Doc-ID: Code             |                      |                     |                   | Client Doc-ID         |      |                    |    | Page                     |    |           |    |
|                           |             |                       |               | R                        |                      |                     |                   | Date                  |      |                    |    | 2 / 5                    |    |           |    |

**Légende**

| <b>Anglais</b>           | <b>Français</b>                |
|--------------------------|--------------------------------|
| Loop identific.          | Identification de boucle       |
| Realization              | Réalisation                    |
| Requirement              | Exigence                       |
| System                   | Système                        |
| Signal identification    | Identification de signal       |
| Subsystem                | Sous-système                   |
| Process group            | Groupe de procédés             |
| I/O label                | Étiquette E/S                  |
| Design class             | Classe de conception           |
| PI diagram               | Diagramme PI                   |
| Explosion protection     | Protection contre l'explosion  |
| Faceplate description    | Description de la plaque avant |
| Type of signal           | Type de signal                 |
| Signal rate              | Débit signal                   |
| Calibration range [unit] | Plage de l'étalonnage [unité]  |
| Signal characteristic    | Caractéristique du signal      |
| SIL class                | Classe SIL                     |
| Var.                     | Var.                           |
| Input standard           | Norme d'entrée                 |
| Product to BL            | Produit au BL                  |
| Analog signal            | Signal analogique              |
| Binary signal            | Signal binaire                 |
| Heavies to BL            | Produits lourds au BL          |
| On                       | Activé                         |
| Off                      | Désactivé                      |
| E7608 MPsteam in         | E7608 MP vapeur entrante       |
| P7604 min flow           | P7604 flux min                 |
| C7602 recycle            | C7602 recyclage                |
| C7602 lower section      | C7602 section inférieure       |
| C7602 upper section      | C7602 section supérieure       |
| C7602 bottom             | C7602 bas                      |
| HART                     | HART                           |
| Syst. powered            | Système alimenté               |
| Contact pot. free        | Contact libre de potentiel     |
| Instrument specification | Spécification de l'instrument  |
| I/O signal list          | Liste des signaux E/S          |

**Figure B.22 – FP001 liste des signaux**





**Légende**

| <b>Anglais</b>                  | <b>Français</b>                                  |
|---------------------------------|--------------------------------------------------|
| Doc. no.                        | Document n°                                      |
| Revision                        | Révision                                         |
| Customer                        | Client                                           |
| End user                        | Utilisateur final                                |
| Rev                             | Révision                                         |
| Date                            | Date                                             |
| Engineering company             | Entreprise d'ingénierie                          |
| Client company                  | Entreprise client                                |
| Proj no.                        | Projet n°                                        |
| Project XXX                     | Projet XXX                                       |
| Title                           | Titre                                            |
| I/O assignment for company X    | Affectation E/S pour entreprise X                |
| Sub doc. no.                    | Sous document n°                                 |
| DSC I/O ASSIGNMENT              | AFFECTATION E/S DSC                              |
| Card slot                       | Position de carte                                |
| Card type                       | Type de carte                                    |
| DCS tag                         | Étiquette DCS                                    |
| Field tag                       | Étiquette du champ                               |
| Description                     | Description                                      |
| I/O type                        | Type E/S                                         |
| I/O range                       | Plage E/S                                        |
| Min range                       | Borne inf de la plage                            |
| Max range                       | Borne sup de la plage                            |
| Engg unit                       | Unité Engg                                       |
| Alarms                          | Alarmes                                          |
| Alarm req?                      | Demande d'alarme?                                |
| Alm priority                    | Alarme «priorité»                                |
| Alm L                           | Alarme L                                         |
| Hysteresis                      | Hystérésis                                       |
| Signal source                   | Signal source                                    |
| Remarks                         | Remarques                                        |
| 4-wire                          | 4-fils                                           |
| 2-wire                          | 2-fils                                           |
| Pump VA100 speed indication     | Pompe VA100 indication de la vitesse             |
| Pump VA200 speed indication     | Pompe VA200 indication de la vitesse             |
| WA100 speed indication          | WA100 indication de la vitesse                   |
| Pump DS20PA200 speed indication | Pompe DS20PA200 indication de la vitesse         |
| Pump VA100 speed set point      | Pompe VA100 valeur de consigne de la vitesse     |
| Pump VA200 speed set point      | Pompe VA200 valeur de consigne de la vitesse     |
| WA100 speed set point           | WA100 valeur de consigne de la vitesse           |
| Pump DS20PA2D0 speed set point  | Pompe DS20PA2D0 valeur de consigne de la vitesse |

| Anglais                                      | Français                                              |
|----------------------------------------------|-------------------------------------------------------|
| Steam 16 bar                                 | Vapeur 16 bar                                         |
| N2 from energy                               | N2 à partir de l'énergie                              |
| Potable water                                | Eau potable                                           |
| Condensate to external                       | Condensat vers l'extérieur                            |
| Compressed air                               | Air comprimé                                          |
| Instrument air                               | Air instrument                                        |
| SPARE                                        | RECHANGE                                              |
| VE200 running indication                     | VE200 indication d'exécution                          |
| VE200 fault indication                       | VE200 indication de panne                             |
| PA120 running indication                     | PA120 indication d'exécution                          |
| PA120 fault indication                       | PA120 indication de panne                             |
| Vacuum pump VA430 running indication         | Pompe à vide VA430 indication d'exécution             |
| Vacuum pump VA430 fault indication           | Pompe à vide VA430 indication de panne                |
| Agitator vessel CA20RA120 running indication | Cuve à agitateur CA20RA120 indication d'exécution     |
| Agitator vessel CA20RA12D fault indication   | Cuve à agitateur CA20RA12D indication de panne        |
| Agitator vessel CA20RA200 running indication | Cuve à agitateur CA20RA200 indication d'exécution     |
| Agitator vessel CA20RA20D fault indication   | Cuve à agitateur CA20RA20D indication de panne        |
| Agitator KF40RA110 running indication        | Agitateur KF40RA110 indication d'exécution            |
| Agitator KF40RA110 fault indication          | Agitateur KF40RA110 indication de panne               |
| Agitator KF40RA110 running indication        | Agitateur KF40RA110 indication d'exécution            |
| Agitator KF40RA11D fault indication          | Agitateur KF40RA11D indication de panne               |
| Agitator KF40RA120 running indication        | Agitateur KF40RA120 indication d'exécution            |
| Agitator KF40RA120 fault indication          | Agitateur KF40RA120 indication de panne               |
| Vacuum pump VA100 running indication         | Pompe à vide VA100 indication d'exécution             |
| Vacuum pump VA100 fault indication           | Pompe à vide VA100 indication de panne                |
| Agitator vessel CA20RA110 running indication | Cuve à agitateur CA20RA110 indication d'exécution     |
| Agitator vessel CA20RA110 fault indication   | Cuve à agitateur CA20RA110 indication de panne        |
| MPA Supply pump PA220 running indication     | MPA pompe d'alimentation PA220 indication d'exécution |
| MPA Supply pump PA220 fault indication       | MPA pompe d'alimentation PA220 indication de panne    |
| BA Supply pump PA320 running indication      | BA pompe d'alimentation PA320 indication d'exécution  |
| BA Supply pump PA320 fault indication        | BA pompe d'alimentation PA320 indication de panne     |
| Blank                                        | Vide                                                  |
| 24 VDC-interrogation                         | 24 Vcc-interrogation                                  |

Figure B.23 – FP002 liste des E/S

[illegible]

**Légende**

| <b>Anglais</b>      | <b>Français</b>                |
|---------------------|--------------------------------|
| Loop identific.     | Identification de boucle       |
| PID no.             | N° du PID                      |
| Service             | Service                        |
| Realisation         | Réalisation                    |
| Measuring range     | Plage de mesure                |
| Start               | Début                          |
| End                 | Fin                            |
| Signal              | Signal                         |
| Process             | Processus                      |
| Threshod value      | Valeur seuil                   |
| C7602 upper section | C7602 section supérieure       |
| C7602 lower section | C7602 section inférieure       |
| C7602 bottom        | C7602 dessous                  |
| E7609 condenser out | E7609 condenseur à l'extérieur |
| E7609 fan           | E7609 ventilateur              |
| C7602 top           | C7602 haut                     |
| P7603 off           | P7603 désactivé                |
| P7604 off           | P7604 désactivé                |
| P7604 on/off        | P7604 activé/désactivé         |
| P7603 on/off        | P7603 activé/ désactivé        |

**Figure B.24 – FQ001 liste des points de déclenchement**

|                             |                         |                              |
|-----------------------------|-------------------------|------------------------------|
| <b>##company<br/>logo##</b> | <b>#Project#</b>        | <b>##Customer<br/>logo##</b> |
|                             | Configuration parameter |                              |

**Parameter list****Tag: CP001****Flue gas pressure**

| Name                               | Value                    | Unit | Status |
|------------------------------------|--------------------------|------|--------|
| <b>Pressure P DS III</b>           |                          |      |        |
| » Identification                   |                          |      |        |
| » » Operation Unit                 |                          |      |        |
| TAG                                | CP001                    | -    | -      |
| Descriptor                         | FGD PD                   | -    | -      |
| Message                            | Flue gas pressure        | -    | -      |
| » » Device                         |                          |      |        |
| Manufacturer                       | #Company                 | -    | -      |
| Device Type                        | Pressure Trans           | -    | -      |
| HART Device ID                     | 0                        | -    | -      |
| Distributor                        | #Company                 | -    | -      |
| Device order number                |                          | -    | -      |
| Universal Revision                 | 5                        | -    | -      |
| Device Revision                    | 1                        | -    | -      |
| Software Revision                  | 1                        | -    | -      |
| Hardware Revision                  | 1                        | -    | -      |
| Final Assembly Number              | 1                        | -    | -      |
| Sensor Type                        | Differential (DP) PN 160 | -    | -      |
| Sensor Serial Number               | 0                        | -    | -      |
| Date                               | 01.04.2010               | -    | -      |
| » Input                            |                          |      |        |
| » » Unit and measuring Speed       |                          |      |        |
| Unit (Measured Value)              | mbar                     | -    | -      |
| Cycle time                         | 90 ms                    | -    | -      |
| » » Measuring Limits               |                          |      |        |
| Lower Value Min                    | -60,00                   | mbar | -      |
| Upper Value Max                    | 60,00                    | mbar | -      |
| Measuring Range Min                | 1,00                     | mbar | -      |
| » » Process Value Scale            |                          |      |        |
| Lower Value                        | 0,000                    | mbar | -      |
| Upper Value                        | 40,000                   | mbar | -      |
| » Output                           |                          |      |        |
| » » Analog Output                  |                          |      |        |
| » » » Limits                       |                          |      |        |
| Analog Output Lower Endpoint Value | 3,84                     | mA   | -      |
| Analog Output Upper Endpoint Value | 20,50                    | mA   | -      |
| » » » Alarm States                 |                          |      |        |
| Analog Output Alarm Type           | Low                      | -    | -      |
| Alarm LRV                          | 3,60                     | mA   | -      |
| Alarm URV                          | 22,80                    | mA   | -      |
| » » Damping                        |                          |      |        |
| Damping                            | 0,10                     | s    | -      |

**Légende**

| <b>Anglais</b>           | <b>Français</b>                  |
|--------------------------|----------------------------------|
| ##company logo##         | ##Sigle de l'entreprise##        |
| #Project#                | #Projet#                         |
| ## Customer logo##       | ## Sigle du client##             |
| Configuration parameter  | Paramètre de configuration       |
| Parameter list           | Liste des paramètres             |
| Tag: CP001               | Étiquette: CP001                 |
| Flue gas pressure        | Pression du gaz de carneau       |
| Name                     | Nom                              |
| Value                    | Valeur                           |
| Unit                     | Unité                            |
| Status                   | Statut                           |
| Pressure P DS            | Pression P DS                    |
| Identification           | Identification                   |
| Operation unit           | Unité de fonctionnement          |
| TAG                      | ÉTIQUETTE                        |
| Descriptor               | Descripteur                      |
| Message                  | Message                          |
| Flue gas pressure        | Pression du gaz de carneau       |
| Device                   | Appareil                         |
| Manufacturer             | Fabricant                        |
| #Company                 | #Entreprise                      |
| Device type              | Type d'appareil                  |
| Pressure trans           | Émetteur de pression             |
| HART device ID           | ID de l'appareil HART            |
| Distributor              | Distributeur                     |
| #Company                 | #Entreprise                      |
| Device order number      | Numéro de commande de l'appareil |
| Universal revision       | Révision universelle             |
| Device revision          | Révision de l'appareil           |
| Software revision        | Révision logicielle              |
| Hardware revision        | Révision matérielle              |
| Final assembly number    | Numéro de l'assemblage final     |
| Sensor type              | Type de capteur                  |
| Differential (DP) PN 160 | Différentiel (DP) PN 160         |
| Sensor serial number     | Numéro de série du capteur       |
| Date                     | Date                             |
| Input                    | Entrée                           |
| Unit and measure speed   | Unité et vitesse de mesure       |
| Unit (measured value)    | Unité (valeur mesurée)           |
| Cycle time               | Temps de cycle                   |
| Measuring limits         | Limites de mesure                |
| Lower value min          | Valeur inférieure min            |
| Upper value max          | Valeur supérieure max            |

| Anglais                            | Français                                                         |
|------------------------------------|------------------------------------------------------------------|
| Measuring range min                | Plage de mesure min                                              |
| Process value scale                | Échelle des valeurs de processus                                 |
| Lower value                        | Valeur inférieure                                                |
| Upper value                        | Valeur supérieure                                                |
| Output                             | Sortie                                                           |
| Analog output                      | Sortie analogique                                                |
| Limits                             | Limites                                                          |
| Analog output lower endpoint value | Valeur inférieure de point final relative à la sortie analogique |
| Analog output upper endpoint value | Valeur supérieure de point final relative à la sortie analogique |
| Alarm states                       | États de l'alarme                                                |
| Analog output alarm type           | Type d'alarme de la sortie analogique                            |
| Alarm LRV                          | Alarme LRV                                                       |
| Alarm URV                          | Alarme URV                                                       |
| Damping                            | Décharge                                                         |

**Figure B.25 – FQ002 liste des paramètres de configuration**





**Légende**

| <b>Anglais</b>                                            | <b>Français</b>                                                                 |
|-----------------------------------------------------------|---------------------------------------------------------------------------------|
| Field                                                     | Terrain                                                                         |
| Instrument room C76                                       | Salle d'instruments C76                                                         |
| Loc panel/PUJB                                            | Panneau local/PUJB                                                              |
| Field junction box                                        | Boîte de jonction de terrain                                                    |
| Marshalling cabinet, Eex i                                | Armoire de rassemblement, Eex i                                                 |
| Special cabinet                                           | Armoire spécial                                                                 |
| Marshalling cabinet, non EEx i                            | Armoire de rassemblement, non EEx i                                             |
| System cabinet                                            | Armoire système                                                                 |
| I/O level: P7615_PV                                       | Niveau E/S: P7615_PV                                                            |
| No spec                                                   | Aucune spécification                                                            |
| P+F dummy module                                          | P+F module fictif                                                               |
| No spec                                                   | Aucune spécification                                                            |
| For cabinet internal wiring refer to vendor documentation | Pour l'armoire, le câblage interne se réfère à la documentation du fournisseur  |
| For system internal wiring refer to vendor documentation  | Pour le système, le câblage interne se réfère à la documentation du fournisseur |
| Doc templates                                             | Modèles de documents                                                            |
| QSHA. no./ state of compl                                 | QSHA. n°/ déclaration de conformité                                             |
| C7602 top                                                 | C7602 en haut                                                                   |

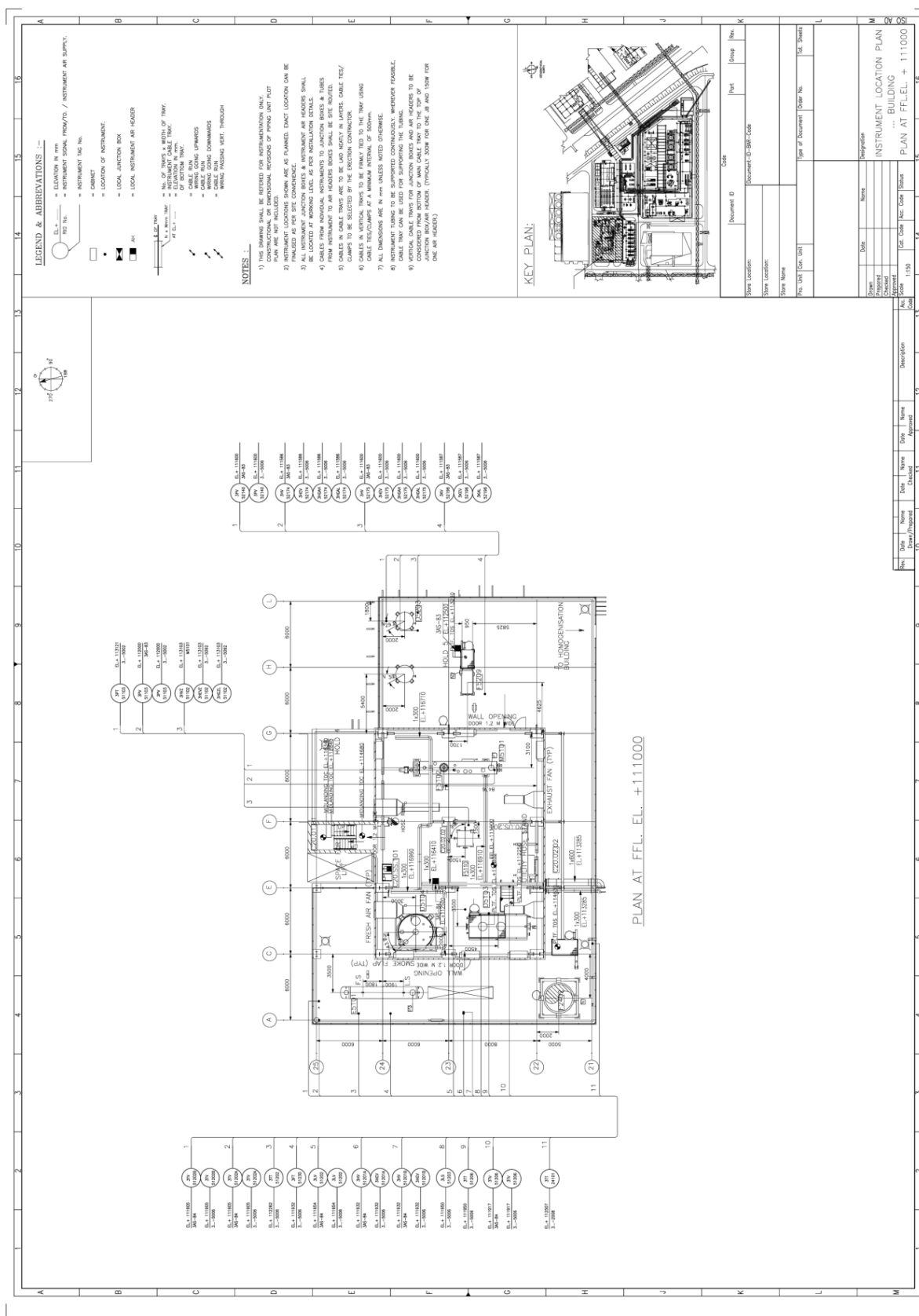
**Figure B.26 – FS002 schéma des boucles**



**Légende**

| <b>Anglais</b>    | <b>Français</b>        |
|-------------------|------------------------|
| Loc               | Emplacement            |
| Room              | Salle                  |
| Thin client       | Client léger           |
| Printer           | Imprimante             |
| Application       | Application            |
| MRP manager       | Gestionnaire MRP       |
| MRP client        | Client MRP             |
| Switch FEX        | Commutateur FEX        |
| CRSP router       | Routeur CRSP           |
| Server            | Serveur                |
| Automation server | Serveur d'automatation |

**Figure B.27 – FS003 plan des bus**

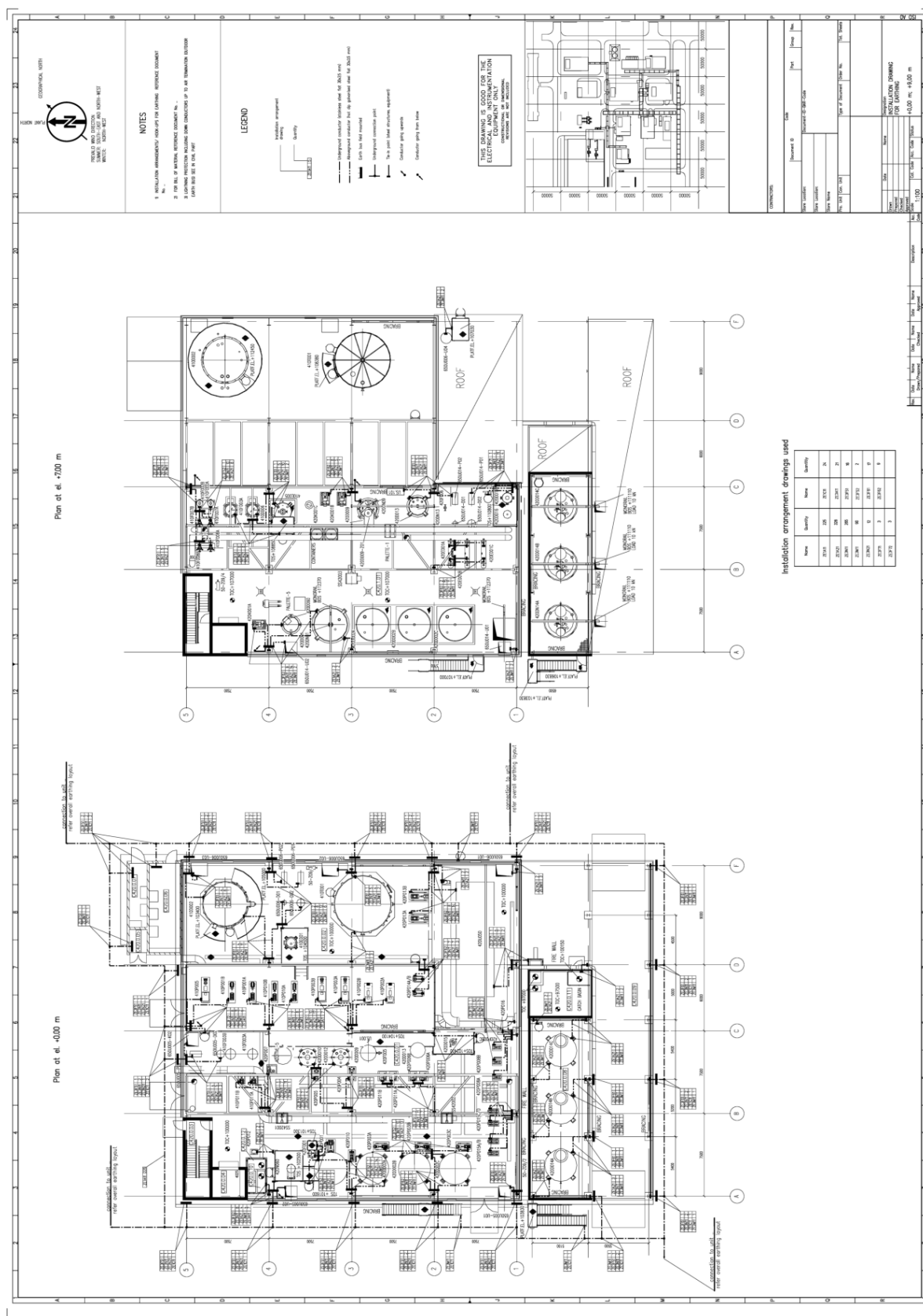


**Légende**

| Anglais                                                                                                                                       | Français                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LEGEND & ABBREVIATIONS                                                                                                                        | LÉGENDE ET ABRÉVIATIONS                                                                                                                                                                                       |
| = ELEVATION IN mm                                                                                                                             | = ÉLÉVATION EN mm                                                                                                                                                                                             |
| INSTRUMENT SIGNAL FROM/TO. / INSTRUMENT AIR SUPPLY.                                                                                           | SIGNAL DE L'INSTRUMENT DE/VERS / ALIMENTATION EN AIR DES INSTRUMENTS                                                                                                                                          |
| = INSTRUMENT TAG no.                                                                                                                          | = ÉTIQUETTE DE L'INSTRUMENT n°.                                                                                                                                                                               |
| = CABINET                                                                                                                                     | = ARMOIRE                                                                                                                                                                                                     |
| = LOCATION OF INSTRUMENT                                                                                                                      | = EMPLACEMENT DE L'INSTRUMENT                                                                                                                                                                                 |
| = LOCAL JUNCTION BOX                                                                                                                          | = BOÎTE DE JONCTION LOCALE                                                                                                                                                                                    |
| = LOCAL INSTRUMENT AIR HEADER                                                                                                                 | = DIRECTEUR D'AIR LOCAL DE L'INSTRUMENT                                                                                                                                                                       |
| = No. OF TRAYS × WIDTH OF TRAY.                                                                                                               | = N° DES CHEMINS DE CÂBLES × LARGEUR DU CHEMIN                                                                                                                                                                |
| = INSTRUMENT CABLE TRAY.                                                                                                                      | = CHEMIN DE CÂBLE DE L'INSTRUMENT                                                                                                                                                                             |
| = ELEVATION IN mm. OF BOTTOM TRAY.                                                                                                            | = ÉLÉVATION EN mm. DU CHEMIN EN BAS                                                                                                                                                                           |
| = CABLE RUN                                                                                                                                   | = CÂBLE EN FONCTIONNEMENT                                                                                                                                                                                     |
| WIRING GOING UPWARDS                                                                                                                          | CÂBLAGE ALLANT VERS LE HAUT                                                                                                                                                                                   |
| = CABLE RUN                                                                                                                                   | = CÂBLE EN FONCTIONNEMENT                                                                                                                                                                                     |
| WIRING GOING DOWNWARDS                                                                                                                        | CÂBLAGE ALLANT VERS LE BAS                                                                                                                                                                                    |
| = CABLE RUN                                                                                                                                   | = CÂBLE EN FONCTIONNEMENT                                                                                                                                                                                     |
| WIRING PASSING VERT. THROUGH                                                                                                                  | CÂBLAGE PASSANT LA VERTICALE                                                                                                                                                                                  |
| NOTES:                                                                                                                                        | NOTES:                                                                                                                                                                                                        |
| 1) THIS DRAWING SHALL BE REFERED FOR INSTRUMENTATION ONLY. CONSTRUCTIONAL OR DIMENSIONAL REVISIONS OF PIPING UNIT PLOT PLAN ARE NOT INCLUDED. | 1) CE DESSIN DOIT ÊTRE CONSIDÉRÉ POUR LES INSTRUMENTS DE FONCTIONNEMENT SEULEMENT. LES RÉVISIONS DIMENSIONNELLES OU DE CONSTRUCTION DU PLAN DE MISE SUR PIED DE L'UNITÉ DES TUYAUTERIES NE SONT PAS INCLUSES. |
| 2) INSTRUMENT LOCATIONS SHOWN ARE AS PLANNED. EXACT LOCATION CAN BE FINALISED AS PER SITE CONVENIENCE.                                        | 2) LES EMPLACEMENTS DES INSTRUMENTS PRÉSENTÉS SONT TELS QUE PLANIFIÉS. LE LIEU EXACT PEUT ÊTRE FINALISÉ SELON LA CONVENANCE DE CHAQUE SITE.                                                                   |
| 3) ALL INSTRUMENT JUNCTION BOXES AND INSTRUMENT AIR HEADERS SHALL BE LOCATED AT WORKING LEVEL AS PER INSTALLATION DETAILS.                    | 3) TOUTES LES BOÎTES DE JONCTION DES INSTRUMENTS ET TOUS LES DIRECTEURS D'AIR DES INSTRUMENTS DOIVENT ÊTRE SITUÉS AU NIVEAU DE TRAVAIL SELON LES DÉTAILS DE L'INSTALLATION.                                   |
| 4) CABLES FROM INDIVIDUAL INSTRUMENTS TO JUNCTION BOXES & TUBES FROM INSTRUMENT TO AIR HEADERS BOXES SHALL BE SITE ROUTED.                    | 4) LES CÂBLES ALLANT DES INSTRUMENTS INDIVIDUELS VERS LES BOÎTES DE JONCTION & LES TUBES ALLANT DES INSTRUMENTS VERS LES BOÎTES DE DIRECTEURS D'AIR DOIVENT ÊTRE ACHEMINÉS AU SITE.                           |
| 5) CABLES IN CABLE TRAYS ARE TO BE LAID NEATLY IN LAYERS. CABLE TIES/ CLAMPS TO BE SELECTED BY THE ERECTION CONTRACTOR.                       | 5) LES CÂBLES DANS LES CHEMINS DE CÂBLES DOIVENT ÊTRE POSÉS PARFAITEMENT EN COUCHES. LES ATTACHES / LES ÉTRIERS DE FIXATION DES CÂBLES DOIVENT ÊTRE SÉLECTIONNÉS PAR L'ENTREPRENEUR DU MONTAGE.               |
| 6) CABLES IN VERTICAL TRAYS TO BE FIRMLY TIED TO THE TRAY USING CABLE TIES/CLAMPS AT A MINIMUM INTERVAL OF 500 mm.                            | 6) LES CÂBLES DANS LES CHEMINS DE CÂBLE VERTICAUX DOIVENT ÊTRE FERMEMENT ATTACHÉS AU CHEMIN EN UTILISANT DES ATTACHES / DES ÉTRIERS DE FIXATION DE CÂBLES À UN INTERVALLE MINIMAL DE 500 mm.                  |

| Anglais                                                                                                                                                                                                      | Français                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7) ALL DIMENSIONS ARE IN mm UNLESS NOTED OTHERWISE.                                                                                                                                                          | 7) TOUTES LES DIMENSIONS SONT EN mm, SAUF INDICATION CONTRAIRE.                                                                                                                                                                                                                               |
| 8) INSTRUMENT TUBING TO BE SUPPORTED CONTINUOUSLY. WHEREVER FEASIBLE, CABLE TRAY CAN BE USED FOR SUPPORTING THE TUBING.                                                                                      | 8) LE TUBAGE D'INSTRUMENT DOIT ÊTRE PRIS EN CHARGE EN PERMANENCE. CHAQUE FOIS QUE POSSIBLE, LE CHEMIN DE CÂBLE PEUT ÊTRE UTILISÉ POUR PRENDRE EN CHARGE LE TUBAGE.                                                                                                                            |
| 9) VERTICAL CABLE TRAYS FOR JUNCTION BOXES AND AIR HEADERS TO BE CONSIDERED FROM BOTTOM OF MAIN CABLE TRAY TO THE TOP OF JUNCTION BOX/AIR HEADER. (TYPICALLY 300 W FOR ONE JB AND 150 W FOR ONE AIR HEADER.) | 9) LES CHEMINS DE CÂBLE VERTICAUX POUR LES BOÎTES DE JONCTION ET LES DIRECTEURS D'AIR DOIVENT ÊTRE CONSIDÉRÉS DU BAS DU CHEMIN DE CÂBLE PRINCIPAL JUSQU'EN HAUT DE LA BOÎTE DE JONCTION /DU DIRECTEUR D'AIR. (TYPIQUEMENT 300 W POUR UNE BOÎTE DE JONCTION ET 150 W POUR UN DIRECTEUR D'AIR.) |
| KEY PLAN                                                                                                                                                                                                     | PLAN DE MASSE                                                                                                                                                                                                                                                                                 |
| GEOGRAPHICAL NORTH                                                                                                                                                                                           | NORD GÉOGRAPHIQUE                                                                                                                                                                                                                                                                             |
| INSTRUMENT LOCATION PLAN ... BUILDING                                                                                                                                                                        | PLAN D'EMPLACEMENT D'INSTRUMENT... BÂTIMENT                                                                                                                                                                                                                                                   |
| PLAN AT FFL.EL. + 11 000                                                                                                                                                                                     | PLAN À FFL.EL. + 11 000                                                                                                                                                                                                                                                                       |
| WALL OPENING                                                                                                                                                                                                 | OUVERTURE DE MUR                                                                                                                                                                                                                                                                              |
| FRESH AIR FAN                                                                                                                                                                                                | VENTILATEUR D'AIR FRAIS                                                                                                                                                                                                                                                                       |
| SPACE FOR LIFT                                                                                                                                                                                               | ESPACE POUR APPAREIL DE LEVAGE                                                                                                                                                                                                                                                                |
| UTILITY HOSE                                                                                                                                                                                                 | TUYAU FLEXIBLE DE SERVICE                                                                                                                                                                                                                                                                     |
| DOOR 1,2 m WIDE                                                                                                                                                                                              | PORTE 1,2 m DE LARGEUR                                                                                                                                                                                                                                                                        |
| SMOKE FLAP                                                                                                                                                                                                   | AILERON DE FUMÉE                                                                                                                                                                                                                                                                              |
| EXHAUST FAN                                                                                                                                                                                                  | VENTILATEUR D'EXTRACTION                                                                                                                                                                                                                                                                      |
| MIDLANDING TOC                                                                                                                                                                                               | TOC DE PALIER INTERMÉDIAIRE                                                                                                                                                                                                                                                                   |
| TO HOMOGENISATION BUILDING                                                                                                                                                                                   | VERS LE BÂTIMENT D'HOMOGENÉISATION                                                                                                                                                                                                                                                            |

Figure B.28 – LD003 plan local ELI

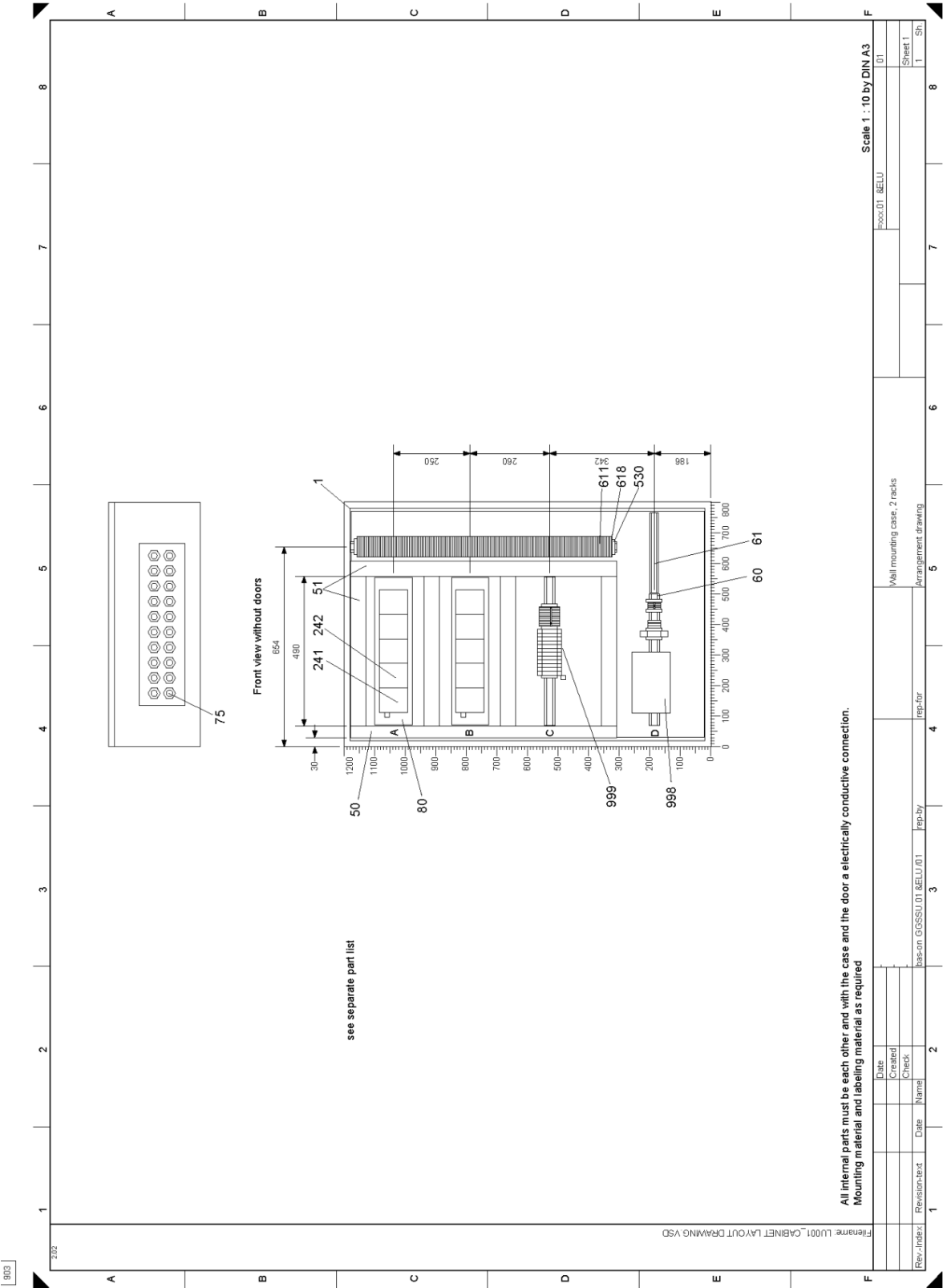


**Légende**

| Anglais                                                                                                       | Français                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| GEOGRAPHICAL NORTH                                                                                            | NORD GÉOGRAPHIQUE                                                                                                                             |
| PLANT NORTH                                                                                                   | NORD DE L'INSTALLATION                                                                                                                        |
| PREVALID WIND DIRECTION                                                                                       | SENS DU VENT PRÉVALIDÉ                                                                                                                        |
| SUMMER: SOUTH-EAST AND NORTH-WEST                                                                             | ÉTÉ: SUD-EST ET NORD-OUEST                                                                                                                    |
| WINTER: NORTH-WEST                                                                                            | HIVER: NORD-OUEST                                                                                                                             |
| NOTES                                                                                                         | NOTES                                                                                                                                         |
| 1) INSTALLATION ARRANGEMENTS/ HOOK-UPS FOR EARTHING REFERENCE DOCUMENT No. _                                  | 1) DISPOSITIONS / BRANCHEMENTS DE L'INSTALLATION POUR LA MISE À LA TERRE, DOCUMENT DE RÉFÉRENCE N° _                                          |
| 2) FOR BILL OF MATERIAL REFERENCE DOCUMENT No. _                                                              | 2) POUR LA NOMENCLATURE DES MATIÈRES, DOCUMENT DE RÉFÉRENCE N° _                                                                              |
| 3) LIGHTNING PROTECTION INCLUDING DOWN CONDUCTORS UP TO AIR TERMINATION (OUTDOOR EARTH BUS) SEE IN CIVIL PART | 3) PROTECTION CONTRE LA FOUDRE Y COMPRIS LES CONDUCTEURS DE DESCENTE JUSQU'À LA TERMINAISON D'AIR (BUS DE MASSE EXTÉRIEUR) VOIR PARTIE CIVILE |
| LEGEND                                                                                                        | LÉGENDE                                                                                                                                       |
| Installation arrangement drawing                                                                              | Plan d'installation                                                                                                                           |
| Quantity                                                                                                      | Quantité                                                                                                                                      |
| Underground conductor (stainless steel flat 30 mm × 3,5 mm)                                                   | Conducteur souterrain (acier inoxydable à plat 30 mm × 3,5 mm)                                                                                |
| Aboveground conductor (hot dip galvanised steel flat 30 mm × 3,5 mm)                                          | Conducteur de surface (immersion à chaud en acier galvanisé à plat 30 mm × 3,5 mm)                                                            |
| Earth bus field mounted                                                                                       | Terrain de bus de masse monté                                                                                                                 |
| Underground connection point                                                                                  | Point de connexion souterrain                                                                                                                 |
| Tie-in point (steel structures, equipment)                                                                    | Point de raccordement (structures en acier, équipement)                                                                                       |
| Conductor going upwards                                                                                       | Conducteurs allant vers le haut                                                                                                               |
| Conductor going from below                                                                                    | Conducteur partant du bas                                                                                                                     |
| THIS DRAWING IS GOOD FOR THE ELECTRICAL AND INSTRUMENTATION EQUIPMENT ONLY                                    | CE DESSIN EST APPROPRIÉ AUX ÉQUIPEMENTS ÉLECTRIQUES ET À INSTRUMENTS DE FONCTIONNEMENT SEULEMENT                                              |
| CONSTRUCTIONAL OR DIMENSIONAL REVISIONS ARE NOT INCLUDED                                                      | LES RÉVISIONS DE CONSTRUCTION OU DIMENSIONNELLES NE SONT PAS INCLUSES                                                                         |
| Installation arrangement drawings used                                                                        | Plans d'installation utilisés                                                                                                                 |
| Name                                                                                                          | Nom                                                                                                                                           |
| Quantity                                                                                                      | Quantité                                                                                                                                      |
| Designation                                                                                                   | Désignation                                                                                                                                   |
| INSTALLATION DRAWING FOR EARTHING                                                                             | SCHÉMA DU MONTAGE POUR LA MISE À LA TERRE                                                                                                     |
| ROOF                                                                                                          | TOIT                                                                                                                                          |
| BRACING                                                                                                       | ENTRETOISE                                                                                                                                    |
| MONORAIL                                                                                                      | MONORAIL                                                                                                                                      |
| LOAD                                                                                                          | CHARGE                                                                                                                                        |
| Connection to unit ... refer overall earthing layout                                                          | Connexion à l'unité ... se référer à la disposition générale de mise à la terre                                                               |
| FIRE WALL                                                                                                     | PARE-FEU                                                                                                                                      |

**Figure B.29 – LD006 plan d'installation**





**Légende**

| <b>Anglais</b>                                                                                                                                                 | <b>Français</b>                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Front view without doors                                                                                                                                       | Vue de face sans portes                                                                                                                                                                    |
| See separate part list                                                                                                                                         | Voir liste des pièces détachées                                                                                                                                                            |
| All internal parts must be each other and with the case and the door a electrically conductive connection. Mounting material and labeling material as required | Toutes les pièces internes doivent constituer chacune avec le boîtier et la porte une connexion électriquement conductrice. Matériel de montage et matériel d'étiquetage selon les besoins |
| Wall mounting case, 2 racks                                                                                                                                    | Boîtier de fixation murale, 2 baies                                                                                                                                                        |
| Arrangement drawing                                                                                                                                            | Plan d'installation                                                                                                                                                                        |
| Scale 1: 10 by DIN A3 01                                                                                                                                       | Échelle 1: 10 selon DIN A3 01                                                                                                                                                              |

**Figure B.30 – LU001 schéma de l'armoire**

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SAC@L1@L1Front

C76REX01

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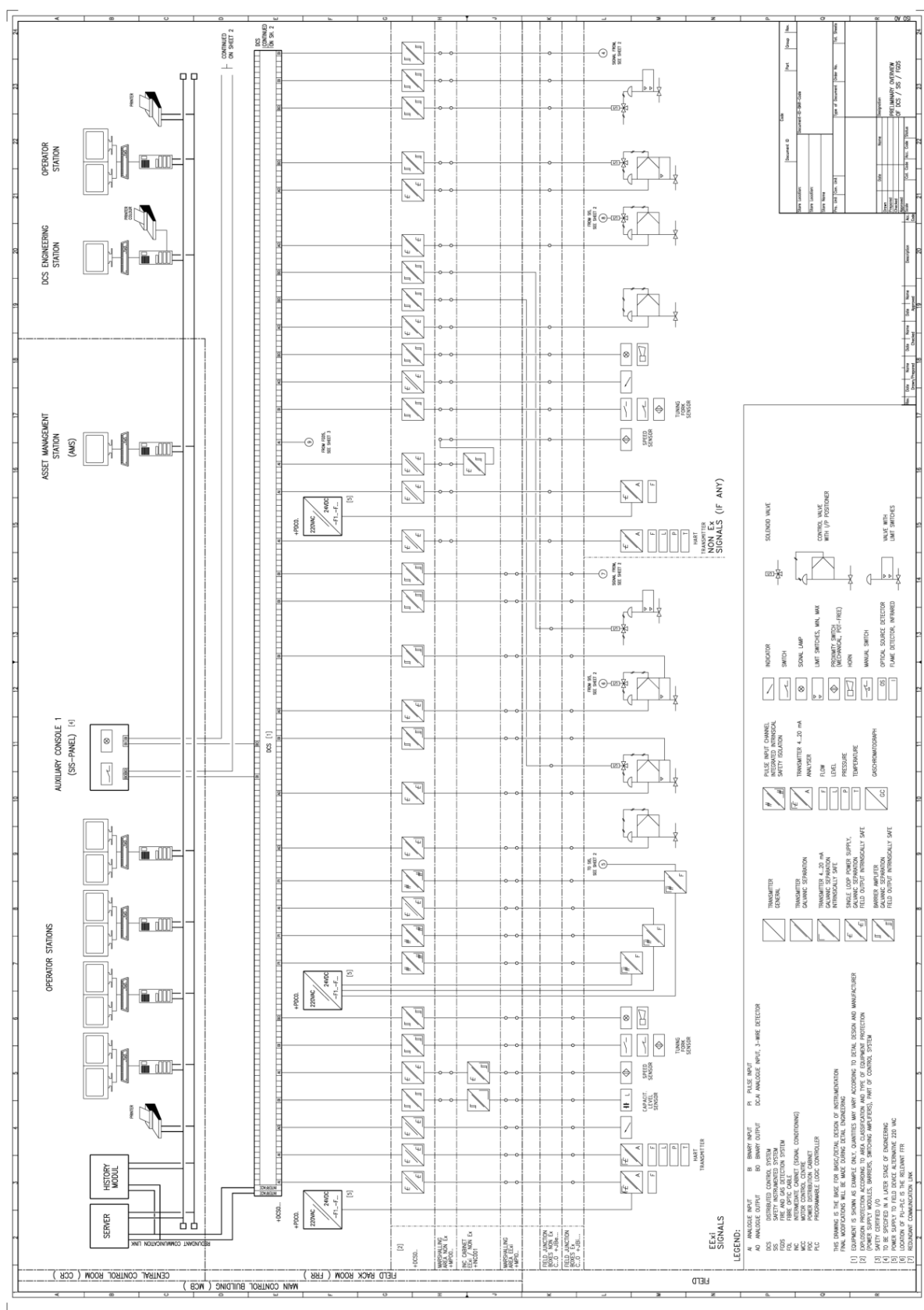
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**Légende**

| <b>Anglais</b>             | <b>Français</b>                |
|----------------------------|--------------------------------|
| Module                     | Module                         |
| Front                      | Avant                          |
| Cable-no. 01: C76REX01-W01 | Câble-n°. 01: C76REX01-W01     |
| IEC 62708 /doc templates   | IEC 62708 / modèles de doc     |
| Doc templates IEC 62708    | Modèles de documents IEC 62708 |

**Figure B.31 – MA001 schéma des bornes**



**Légende**

| Anglais                                         | Français                                                                       |
|-------------------------------------------------|--------------------------------------------------------------------------------|
| MAIN CONTROL BUILDING (MCB)                     | BÂTIMENT DE COMMANDE PRINCIPAL (MCB)                                           |
| FIELD RACK ROOM (FRR)                           | SALLE DE BAIES DE TERRAIN (FRR)                                                |
| CENTRAL CONTROL ROOM (CCR)                      | SALLE DE COMMANDE CENTRALE (CCR)                                               |
| REDUNDANT COMMUNICATION LINK                    | LIAISON DE COMMUNICATION REDONDANTE                                            |
| FIELD                                           | TERRAIN                                                                        |
| INTERFACE                                       | INTERFACE                                                                      |
| OPERATOR STATIONS AUXILIARY CONSOLE 1           | STATIONS OPÉRATEUR- PUPITRE DE COMMANDE AUXILIAIRE 1                           |
| ASSET MANAGEMENT                                | GESTION DES BIENS                                                              |
| DCS ENGINEERING STATION                         | STATION D'INGÉNIERIE DCS                                                       |
| OPERATOR STATION                                | STATION OPÉRATEUR                                                              |
| PRINTER                                         | IMPRIMANTE                                                                     |
| PRINTER COLOUR SERVER                           | SERVEUR D'IMPRIMANTE COULEUR                                                   |
| HISTORY MODULE                                  | MODULE D'HISTORIQUE                                                            |
| CONTINUED ON SHEET 2                            | SUITE SUR LA FEUILLE 2                                                         |
| DCS CONTINUED ON SH. 2                          | SUITE DCS SUR FEUILLE 2                                                        |
| FROM FGDS, SEE SHEET 3 MARSHALLING AREA NON Ex  | À PARTIR DU FGDS, VOIR FEUILLE 3, AIRE DE STATIONNEMENT DES CONTENEURS, NON Ex |
| INC CABINET EExi / NON Ex MARSHALLING AREA EExi | INC ARMOIRE EExi / NON Ex AIRE DE STATIONNEMENT DES CONTENEURS EExi            |
| FIELD JUNCTON BOXES NON Ex                      | BOÎTES DE JONCTION DE TERRAIN NON Ex                                           |
| FIELD JUNCTON BOXES Ex                          | BOÎTES DE JONCTION DE TERRAIN Ex                                               |
| TO SIS, SEE SHEET 2                             | VERS SIS, VOIR FEUILLE 2                                                       |
| FROM SIS, SEE SHEET 2 CAPACIT. LEVEL SENSOR     | À PARTIR DE SIS, VOIR FEUILLE 2 CAPTEUR DU NIVEAU DE CAPACITÉ                  |
| SPEED SENSOR                                    | CAPTEUR DE VITESSE                                                             |
| TUNING FORK SENSOR                              | CAPTEUR À DIAPASON                                                             |
| HART TRANSMITTER                                | ÉMETTEUR HART                                                                  |
| NON Ex SIGNALS (IF ANY)                         | SIGNAUX NON Ex (S'ILS EXISTENT)                                                |
| EExi SIGNALS LEGEND                             | LÉGENDE DES SIGNAUX EExi                                                       |
| AI ANALOGUE INPUT                               | AI ENTRÉE ANALOGIQUE                                                           |
| BI BINARY INPUT                                 | BI ENTRÉE BINAIRE                                                              |
| AO ANALOGUE OUTPUT                              | AO SORTIE ANALOGIQUE                                                           |
| BO BINARY OUTPUT                                | BO SORTIE BINAIRE                                                              |
| DCS DISTRIBUTED CONTROL SYSTEM                  | DCS SYSTÈME DE COMMANDE DISTRIBUÉ                                              |
| SIS SAFETY INSTRUMENTED SYSTEM                  | SIS SYSTÈME INSTRUMENTÉ DE SÉCURITÉ                                            |
| FGDS FIRE AND GAS DETECTION SYSTEM              | FGDS SYSTÈME DE DÉTECTION D'INCENDIE ET DE GAZ                                 |
| FOL FIBRE OPTIC CABLE                           | FOL CÂBLE EN FIBRE OPTIQUE                                                     |
| INC INTERMEDIATE CABINET (SIGNAL CONDITIONING)  | INC ARMOIRE INTERMÉDIAIRE (PRÉTRAITEMENT DES SIGNAUX)                          |
| MCC MOTOR CONTROL CENTRE                        | MCC CENTRE DE CONDUITE DES MOTEURS                                             |
| PDC POWER DISTRIBUTION CABINET                  | PDC ARMOIRE DE DISTRIBUTION DE                                                 |

| Anglais                                                                                                                                                                   | Français                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                           | PUISSANCE                                                                                                                                                                                                        |
| PLC PROGRAMMABLE LOGIC CONTROLLER                                                                                                                                         | PLC CONTRÔLEUR LOGIQUE PROGRAMMABLE                                                                                                                                                                              |
| PI PULSE INPUT                                                                                                                                                            | PI ENTRÉE D'IMPULSION                                                                                                                                                                                            |
| DC.AI ANALOGUE INPUT, 3-WIRE DETECTOR                                                                                                                                     | DC.AI ENTRÉE ANALOGIQUE, DÉTECTEUR À 3 FILS                                                                                                                                                                      |
| THIS DRAWING IS THE BASE FOR BASIC/DETAIL DESIGN OF INSTRUMENTATION. FINAL MODIFICATIONS WILL BE MADE DURING DETAIL ENGINEERING                                           | CE DESSIN CONSTITUE LA BASE POUR UNE CONCEPTION ÉLÉMENTAIRE/DÉTAILLÉE DES INSTRUMENTS DE FONCTIONNEMENT. LES MODIFICATIONS FINALES SERONT EFFECTUÉES PENDANT L'ÉTUDE DÉTAILLÉE                                   |
| [1] EQUIPMENT IS SHOWN AS EXAMPLE ONLY, QUANTITIES MAY VARY ACCORDING TO DETAIL DESIGN AND MANUFACTURER                                                                   | [1] L'ÉQUIPEMENT EST MONTRÉ À TITRE D'EXEMPLE SEULEMENT, LES QUANTITÉS PEUVENT VARIER SELON LA CONCEPTION DÉTAILLÉE ET SELON LE FABRICANT                                                                        |
| [2] EXPLOSION PROTECTION ACCORDING TO AREA CLASSIFICATION AND TYPE OF EQUIPMENT PROTECTION (POWER SUPPLY MODULES, BARRIERS, SWITCHING AMPLIFIERS), PART OF CONTROL SYSTEM | [2] PROTECTION CONTRE LES EXPLOSIONS SELON LA CLASSIFICATION DE ZONES ET LE TYPE DE PROTECTION DE L'ÉQUIPEMENT (MODULES D'ALIMENTATION, BARRIÈRES, AMPLIFICATEURS DE COMMUTATION), PARTIE DU SYSTÈME DE COMMANDE |
| [3] SAFETY CERTIFIED I/O                                                                                                                                                  | [3] CERTIFIÉ EN SÉCURITÉ I/O                                                                                                                                                                                     |
| [4] TO BE SPECIFIED IN A LATER STAGE OF ENGINEERING                                                                                                                       | [4] À SPÉCIFIER DANS UNE ÉTAPE ULTÉRIEURE DE L'ÉTUDE                                                                                                                                                             |
| [5] POWER SUPPLY TO FIELD DEVICE ALTERNATIVE 220 VAC                                                                                                                      | [5] ALIMENTATION ÉLECTRIQUE VERS L'APPAREIL DE TERRAIN: COURANT ALTERNATIF 220 VAC                                                                                                                               |
| [6] LOCATION OF PU-PLC IS THE RELEVANT FFR                                                                                                                                | [6] L'EMPLACEMENT DU PU-PLC EST LE FFR PERTINENT                                                                                                                                                                 |
| [7] REDUNDANT COMMUNICATION LINK                                                                                                                                          | [7] LIAISON DE COMMUNICATION REDONDANTE                                                                                                                                                                          |
| TRANSMITTER -GENERAL                                                                                                                                                      | ÉMETTEUR – GÉNÉRAL                                                                                                                                                                                               |
| TRANSMITTER GALVANIC SEPARATION                                                                                                                                           | ÉMETTEUR – SÉPARATION GALVANIQUE                                                                                                                                                                                 |
| TRANSMITTER 4...20 mA GALVANIC SEPARATION INTRINSICALLY SAFE                                                                                                              | ÉMETTEUR 4...20 mA SÉPARATION GALVANIQUE DE SÉCURITÉ INTRINSÈQUE                                                                                                                                                 |
| SINGLE LOOP POWER SUPPLY, GALVANIC SEPARATION, FIELD OUTPUT INTRINSICALLY SAFE                                                                                            | ALIMENTATION ÉLECTRIQUE À SIMPLE BOUCLE, SÉPARATION GALVANIQUE, SORTIE DE TERRAIN DE SÉCURITÉ INTRINSÈQUE                                                                                                        |
| BARRIER AMPLIFIER, GALVANIC SEPARATION, FIELD OUTPUT INTRINSICALLY SAFE                                                                                                   | AMPLIFICATEUR DE BARRIÈRE, SÉPARATION GALVANIQUE, SORTIE DE TERRAIN DE SÉCURITÉ INTRINSÈQUE                                                                                                                      |
| PULSE INPUT CHANNEL, INTEGRATED INTRINSICAL SAFETY ISOLATION                                                                                                              | VOIE D'ENTRÉE D'IMPULSION, ISOLATION INTÉGRÉE DE SÉCURITÉ INTRINSÈQUE                                                                                                                                            |
| TRANSMITTER 4...20 mA, ANALYSER                                                                                                                                           | ÉMETTEUR 4...20 mA, ANALYSEUR                                                                                                                                                                                    |
| FLOW                                                                                                                                                                      | FLUX                                                                                                                                                                                                             |
| LEVEL                                                                                                                                                                     | NIVEAU                                                                                                                                                                                                           |
| PRESSURE                                                                                                                                                                  | PRESSION                                                                                                                                                                                                         |
| TEMPERATURE                                                                                                                                                               | TEMPÉRATURE                                                                                                                                                                                                      |
| GAS CHROMATOGRAPH                                                                                                                                                         | CHROMATOGRAPHE EN PHASE GAZEUSE                                                                                                                                                                                  |
| INDICATOR                                                                                                                                                                 | INDICATEUR                                                                                                                                                                                                       |
| SWITCH                                                                                                                                                                    | INTERRUPTEUR                                                                                                                                                                                                     |
| SIGNAL LAMP                                                                                                                                                               | LAMPE DE SIGNALISATION                                                                                                                                                                                           |

| Anglais                                  | Français                                               |
|------------------------------------------|--------------------------------------------------------|
| LIMIT SWITCHES, MIN, MAX                 | INTERRUPTEURS DE FIN DE COURSE, MIN, MAX               |
| PROXIMITY SWITCH (MECHANICAL, POT-FREE)  | DÉTECTEUR DE PROXIMITÉ (MÉCANIQUE, LIBRE DE POTENTIEL) |
| HORN                                     | CORNE                                                  |
| MANUAL SWITCH                            | INTERRUPTEUR MANUEL                                    |
| OPTICAL SOURCE DETECTOR                  | DÉTECTEUR DE SOURCE OPTIQUE                            |
| FLAME DETECTOR, INFRARED                 | DÉTECTEUR DE FLAMME, INFRAROUGE                        |
| SOLENOID VALVE                           | ÉLECTROVANNE                                           |
| CONTROL VALVE WITH I/P POSITIONER        | SOUPAPE DE COMMANDE AVEC POSITIONNEUR I/P              |
| VALVE WITH LIMIT SWITCHES                | SOUPAPE AVEC INTERRUPTEURS DE FIN DE COURSE            |
| Designation                              | Désignation                                            |
| PRELIMINARY OVERVIEW OF DCS / SIS / FGDS | VUE D'ENSEMBLE PRÉLIMINAIRE DE DCS / SIS / FGDS        |

**Figure B.32 – MA003 plan de conception du câblage**



| Instrument Engineering<br>Cable list "Power Cable" |               |                       |                 |         |                     |              |       |          |        |          |  |  |
|----------------------------------------------------|---------------|-----------------------|-----------------|---------|---------------------|--------------|-------|----------|--------|----------|--|--|
| R                                                  |               | Doc ID Code           |                 | Datum   |                     | Name         |       | Code     |        | Unit     |  |  |
| 1                                                  | 2             | 3                     | 4               | 5       | 6                   | 7            | 8     | 9        | 10     | 11       |  |  |
| Item No.                                           | Cable No.     | From Equipment        | To Equipment    | Part No | Type of Cable       | Length       | Unit  | Supplier | Remark | Revision |  |  |
| 107                                                | SCP_5007.2    | C20+3_5007            | C50+3PDC02.X201 |         | NYCY 2x 2,5/2.5 mm² | 98 Meter     | New   |          |        | 0        |  |  |
| 108                                                | SCP_5021.2    | 3_5021                | C50+3PDC02.X201 |         | NYCY 2x 4/4 mm²     | 450 Meter    |       |          |        | 0        |  |  |
| 109                                                | SCP_5022.2    | 3_5022                | C50+3PDC02.X201 |         | NYCY 2x 4/4 mm²     | 450 Meter    |       |          |        | 0        |  |  |
| 110                                                | SCP_6001.2    | C12+3_6001            | C50+3PDC02.X201 |         | NYCY 2x 2,5/2.5 mm² | 132 Meter    |       |          |        | 0        |  |  |
| 111                                                | SCP_6002.2    | C40+3_6002            | C50+3PDC02.X201 |         | NYCY 2x 2,5/2.5 mm² | 50 Meter     |       |          |        | 0        |  |  |
| 112                                                | SCP_6003.2    | C12+3_6003            | C50+3PDC02.X201 |         | NYCY 2x 2,5/2.5 mm² | 78 Meter     |       |          |        | 0        |  |  |
| 113                                                | SCP_7001.2    | C12+3_7001            | C50+3PDC02.X201 |         | NYCY 2x 2,5/2.5 mm² | 135 Meter    |       |          |        | 0        |  |  |
| 114                                                |               | Server Cabinet        | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | Meter        | Spare |          |        | 0        |  |  |
| 115                                                |               | Aux Cabinet           | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 128 Meter    |       |          |        | 0        |  |  |
| 116                                                | SCP_0091.2    | C70+3_0091            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 93 Meter     |       |          |        | 0        |  |  |
| 117                                                | SCP_1091.2    | C11+3_1091            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 153 Meter    |       |          |        | 0        |  |  |
| 118                                                | SCP_2091.2    | C13+3_2091            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 101 Meter    |       |          |        | 0        |  |  |
| 119                                                | SCP_2092.2    | C13+3_2092            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 117 Meter    |       |          |        | 0        |  |  |
| 120                                                | SCP_3091.2    | C12+3_3091            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 132 Meter    |       |          |        | 0        |  |  |
| 121                                                | SCP_3092.2    | C12+3_3092            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 142 Meter    |       |          |        | 0        |  |  |
| 122                                                | SCP_4091.2    | 3_4091                | C50+3PDC02.X301 |         | NYCY 2x 4/4 mm²     | 430 Meter    | OSBL  |          |        | 0        |  |  |
| 123                                                | SCP_5091.2    | C20+3_5091            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 75 Meter     |       |          |        | 0        |  |  |
| 124                                                | SCP_5092.2    | C20+3_5092            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 82 Meter     |       |          |        | 0        |  |  |
| 125                                                | SCP_6091.2    | C40+3_6091            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 95 Meter     |       |          |        | 0        |  |  |
| 126                                                | SCP_6092.2    | 3_6092                | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 50 Meter     |       |          |        | 0        |  |  |
| 127                                                | SCP_7091.2    | C12+3_7091            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | HOLD         | Meter | Deleted  |        | 0        |  |  |
| 128                                                | SCP_8901.2    | C13+3_8901            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 142 Meter    |       |          |        | 0        |  |  |
| 129                                                | SCP_9904.2    | C50+3_9904            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 176 Meter    |       |          |        | 0        |  |  |
| 130                                                | SCP_9903.2    | C50+3_9903            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 60 Meter     |       |          |        | 0        |  |  |
| 131                                                | SCP_9992.2    | C50+3_9992            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 40 Meter     |       |          |        | 0        |  |  |
| 132                                                | SCP_9993.2    | C50+3_9993            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 60 Meter     |       |          |        | 0        |  |  |
| 133                                                | SCP_9991.2    | C50+3_9991            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 60 Meter     |       |          |        | 0        |  |  |
| 134                                                | SCP_DCS01.2   | C50+3DCS01            | C50+3PDC02.X301 |         | NYCY 2x 2,5/2.5 mm² | 40 Meter     |       |          |        | 0        |  |  |
| 135                                                | SCP_LCT1.1    | 3-LCC-1               | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | 40 Meter     |       |          |        | 0        |  |  |
| 136                                                |               | MES Interface OPC ENG | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | Meter        | Spare |          |        | 0        |  |  |
| 137                                                | SCP_C50 X04.1 | C50-B01-X04           | C50+3PDC03.X201 |         | NYCY 2x 2,5/2.5 mm² | 40 Meter     |       |          |        | 0        |  |  |
| 138                                                | SCP_C50 X03.1 | C50-B01-X03           | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | 40 Meter     |       |          |        | 0        |  |  |
| 139                                                |               | Smart MCC EWS Eng     | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | Meter        | Spare |          |        | 0        |  |  |
| 140                                                | SCP_C50 X02.1 | C50-B01-X02           | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | 40 Meter     |       |          |        | 0        |  |  |
| 141                                                | SCP_FT00104   | 3F T00104             | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | 40 Meter     |       |          |        | 0        |  |  |
| 142                                                | SCP_FT00111   | 3F T00111             | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | 113 Meter    |       |          |        | 0        |  |  |
| 143                                                | SCP_FT00125   | 3F T00125             | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | 113 Meter    |       |          |        | 0        |  |  |
| 144                                                | SCP_FT00126   | 3F T00126             | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | 90 Meter     |       |          |        | 0        |  |  |
| 145                                                | SCP_FT00127   | 3F T00127             | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | 113 Meter    |       |          |        | 0        |  |  |
| 146                                                | SCP_FT00128   | 3F T00128             | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | 90 Meter     |       |          |        | 0        |  |  |
| 147                                                | SCP_FT00141   | 3F T00141             | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | BY BES Meter | OSBL  |          |        | 0        |  |  |
| 148                                                | SCP_FTT11301  | 3F T11301             | C50+3PDC03.X101 |         | NYCY 2x 2,5/2.5 mm² | 160 Meter    |       |          |        | 0        |  |  |
| 149                                                | SCP_LCT3.1    | 3-LCT-3               | C50+3PDC03.X201 |         | NYCY 2x 2,5/2.5 mm² | 40 Meter     |       |          |        | 0        |  |  |
| 150                                                |               | Op Station            | C50+3PDC03.X201 |         | NYCY 2x 2,5/2.5 mm² | 118 Meter    |       |          |        | 0        |  |  |
| 151                                                |               |                       | C50+3PDC03.X201 |         | NYCY 2x 2,5/2.5 mm² | 141 Meter    |       |          |        | 0        |  |  |
| 152                                                | SCP_ANA23.1   | SANA23.X01            | C50+3PDC03.X201 |         | NYCY 2x 2,5/2.5 mm² | 133 Meter    |       |          |        | 0        |  |  |
| 153                                                | SCP_ANA24.1   | SANA24.X01            | C50+3PDC03.X201 |         | NYCY 2x 2,5/2.5 mm² | 110 Meter    |       |          |        | 0        |  |  |
| 154                                                | SCP_ANA25.1   | SANA25.X01            | C50+3PDC03.X201 |         | NYCY 2x 2,5/2.5 mm² | 0            |       |          |        | 0        |  |  |
| 155                                                | SCP_ANA26.1   | SANA26.X01            | C50+3PDC03.X201 |         | NYCY 2x 2,5/2.5 mm² | 171 Meter    |       |          |        | 0        |  |  |
| 156                                                | SCP_FTT1302   | 3F T11302             | C50+3PDC03.X201 |         | NYCY 2x 2,5/2.5 mm² | 133 Meter    |       |          |        | 0        |  |  |
| 157                                                | SCP_FTT1308   | 3F T11308             | C50+3PDC03.X201 |         | NYCY 2x 2,5/2.5 mm² | 160 Meter    |       |          |        | 0        |  |  |
| 158                                                | SCP_FTT1309   | 3F T11309             | C50+3PDC03.X201 |         | NYCY 2x 2,5/2.5 mm² | 156 Meter    |       |          |        | 0        |  |  |
| 159                                                | SCP_FTT1420   | 3F T11420             | C50+3PDC03.X201 |         | NYCY 2x 2,5/2.5 mm² | 112 Meter    |       |          |        | 0        |  |  |

**Légende**

| <b>Anglais</b>                                  | <b>Français</b>                                                        |
|-------------------------------------------------|------------------------------------------------------------------------|
| Instrument engineering cable list “power cable” | Liste de câbles d'ingénierie des instruments<br>“Câble d'alimentation” |
| NEW                                             | NOUVEAU                                                                |
| DELETED                                         | SUPPRIMÉ                                                               |
| SPARE                                           | RECHANGE                                                               |
| OSBL                                            | OSBL                                                                   |
| LENGTH                                          | LONGUEUR                                                               |
| UNIT                                            | UNITÉ                                                                  |
| SUPPLIER                                        | FOURNISSEUR                                                            |
| REMARK                                          | REMARQUE                                                               |
| Revision                                        | Révision                                                               |
| Cable no.                                       | Câble n°                                                               |
| From equipment                                  | A partir de l'équipement                                               |
| To equipment                                    | Vers l'équipement                                                      |
| Part no.                                        | N° de la pièce                                                         |
| Type of cable                                   | Type de câble                                                          |
| HOLD                                            | ATTENTE                                                                |
| BY UBS                                          | PAR UBS                                                                |

**Figure B.33 – MB001 liste des câbles**

IEC

**Légende**

| <b>Anglais</b>                   | <b>Français</b>                              |
|----------------------------------|----------------------------------------------|
| Cable laying list acc. IEC 62708 | Schéma du tracé des câbles selon l'IEC 62708 |
| Cable no.                        | Câble n°                                     |
| Start at                         | Début à                                      |
| End at                           | Fin à                                        |
| Section A                        | Section A                                    |
| Number of cable                  | Numéro du câble                              |
| Remark                           | Remarque                                     |

**Figure B.34 – MB002 schéma du tracé des câbles**

| Single Material CODE | DESCRIPTION Single Material                                                                                                              | Additional description                                                    | Size                       | Material | Rev 0             | Unit   | Hook up no. 132.2A | 132.2C | 134.2A | 160.2A | 160.2d (1/2" monoflang e) | 160.2B | 160.2C | 162.2A | 162.2D (1/2" monoflang e) | Single Material Total |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------|----------|-------------------|--------|--------------------|--------|--------|--------|---------------------------|--------|--------|--------|---------------------------|-----------------------|
|                      |                                                                                                                                          |                                                                           |                            |          | Quantity hook ups |        | 2.00               | 4.00   | 2.00   | 21.00  | 0.00                      | 2.00   | 2.00   | 23.00  | 7.00                      |                       |
| 3A02.001             | Tube 12mm OD X 1mm Thk                                                                                                                   | Tube 12mmOD                                                               | 12mm OD X 1mm              | 1.4571   | 8844              | Meters | 12                 | 12     | 30     | 0.5    | 0.5                       | 6      | 6      | 0.5    |                           | 67.5                  |
| 3A02.002             | Tube 6mm OD X 1mm Thk, Prefabricated single length tube, Heat Traced                                                                     | Tube 6mmOD                                                                | 6mm OD X 1mm               | 1.4571   | 360               | Meters |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3A02.003             | Tube 6mm OD X 1mm Thk, SS316L                                                                                                            | Tube 6mmOD                                                                | 6mm OD X 1mm               | 1.4571   | 550               | Meters |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3B01.029             | Metal compression fittings, Gyrolok MMRS                                                                                                 | Male connector with parallel pipe                                         | 12mm ODx1/4"               | 1.4571   | 404               | nos.   |                    |        | 2      | 1      | 1                         | 2      | 2      | 1      |                           | 9                     |
| 3B01.031             | Metal compression fittings, Gyrolok MMRS                                                                                                 | Male connector with parallel pipe                                         | 12mm ODx1/2"               | 1.4571   | 464               | nos.   | 4                  | 4      | 4      |        |                           |        |        |        |                           | 12                    |
| 3B04.001             | Metal compression fittings, Gyrolok MMRS                                                                                                 | Plug                                                                      | 12mm OD                    | 1.4571   | 300               | nos.   | 2                  | 2      | 2      | 1      | 1                         |        |        | 1      |                           | 9                     |
| 3B06.003             | Syphon with G 1/2 male connection on process side and G 1/2 female connection on instrument side                                         | Syphon                                                                    | G 1/2 (M) X G 1/2 (F)      | 1.4571   | 15                | nos.   |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3C01.001             | 1/2" Flange ANSI150 RF, output 12mm Gyrolok                                                                                              |                                                                           | ANSI 150 1/2" flange       | 1.4571   | 12                | nos.   |                    |        |        |        |                           | 1      |        |        |                           | 1                     |
| 3C01.002             | 1/2" Flange ANSI300 RF, output 12mm Gyrolok                                                                                              |                                                                           | ANSI 300 1/2" flange       | 1.4571   | 10                | nos.   |                    |        | 1      |        |                           |        | 1      |        |                           | 2                     |
| 3D01.001             | Manifold, three-way direct mounting, pipe thread, austenitic stainless steel confirm PED and rules for pressure vessels                  | Manifold, three-way                                                       | G 1/2 (F)                  | 1.4571   | 10                | nos.   |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3D11.001             | Monoflange with instrument and vent valve, direct mounting flange NPS 1", class 300/600 Thread G1/2 internal. Monoflange with G1/2" Plug | Monoflange                                                                | As per PD 3.5.7_261 2EB.21 |          | 269               | nos.   | 2                  | 2      | 2      | 1      |                           | 1      | 1      | 1      |                           | 10                    |
| 3D11.003             | Monoflange with instrument and vent valve, direct mounting flange NPS 1", class 1500 Thread G1/2 internal. Monoflange with G1/2" Plug    | Monoflange                                                                | As per PD 3.5.7_261 2EB.21 |          | 1                 | nos.   |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3D12.001             | Monoflange with instrument and vent valve, direct mounting flange NPS 1", class 300/600 Thread G1/2 internal. Monoflange with G1/2" Plug | Monoflange with Locked open valve for process connection and locked close | As per PD 3.5.7_261 2EB.21 |          | 4                 | nos.   |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3L01.001             | Instrument-protection box, plastic                                                                                                       | Instrument-protection box, plastic                                        | Big box ca 400X250         |          | 14                | nos.   |                    |        |        |        |                           |        |        |        |                           | 0                     |
| 3X01.001             | Metal compression fittings, Gyrolok MMRS                                                                                                 | Tubing union 12 mm OD                                                     | 12 mm OD                   | 1.4571   | 1342              | nos.   |                    | 2      | 5      |        |                           |        |        |        |                           | 7                     |
| 3X01.002             | Metal compression fittings, Gyrolok MMRS                                                                                                 | Union Tee 12 mm OD                                                        | 12mm OD X 12mm OD          | 1.4571   | 20                | nos.   | 2                  | 2      | 2      |        |                           |        |        |        |                           | 6                     |

**Légende**

| Anglais                                                                                                                                  | Français                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Single material CODE                                                                                                                     | CODE du matériel simple                                                                                                                                           |
| DESCRIPTION single material                                                                                                              | DESCRIPTION – Matériel simple                                                                                                                                     |
| Additional description                                                                                                                   | Description additionnelle                                                                                                                                         |
| Size                                                                                                                                     | Taille                                                                                                                                                            |
| Material                                                                                                                                 | Matériel                                                                                                                                                          |
| Rev 0.                                                                                                                                   | Rév 0.                                                                                                                                                            |
| Unit                                                                                                                                     | Unité                                                                                                                                                             |
| Hook up no. 132.2A                                                                                                                       | Branchement N° 132.2A                                                                                                                                             |
| 160.2d (1/2" monoflange)                                                                                                                 | 160.2d (1/2" mono-bride)                                                                                                                                          |
| 162.2D (1/2" monoflange)                                                                                                                 | 162.2D (1/2" mono-bride)                                                                                                                                          |
| Single material total                                                                                                                    | Matériel simple – total                                                                                                                                           |
| Quantity hook-ups                                                                                                                        | Quantité – branchements                                                                                                                                           |
| Meters                                                                                                                                   | Appareils de mesure                                                                                                                                               |
| Tube 12 mm OD × 1 mm thk                                                                                                                 | Tube 12 mm OD × 1 mm épaisseur                                                                                                                                    |
| Tube 12 mm OD                                                                                                                            | Tube 12 mm OD                                                                                                                                                     |
| Tube 6 mm OD × 1 mm thk; prefabricated single length tube, heat traced                                                                   | Tube 6 mm OD × 1 mm épaisseur; Tube préfabriqué de longueur unique, Chaleur Tracée                                                                                |
| Prefabricated tube 6 mm OD                                                                                                               | Tube préfabriqué 6 mm OD                                                                                                                                          |
| Tube 6 mm OD × 1 mm thk; SS316L tube                                                                                                     | Tube 6 mm OD × 1 mm épaisseur; SS316L tube                                                                                                                        |
| Tube 6 mm OD                                                                                                                             | Tube 6 mm OD                                                                                                                                                      |
| Metal compression fittings, Gyrolok MMRS                                                                                                 | Accessoires métalliques à compression, Gyrolok MMRS                                                                                                               |
| Male connector with parallel pipe                                                                                                        | Connecteur mâle avec tuyau parallèle                                                                                                                              |
| Metal compression fittings, Gyrolok MMRS                                                                                                 | Accessoires métalliques à compression, Gyrolok MMRS                                                                                                               |
| Male connector with parallel pipe                                                                                                        | Connecteur mâle avec tuyau parallèle                                                                                                                              |
| Metal compression fittings, Gyrolok MMRS                                                                                                 | Accessoires métalliques à compression, Gyrolok MMRS                                                                                                               |
| Plug                                                                                                                                     | Fiche                                                                                                                                                             |
| Syphon with G 1/2 male connection on process side and G 1/2 female connection on instrument side                                         | Siphon avec un raccord mâle G 1/2 du côté process et un raccord femelle G 1/2 du côté instrument                                                                  |
| Syphon                                                                                                                                   | Siphon                                                                                                                                                            |
| 1/2" flange ANSI150 RF, output 12mm Gyrolok                                                                                              | Bride 1/2" ANSI150 RF, sortie Gyrolok 12mm                                                                                                                        |
| 1/2" flange ANSI300 RF, output 12mm Gyrolok                                                                                              | Bride 1/2" ANSI300 RF, sortie Gyrolok 12mm                                                                                                                        |
| Manifold, three-way, direct mounting, pipe thread, austenitic stainless steel confirm PED and rules for pressure vessels                 | Collecteur, à trois voies, fixation directe, filetage de tuyaux, en acier inoxydable austénitique conformément à la PED et aux règles de récipients sous pression |
| Manifold, three-way                                                                                                                      | Collecteur, à trois voies                                                                                                                                         |
| Monoflange with instrument and vent valve, direct mounting flange NPS 1", class 300/600 thread G1/2 internal. Monoflange with G1/2" plug | Mono-bride avec instrument et soupape de respiration, bride de fixation directe NPS 1", classe 300/600 filetage G1/2 interne. Mono-bride avec fiche G1/2"         |
| Monoflange                                                                                                                               | Mono-bride                                                                                                                                                        |
| Monoflange with instrument and vent valve, direct mounting flange NPS 1M, class 1500 thread G1/2                                         | Mono-bride avec instrument et soupape de respiration, bride de fixation directe NPS 1M,                                                                           |

| Anglais                                                                                                                                  | Français                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| internal. Monoflange with G1/2" plug.                                                                                                    | classe 1500 filetage G1/2 interne. Mono-bride avec fiche G1/2"                                                                                            |
| Monoflange                                                                                                                               | Mono-bride                                                                                                                                                |
| Monoflange with instrument and vent valve, direct mounting flange NPS 1", class 300/600 Thread G1/2 internal. Monoflange with G1/2" plug | Mono-bride avec instrument et soupape de respiration, bride de fixation directe NPS 1", classe 300/600 filetage G1/2 interne. Mono-bride avec fiche G1/2" |
| Monoflange with locked open valve for process connection and locked close                                                                | Mono-bride avec soupape ouverte verrouillée pour connexion de processus et fermée verrouillée                                                             |
| Instrument-protection box, plastic                                                                                                       | Boîte de protection d'instrument, en plastique                                                                                                            |
| Instrument- protection box, plastic                                                                                                      | Boîte de protection d'instrument, en plastique                                                                                                            |
| Metal compression fittings, Gyrolok MMRS                                                                                                 | Accessoires à compression métalliques, Gyrolok MMRS                                                                                                       |
| Tubing union 12 mm OD                                                                                                                    | Union de tubage 12 mm OD                                                                                                                                  |
| Metal compression fittings, Gyrolok MMRS                                                                                                 | Accessoires à compression métalliques, Gyrolok MMRS                                                                                                       |
| Union tee 12 mm OD                                                                                                                       | Union à té 12 mm OD                                                                                                                                       |

Figure B.35 – PA001 bordereau des matériaux

[illegible]



**Légende**

| Anglais                                                                                                                                                                       | Français                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SUPPLIER'S DATA                                                                                                                                                               | DONNÉES DU FOURNISSEUR                                                                                                                                                                                                         |
| SPARE PARTS INTERCHANGEABILITY RECORD                                                                                                                                         | ENREGISTREMENT D'INTERVERSION DES PIÈCES DE RECHANGE                                                                                                                                                                           |
| Erection, commissioning and start up                                                                                                                                          | Montage, mise en service et démarrage                                                                                                                                                                                          |
| Supplier:                                                                                                                                                                     | Fournisseur:                                                                                                                                                                                                                   |
| Purchase order no.:                                                                                                                                                           | Bon de commande n°:                                                                                                                                                                                                            |
| Sheet n°:1 of: 1                                                                                                                                                              | Feuille n°:1 de: 1                                                                                                                                                                                                             |
| Supplier to state total price for quantities as per column 15                                                                                                                 | Le fournisseur doit énoncer le prix total pour les quantités selon la colonne 15                                                                                                                                               |
| Document ID                                                                                                                                                                   | ID du document                                                                                                                                                                                                                 |
| DSM DATA                                                                                                                                                                      | DONNÉES DSM                                                                                                                                                                                                                    |
| Notes:                                                                                                                                                                        | Notes:                                                                                                                                                                                                                         |
| 1) For instructions see the attached instruction ...                                                                                                                          | 1) Pour les instructions, voir l'instruction ci attachée...                                                                                                                                                                    |
| 2) If an item is interchangeable between two or more units, it should be listed once, incl. its characteristics such as dimensions, design specifications, etc.               | 2) Si un article est interchangeable entre deux ou plusieurs unités, il convient de l'énoncer une fois, y compris ses caractéristiques telles que les dimensions, les spécifications de conception, etc.                       |
| 3) Quote original manufacturer's identification numbers for all bought-out items such as ball bearings, V-belts, mechanical seals, couplings, instruments, fuses, relays, etc | 3) Citer les numéros d'identification de fabrication originale pour tous les articles achetés tels que les roulements à billes, courroies trapézoïdales, scellements mécaniques, raccords, instruments, fusibles, relais, etc. |
| For further instructions refer to instruction...                                                                                                                              | Pour de plus amples instructions, se référer à l'instruction ...                                                                                                                                                               |
| Type:                                                                                                                                                                         | Type:                                                                                                                                                                                                                          |
| Handled by                                                                                                                                                                    | Traité par                                                                                                                                                                                                                     |
| Supplier to state total price for quantities as per column 15                                                                                                                 | Le fournisseur doit énoncer le prix total pour les quantités selon la colonne 15                                                                                                                                               |
| Issue                                                                                                                                                                         | Édition                                                                                                                                                                                                                        |
| Date                                                                                                                                                                          | Date                                                                                                                                                                                                                           |
| Min. stock                                                                                                                                                                    | Stock minimal                                                                                                                                                                                                                  |
| Max. stock                                                                                                                                                                    | Stock maximal                                                                                                                                                                                                                  |
| Drawing number                                                                                                                                                                | Numéro du dessin                                                                                                                                                                                                               |
| Supplier's name                                                                                                                                                               | Nom du fournisseur                                                                                                                                                                                                             |
| Manufacturer's name                                                                                                                                                           | Nom du fabricant                                                                                                                                                                                                               |
| Supplier's part number                                                                                                                                                        | Code d'article du fournisseur                                                                                                                                                                                                  |
| Manufacturer's part number (see note 3)                                                                                                                                       | Code d'article du fabricant (voir note 3)                                                                                                                                                                                      |
| Item n° on drawing                                                                                                                                                            | Article n° sur le dessin                                                                                                                                                                                                       |
| UNIT PRICE CURRENCY: EURO                                                                                                                                                     | PRIX UNITAIRE – MONNAIE: EURO                                                                                                                                                                                                  |
| Delivery time in weeks                                                                                                                                                        | Délai de livraison en semaines                                                                                                                                                                                                 |
| No. of units                                                                                                                                                                  | N° d'unités                                                                                                                                                                                                                    |
| (REMINDER: SUPPLIER TO ATTACH TO THIS FORM ALL DRAWINGS AND PART LISTS)                                                                                                       | (RAPPEL: LE FOURNISSEUR DOIT JOINDRE À CE FORMULAIRE TOUS LES DESSINS ET LES LISTES DES PIÈCES DÉTACHÉES)                                                                                                                      |
| DESCRIPTION OF PARTS COMPLETE WITH SPECIFICATION OF KIND OF MATERIAL (see note 2)                                                                                             | DESCRIPTION DES PIÈCES DÉTACHÉES COMPLÈTES AINSI QUE LA SPÉCIFICATION DU TYPE DE MATÉRIEL (voir note 2)                                                                                                                        |
| Flexible connection DN150 / silicone                                                                                                                                          | Connexion flexible DN150 / silicone                                                                                                                                                                                            |
| Flexible connection DN200/ silicone                                                                                                                                           | Connexion flexible DN200/ silicone                                                                                                                                                                                             |
| Flexible connection DN250/ silicone                                                                                                                                           | Connexion flexible DN250/ silicone                                                                                                                                                                                             |
| Flexible connection DN200/ silicone                                                                                                                                           | Connexion flexible DN200/ silicone                                                                                                                                                                                             |
| Flexible connection DN150 / silicone                                                                                                                                          | Connexion flexible DN150 / silicone                                                                                                                                                                                            |
| Flexible connection DN200/ silicone                                                                                                                                           | Connexion flexible DN200/ silicone                                                                                                                                                                                             |
| Flexible connection D356x200 including stainless steel clamps                                                                                                                 | Connexion flexible D356x200 y compris les étriers de fixation en acier inoxydable                                                                                                                                              |
| Material: NBR white/outside black for UV protection                                                                                                                           | Matériel: NBR blanc/extérieur noir pour protection UV                                                                                                                                                                          |
| Flexible connection D50B535 × 180 mm including stainless steel clamps                                                                                                         | Connexion flexible D50B535 × 180 mm y compris les étriers de fixation en acier inoxydable                                                                                                                                      |

| Anglais                                                                                             | Français                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Material: NBR white/ outside black for UV protection                                                | Matériel: NBR blanc/ extérieur noir pour protection UV                                                                                                                   |
| Universal clamp set >DN100 consisting of: 5 screw locks and 4 meter clamp strip for all Liw feeders | Ensemble d'étriers de fixation universels >DN100 composé de: 5 écluses de vis et d'une bande d'étriers de fixation de 4 mètres pour toutes les lignes d'alimentation Liw |
| Seal cartridge including wear protection sleeve                                                     | Cartouche de garniture y compris le manchon de protection contre l'usure                                                                                                 |
| System unit VSE 20100 software VLW 20150 for LIW Feeders                                            | Unité système VSE 20100 logiciel VLW 20150 pour les lignes d'alimentation LIW                                                                                            |
| System unit VSE 20100 software VND 20150 1 for multitor Coriolis system                             | Unité système VSE 20100 logiciel VND 20150 1 pour système Coriolis multi-cœur                                                                                            |
| Project:                                                                                            | Projet:                                                                                                                                                                  |
| Project no.                                                                                         | Projet n°                                                                                                                                                                |
| Job code                                                                                            | Code tâche                                                                                                                                                               |
| Client                                                                                              | Client                                                                                                                                                                   |
| Discipline                                                                                          | Discipline                                                                                                                                                               |
| Screening ready                                                                                     | Tri prêt                                                                                                                                                                 |
| Screening approved by:                                                                              | Tri approuvé par:                                                                                                                                                        |
| PME approval:                                                                                       | Approbation PME:                                                                                                                                                         |
| SPIR approved for... art. no                                                                        | SPIR approuvé pour... article n°                                                                                                                                         |
| Material planning:                                                                                  | Planification de matériels:                                                                                                                                              |
| Order ref. Number                                                                                   | Référence de la commande Numéro                                                                                                                                          |
| NUMBER OF PARTS PER UNIT                                                                            | NOMBRE DE PIÈCES DÉTACHÉES PAR UNITÉ                                                                                                                                     |
| Supplier's serial n°                                                                                | Numéro de série du fournisseur                                                                                                                                           |
| Supplier's model or type                                                                            | Modèle ou type du fournisseur                                                                                                                                            |
| Equipment reg. or tag n°                                                                            | Reg. ou étiquette n° de l'équipement                                                                                                                                     |
| ITEM NUMBER                                                                                         | NUMÉRO DE L'ARTICLE                                                                                                                                                      |
| Total number of identical parts installed                                                           | NOMBRE TOTAL DE PIÈCES DÉTACHÉES IDENTIQUES INSTALLÉES                                                                                                                   |
| Recomm. by supplier                                                                                 | Recommandé par le fournisseur                                                                                                                                            |
| Recommended by customer                                                                             | Recommandé par le client                                                                                                                                                 |
| Approved by client                                                                                  | Approuvé par le client                                                                                                                                                   |
| Quantity to be ordered                                                                              | Quantité à commander                                                                                                                                                     |
| KM/KS material plann. advice                                                                        | Planification de matériels KM/KS conseil                                                                                                                                 |
| Action                                                                                              | Action                                                                                                                                                                   |
| Repairable                                                                                          | Réparable                                                                                                                                                                |
| Procurement price                                                                                   | Prix d'approvisionnement                                                                                                                                                 |

**Figure B.36 – PB001 liste des pièces détachées**

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| 1                                  | Loop-          | PID No. | TAG No. | Description                     | Part no.                  | SIL        | DATA SHEET | R    |
|------------------------------------|----------------|---------|---------|---------------------------------|---------------------------|------------|------------|------|
| 2                                  | Identification |         |         |                                 |                           |            | R          | Date |
| 3                                  | 1              | 2       | 3       | 4                               | 8                         | 9          | 5          | 6    |
| 4                                  | A7602          | 14      | AQ7602  | Hydrocarbon                     | QAAM001                   |            |            |      |
| 5                                  |                |         |         | analyzer                        |                           |            |            |      |
| 6                                  | A7654          | 13      | AT7654  | Manual sampling system          | QCAA001                   |            |            |      |
| 7                                  | F7608          | 13      | FE7608  | Orifice plate assembly          | KFAA001                   |            |            |      |
| 8                                  |                |         | FT7608  | Flow dP-transmitter             | KFEA001                   |            |            |      |
| 9                                  | F7609          | 13      | FE7609  | Orifice plate assembly          | KFAA001                   |            |            |      |
| 10                                 |                |         | FT7609  | Flow dP-transmitter             | KFEA001                   |            |            |      |
| 11                                 | F7610          | 14      | FE7610  | Orifice plate assembly          | KFAA001                   |            |            |      |
| 12                                 |                |         | FT7610  | Flow dP-transmitter             | KFEA001                   |            |            |      |
| 13                                 | F7612          | 14      | FE7612  | Orifice plate assembly          | KFAA001                   |            |            |      |
| 14                                 |                |         | FT7612  | Flow dP-transmitter             | KFEA001                   |            |            |      |
| 15                                 | F7613          | 14      | FE7613  | Orifice plate assembly          | KFAA001                   |            |            |      |
| 16                                 |                |         | FT7613  | Flow dP-transmitter             | KFEA001                   |            |            |      |
| 17                                 | F7651          | 13      | FO7651  | Restriction orifice             | MT00001                   |            |            |      |
| 18                                 | F7652          | 13      | FO7652  | Restriction orifice             | MT00001                   |            |            |      |
| 19                                 | H7613          | 13      | HS7613  | Operation device (field mount.) | TEA0001                   |            |            |      |
| 20                                 |                |         |         | Switches / Buttons              |                           |            |            |      |
| 21                                 | H7614          | 13      | HSA7614 | Configuration, flowsheets       | SAF0001                   |            |            |      |
| 22                                 | H7615          | 13      | HS7615  | Operation device (field mount.) | TEA0001                   |            |            |      |
| 23                                 |                |         |         | Switches / Buttons              |                           |            |            |      |
| 24                                 | H7619          | 14      | HS7619  | Operation device (field mount.) | TEA0001                   |            |            |      |
| 25                                 |                |         |         | Switches / Buttons              |                           |            |            |      |
| 26                                 | H7620          | 14      | HSA7620 | Configuration, flowsheets       | SAF0001                   |            |            |      |
| 27                                 | H7621          | 14      | HS7621  | Operation device (field mount.) | TEA0001                   |            |            |      |
| 28                                 |                |         |         | Switches / Buttons              |                           |            |            |      |
| 29                                 | L7604          | 13      | LT7604  | Displacer level transmitter     | KLCA001                   |            |            |      |
| 30                                 | L7605          | 14      | LT7605  | Displacer level transmitter     | KLCA001                   |            |            |      |
| 31                                 | L7654          | 13      | LI7654  | Magnetic level indicator        | KLBA001                   |            |            |      |
| 32                                 | L7655          | 14      | LI7655  | Magnetic level indicator        | KLBA001                   |            |            |      |
| 33                                 | P7615          | 13      | PT7615  | Pressure transmitter            | KPKA001                   |            |            |      |
| 34                                 | P7616          | 13      | PT7616  | Pressure transmitter            | KPKA001                   |            |            |      |
| 35                                 | P7617          | 13      | PT7617  | Pressure transmitter            | KPKA001                   |            |            |      |
| 36                                 | P7619          | 13      | PT7619  | Pressure transmitter            | KPKA001                   |            |            |      |
| 37                                 | P7664          | 13      | PI7664  | Pressure gauge                  | KPCA001                   |            |            |      |
| 38                                 | P7665          | 13      | PI7665  | Pressure gauge                  | KPCA001                   |            |            |      |
| 39                                 | P7666          | 13      | PI7666  | Pressure gauge                  | KPCA001                   |            |            |      |
| 40                                 | P7667          | 14      | PI7667  | Pressure gauge                  | KPCA001                   |            |            |      |
| 41                                 | P7668          | 14      | PI7668  | Pressure gauge                  | KPCA001                   |            |            |      |
| 42                                 | P7669          | 14      | PI7669  | Pressure gauge                  | KPCA001                   |            |            |      |
| 43                                 | P7670          | 14      | PI7670  | Pressure gauge                  | KPCA001                   |            |            |      |
| 44                                 | T7614          | 13      | TW7614  | Thermowell (flanged type)       | KTAB001                   |            |            |      |
| 45                                 |                |         | TT7614  | RTD-thermometer                 | KTFB001                   |            |            |      |
| 46                                 |                |         |         | w. head-mounted transm.         |                           |            |            |      |
| 47                                 | T7615          | 13      | TW7615  | Thermowell (flanged type)       | KTAB001                   |            |            |      |
| 48                                 |                |         | TT7615  | RTD-thermometer                 | KTFB001                   |            |            |      |
| 49                                 |                |         |         | w. head-mounted transm.         |                           |            |            |      |
| 50                                 | T7616          | 13      | TW7616  | Thermowell (flanged type)       | KTAB001                   |            |            |      |
| 51                                 |                |         | TT7616  | RTD-thermometer                 | KTFB001                   |            |            |      |
| 52                                 |                |         |         | w. head-mounted transm.         |                           |            |            |      |
| 53                                 | T7617          | 13      | TW7617  | Thermowell (flanged type)       | KTAB001                   |            |            |      |
| 54                                 |                |         | TT7617  | RTD-thermometer                 | KTFB001                   |            |            |      |
| 55                                 |                |         |         | w. head-mounted transm.         |                           |            |            |      |
| 56                                 | T7618          | 13      | TW7618  | Thermowell (flanged type)       | KTAB001                   |            |            |      |
| 57                                 |                |         | TT7618  | RTD-thermometer                 | KTFB001                   |            |            |      |
| 58                                 |                |         |         | w. head-mounted transm.         |                           |            |            |      |
| 59                                 | T7619          | 13      | TW7619  | Thermowell (flanged type)       | KTAB001                   |            |            |      |
| 60                                 |                |         | TT7619  | RTD-thermometer                 | KTFB001                   |            |            |      |
| 61                                 |                |         |         | w. head-mounted transm.         |                           |            |            |      |
| 62                                 | T7620          | 13      | TW7620  | Thermowell (flanged type)       | KTAB001                   |            |            |      |
| 63                                 |                |         | TT7620  | RTD-thermometer                 | KTFB001                   |            |            |      |
| 64                                 |                |         |         | w. head-mounted transm.         |                           |            |            |      |
| Instrument index<br>acc. IEC 62708 |                |         |         |                                 | IEC 62708 / Doc templates |            |            |      |
| Code<br>Plant<br>Unit              |                |         |         |                                 |                           |            |            |      |
| R Date Client Doc-ID:              |                |         |         |                                 |                           |            |            |      |
| Doc-ID-Code:                       |                |         |         |                                 | CC PB UA:                 | Page 1 / 2 |            |      |

**Légende**

| <b>Anglais</b>                          | <b>Français</b>                                      |
|-----------------------------------------|------------------------------------------------------|
| Loop identification                     | Identification de boucle                             |
| PID no.                                 | N° du PID                                            |
| Tag no.                                 | N° de l'étiquette                                    |
| Description                             | Description                                          |
| Part no.                                | N° de la pièce                                       |
| SIL                                     | SIL                                                  |
| Data sheet                              | Feuille de caractéristiques                          |
| Date                                    | Date                                                 |
| Hydrocarbon analyzer                    | Analyseur d'hydrocarbures                            |
| Manual sampling system                  | Système d'échantillonnage manuel                     |
| Orifice plate assembly                  | Assemblage de diaphragmes                            |
| Flow dP-transmitter                     | Émetteur dP de flux                                  |
| Restriction orifice                     | Orifice de restriction                               |
| Operation device (field mount.)         | Appareil de fonctionnement (installé sur le terrain) |
| Switches / buttons                      | Interrupteurs / boutons                              |
| Configuration, flowsheets               | Configuration, schémas de procédé                    |
| Displacer level transmitter             | Émetteur de niveau du piston auxiliaire              |
| Magnetic level indicator                | Indicateur de niveau magnétique                      |
| Pressure transmitter                    | Émetteur de pression                                 |
| Pressure gauge                          | Manomètre                                            |
| Thermowell (flanged type)               | Puits thermométrique (type à brides)                 |
| RTD-thermometer w. head-mounted transm. | Thermomètre RTD avec émetteur pour montage en tête   |
| Instrument index acc. IEC 62708         | Liste d'appareils PLT selon l'IEC 62708              |

**Figure B.37 – PB002 liste d'appareils PLT**

| #Company |                   |           | #Customer                |                  | #Plant                   |                |
|----------|-------------------|-----------|--------------------------|------------------|--------------------------|----------------|
| No.      | Device Identifier | Location  | Software Name            | Version          | Release                  | Release number |
| 1        | 10CRU01GJ101      | 10UBA0100 | DCS System Software      | V5.4 + SP5 + HF2 | K5.4.5.2 3.1.0.1         | K5.4.5.2       |
| 2        | 10CRU01GJ101      | 10UBA0101 | ContinuousFunctionChart  | V7.0 + SP1 + HF3 | K07.00.01.03 01.05.00.01 | K7.0.1.3       |
| 3        | 10CRU01GJ101      | 10UBA0102 | License Manager Software | V4.0 + SP5       | K04.00.05.00 01.06.00.01 | K4.0.5.0       |
| 4        | 10CRU01GJ101      | 10UBA0103 | Failsafe System Software | V6.1             | V06.01.00.00 01.16.00.01 | V6.1.0.0       |
| 5        | 10CRU01GJ101      | 10UBA0104 | PIp Modbus Master        | V3.1 + SP2       | R3.1.2.1                 | V3.1.2.0       |
| 6        | 10CRU01GJ101      | 10UBA0105 | PIp Modbus Slave         | V3.1 + SP3       | R3.1.3.1                 | V3.1.3.0       |
| 7        | 10CRU01GJ101      | 10UBA0106 | Failsafe System Library  | V1.2 + SP4       | K1.2.4.0 1.8.0.4         | V1.2.4.0       |
| 8        | 10CRU01GJ101      | 10UBA0107 | NET PC Software          | V7.0 + Hotfix 1  | Build 3509               | 7.0.0.1        |
| 9        |                   |           |                          |                  |                          |                |
| 10       |                   |           |                          |                  |                          |                |
| 11       |                   |           |                          |                  |                          |                |
| 12       |                   |           |                          |                  |                          |                |
| 13       |                   |           |                          |                  |                          |                |
| 14       |                   |           |                          |                  |                          |                |

**Légende**

| <b>Anglais</b>              | <b>Français</b>                             |
|-----------------------------|---------------------------------------------|
| #Company                    | #Entreprise                                 |
| #Customer                   | #Client                                     |
| #Plant                      | #Installation                               |
| Device identifier           | Identificateur d'appareil                   |
| Location                    | Emplacement                                 |
| Software name               | Nom de logiciel                             |
| Version                     | Version                                     |
| Release                     | Autorisation de publier                     |
| Release number              | Numéro de l'autorisation de publier         |
| DCS system software         | Logiciel du système DCS                     |
| Continuous function chart 3 | Diagramme fonctionnel continu 3             |
| License manager software    | Logiciel de gestionnaire de licences        |
| Failsafe system software    | Logiciel du système de sécurité intégré     |
| PtP Modbus master           | Maître Modbus PtP                           |
| PtP Modbus slave            | Esclave Modbus PtP                          |
| Failsafe system library     | Bibliothèque du système de sécurité intégré |
| NET PC software             | Logiciel NET PC                             |
| System log book             | Journal de bord du système                  |

**Figure B.38 – PD001 journal de bord du système**

| HOOK UP DRAWINGS<br>FOR ERECTION                                                                                                                                                     |         |                                                                                                                                          |                                                 | Page ... OF ...          |                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------------------------|---------------------|
| Owner Project Code:                                                                                                                                                                  |         | Plant:                                                                                                                                   |                                                 | Project No:              |                     |
| HOOK-UP TYPE - DP TRANSMITTER WITH 3 WAY MANIFOLD (LT & PDT)<br>REMOTE MOUNTED - LIQUID SERVICE:<br>TRANSMITTER TO BE MOUNTED BELOW TAPPING POINT<br>SAFE AREA INSTALLATION (NON EX) |         | DRG. No.                                                                                                                                 |                                                 | SHEET 2 OF 2             |                     |
| ITEM CODE                                                                                                                                                                            | QTY.    | DESCRIPTION                                                                                                                              | ADDITIONAL DESCRIPTION                          | SIZE                     | REQUIRED QTY/ SCOPE |
| BM03.022                                                                                                                                                                             | 1       | CABLE GAND AND ACCESSORIES, MATERIAL-PLASTIC APPLICATION:Exe                                                                             | CABLE GLAND (BLACK)                             | M20x1.5<br>Exe           | CUSTOMER            |
| BM07.002                                                                                                                                                                             | 1       | CABLE FOR 'HIGH LEVEL' SIGNALS, STANDARD CABLE                                                                                           | Non-Exl                                         | 1x2x1.02mm               | CUSTOMER            |
| BM01.031                                                                                                                                                                             | 4       | METAL COMPRESSION FITTING<br>GYROLOK MMBS                                                                                                | MALE CONNECTORS<br>WITH PARALLEL PIPE<br>THREAD | 12mm ODx1/2"             | CONTRACTOR          |
| BA02.001                                                                                                                                                                             | 12 Mtr. | TUBE 12mm OD X 1mm THK                                                                                                                   | TUBE 12mm OD                                    | 12mm OD                  | CUSTOMER            |
| BM01.032                                                                                                                                                                             | 2       | METAL COMPRESSION FITTING<br>GYROLOK MMBS                                                                                                | BLANKING PLUG                                   | G/4"                     | CONTRACTOR          |
| BM04.001                                                                                                                                                                             | 2       | METAL COMPRESSION FITTING<br>GYROLOK MMBS                                                                                                | STANDARD PLUG                                   | 12mm OD                  | CONTRACTOR          |
| BM01.006 AS REQD.                                                                                                                                                                    |         | FASTENING MATERIAL FOR TUBES                                                                                                             | -                                               | -                        | SCOPE BY CONTRACTOR |
| BM01.002                                                                                                                                                                             | 2       | METAL COMPRESSION FITTING<br>GYROLOK MMBS                                                                                                | UNION TEE                                       | 12mmODx12mmOD<br>12mmOD  | CONTRACTOR          |
| BM01.003                                                                                                                                                                             | 2       | NEEDLE VALVE                                                                                                                             | -                                               | 12mm OD                  | CUSTOMER            |
| BM01.005                                                                                                                                                                             | 2       | SEALING WASHER FOR G1/4 CONNECTION                                                                                                       | SEALING WASHER                                  | G1/4"                    | CONTRACTOR          |
| BM01.004                                                                                                                                                                             | 4       | SEALING WASHER FOR G1/2 CONNECTION                                                                                                       | SEALING WASHER                                  | G1/2"                    | CONTRACTOR          |
| BM01.001                                                                                                                                                                             | 2       | MONO FLANGE WITH INSTRUMENT AND VENT VALVE, DIRECT MOUNTING, FLANGE MPS 1"CLASS 300/600/THREAD G1/2 INTERNAL, MONOFLANGE WITH G1/2" PLUG | MONOFLANGE                                      | AS PER<br>FD3.57-96/2B21 | CUSTOMER            |

|                                                                                                                                                                                       |                                 |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------|
|                                                                                                                                                                                       | HOO UP DRAWINGS<br>FOR ERECTION | Page ... OF ...          |
| Owner Project Code:                                                                                                                                                                   | Plant:                          | Project No:<br>Job Code: |
| HOO-UP TYPE : DP TRANSMITTER WITH 3 WAY MANIFOLD (LT & PDT)<br>REMOTE MOUNTED - LIQUID SERVICE :-<br>TRANSMITTER TO BE MOUNTED BELOW TAPPING POINT<br>SAFE AREA INSTALLATION (NON EX) | DRG. No.                        | SHEET 1 OF 2             |
|                                                                                                                                                                                       | TAG No.                         | 3PDT-51207               |

DO NOT REMOVE THIS TAG

**TAPPING ORIENTATION FOR LIQUID / VAPOUR SERVICE**

HORIZONTAL PIPE

VERTICAL PIPE

**DETAIL Y**

NOTE:

1) BEFORE INSTALLATION QUANTITIES AND LENGTH OF MATERIAL ARE TO BE CHECKED AT SITE.

Doc. ID: CODE
Rev.

**Légende**

| Anglais                                                                                                                                                                       | Français                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HOOK UP DRAWINGS FOR ERECTION                                                                                                                                                 | DESSINS DE BRANCHEMENT POUR MONTAGE                                                                                                                                                                                    |
| Owner project code:                                                                                                                                                           | Code du maître d'ouvrage:                                                                                                                                                                                              |
| Plant:                                                                                                                                                                        | Installation:                                                                                                                                                                                                          |
| HOOK-UP TYPE: DP TRANSMITTER WITH 3 WAY MANIFOLD (L T & PDT) REMOTE MOUNTED – LIQUID SERVICE: TRANSMITTER TO BE MOUNTED BELOW TAPPING POINT SAFE AREA INSTALLATION (NON Exi), | TYPE DE BRANCHEMENT: ÉMETTEUR DP AVEC COLLECTEUR À 3 VOIES (L T & PDT) MONTÉ À DISTANCE – SERVICE LIQUIDE: ÉMETTEUR À SE FAIRE MONTÉ EN DESSOUS DU POINT DE PIQUAGE – INSTALLATION DANS LA ZONE DE SÉCURITÉ (NON Exi), |
| DRG. no                                                                                                                                                                       | DRG. n°                                                                                                                                                                                                                |
| Page ... of ..                                                                                                                                                                | Page ... de ..                                                                                                                                                                                                         |
| Project no:                                                                                                                                                                   | N° du projet:                                                                                                                                                                                                          |
| Job code:                                                                                                                                                                     | Code tâche:                                                                                                                                                                                                            |
| SHEET 1 OF 2                                                                                                                                                                  | FEUILLE 1 DE 2                                                                                                                                                                                                         |
| TAG no.                                                                                                                                                                       | N° de l'étiquette                                                                                                                                                                                                      |
| MONOFLANGE                                                                                                                                                                    | MONO-BRIDE                                                                                                                                                                                                             |
| TRANSMITTER CONNECTION                                                                                                                                                        | CONNEXION DE L'ÉMETTEUR                                                                                                                                                                                                |
| PROCESS                                                                                                                                                                       | PROCESS                                                                                                                                                                                                                |
| TAPPING ORIENTATION FOR LIQUID / VAPOUR SERVICE                                                                                                                               | ORIENTATION DU POINT DE PIQUAGE POUR SERVICE LIQUIDE / VAPEUR                                                                                                                                                          |
| VENT                                                                                                                                                                          | AÉRATION                                                                                                                                                                                                               |
| VERTICAL PIPE / EQUIPMENT                                                                                                                                                     | CONDUIT / ÉQUIPEMENT VERTICAL                                                                                                                                                                                          |
| ITEM CODE                                                                                                                                                                     | CODE D'ARTICLE                                                                                                                                                                                                         |
| QTY.                                                                                                                                                                          | QUANTITÉ                                                                                                                                                                                                               |
| INST PIPING (FLANGE 1", 300 MIN BY PIPING)                                                                                                                                    | TUYAUTERIES INSTALLÉES (BRIDE 1", 300 MIN PAR TUYAUTERIES)                                                                                                                                                             |
| HORIZONTAL PIPE                                                                                                                                                               | CONDUIT HORIZONTAL                                                                                                                                                                                                     |
| DETAIL Y                                                                                                                                                                      | DÉTAIL Y                                                                                                                                                                                                               |
| NOTE:                                                                                                                                                                         | NOTE:                                                                                                                                                                                                                  |
| 1) BEFORE INSTALLATION QUANTITIES AND LENGTH OF MATERIAL ARE TO BE CHECKED AT SITE.                                                                                           | 1) AVANT L'INSTALLATION, LES QUANTITÉS ET LA LONGUEUR DU MATÉRIEL DOIVENT ÊTRE VÉRIFIÉES SUR SITE.                                                                                                                     |
| Doc. ID-code                                                                                                                                                                  | Doc. ID-code                                                                                                                                                                                                           |
| Rev.                                                                                                                                                                          | Rév.                                                                                                                                                                                                                   |
| DESCRIPTION                                                                                                                                                                   | Description                                                                                                                                                                                                            |
| ADDITIONAL DESCRIPTION                                                                                                                                                        | DESCRIPTION ADDITIONNELLE                                                                                                                                                                                              |
| SIZE                                                                                                                                                                          | TAILLE                                                                                                                                                                                                                 |
| MATERIAL                                                                                                                                                                      | MATÉRIEL                                                                                                                                                                                                               |
| REQUIRED QTY/SCOPE                                                                                                                                                            | QUANTITÉ/DOMAIN D'APPLICATION REQUIS(E)                                                                                                                                                                                |
| CABLE GLAND AND ACCESSORIES, MATERIAL: PLASTIC APPLICATION: Exe                                                                                                               | PRESSE-ÉTOUPE ET ACCESSOIRES, MATÉRIEL: PLASTIQUE APPLICATION: Exe                                                                                                                                                     |
| CABLE GLAND BLACK                                                                                                                                                             | PRESSE-ÉTOUPE NOIR                                                                                                                                                                                                     |
| CUSTOMER                                                                                                                                                                      | Client                                                                                                                                                                                                                 |
| CABLE FOR 'HIGH LEVEL' SIGNALS, STANDARD CABLE                                                                                                                                | CÂBLE POUR SIGNAUX 'HAUT NIVEAU', CÂBLE NORMALISÉ                                                                                                                                                                      |
| Non-Exi                                                                                                                                                                       | Non-Exi                                                                                                                                                                                                                |
| METAL COMPRESSION FITTING GYROLOK                                                                                                                                             | ACCESSOIRE À COMPRESSION MÉTALLIQUE,                                                                                                                                                                                   |



| Anglais                                                                                                                                    | Français                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| MMRS                                                                                                                                       | GYROLOK MMRS                                                                                                                                          |
| MALE CONNECTORS WITH PARALLEL THREAD                                                                                                       | CONNECTEURS MÂLES AVEC FILETAGE PARALLÈLE                                                                                                             |
| CONTRACTOR                                                                                                                                 | ENTREPRENEUR                                                                                                                                          |
| BLANKING PLUG                                                                                                                              | OBTURATEUR                                                                                                                                            |
| TUBE 12 mm OD × 1 mm THK                                                                                                                   | TUBE 12 mm OD × 1 mm ÉPAISSEUR                                                                                                                        |
| TUBE 12 mm OD                                                                                                                              | TUBE 12 mm OD                                                                                                                                         |
| AS REQD.                                                                                                                                   | COMME REQUIS                                                                                                                                          |
| FASTENING MATERIAL FOR TUBES                                                                                                               | MATÉRIEL DE FIXATION POUR TUBES                                                                                                                       |
| STANDARD PLUG                                                                                                                              | FICHE NORMALISÉE                                                                                                                                      |
| UNION TEE                                                                                                                                  | UNION À TÉ                                                                                                                                            |
| 12 mm OD × 12 mm OD × 12 mm OD                                                                                                             | 12 mm OD × 12mm OD × 12 mm OD                                                                                                                         |
| NEEDLE VALVE                                                                                                                               | SOUPAPE À POINTEAU                                                                                                                                    |
| SEALING WASHER FOR G1/4 CONNECTION                                                                                                         | RONDELLE D'ÉTANCHÉITÉ POUR RACCORDEMENT G1/4                                                                                                          |
| SEALING WASHER                                                                                                                             | RONDELLE D'ÉTANCHÉITÉ                                                                                                                                 |
| SEALING WASHER FOR G1/2 CONNECTION                                                                                                         | RONDELLE D'ÉTANCHÉITÉ POUR RACCORDEMENT G1/2                                                                                                          |
| MONO FLANGE WITH INSTRUMEN AND VENT VALVE, DIRECT MOUNTING, FLANGE NPS 1", CI ASS 300/600/THREAD G1/2 INTERNAL, MONOFLANGE WITH G1/2" PLUG | MONOBRIDE AVEC INSTRUMENT ET SOUPAPE DE RESPIRATION, FIXATION DIRECTE, BRIDE NPS 1", CLASSE 300/600/FILETAGE G1/2 INTERNE, MONOBRIDE AVEC FICHE G1/2" |
| MONOFLANGE                                                                                                                                 | MONOBRIDE                                                                                                                                             |
| AS PER PD3.5.7-261.2EB.21                                                                                                                  | SELON PD3.5.7-261.2EB.21                                                                                                                              |

**Figure B.39 – TC001 schéma du montage (raccordement)**

IEC

**Légende**

| Anglais                                                                                                    | Français                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Item                                                                                                       | Article                                                                                                                                      |
| Num.                                                                                                       | Numéro                                                                                                                                       |
| Product key                                                                                                | Clé de produit                                                                                                                               |
| Manufacturer                                                                                               | Fabricant                                                                                                                                    |
| Designation                                                                                                | Désignation                                                                                                                                  |
| Order-no                                                                                                   | Commande n°                                                                                                                                  |
| Dimensions                                                                                                 | Dimensions                                                                                                                                   |
| Material                                                                                                   | Matériel                                                                                                                                     |
| Remarks                                                                                                    | Remarques                                                                                                                                    |
| Thermowell form 4S                                                                                         | Forme de puits thermométrique 4S                                                                                                             |
| #Company                                                                                                   | #Entreprise                                                                                                                                  |
| Seal ring                                                                                                  | Bague d'étanchéité                                                                                                                           |
| Temperature measurement with weld-in thermowell according to DIN 43763 in pipings or analogously for tanks | Mesure de la température avec puits thermométrique à souder selon la DIN 43763 dans les tuyauteries ou de façon analogue pour les réservoirs |
| Sensor                                                                                                     | Capteur                                                                                                                                      |
| Distance $\geq 750$ mm                                                                                     | Distance $\geq 750$ mm                                                                                                                       |
| Admissible for local measurement only                                                                      | Admissible pour la mesure locale uniquement                                                                                                  |
| Inadmissible                                                                                               | Inadmissible                                                                                                                                 |
| The transition line from the cylindrical to the conical part should be 1 mm to 2 mm behind the inner wall  | Il convient que la ligne de transition entre la partie cylindrique et la partie conique soit de 1 mm à 2 mm derrière la paroi intérieure     |
| Inadmissible field                                                                                         | Champ inadmissible                                                                                                                           |
| Installation area for telemetry                                                                            | Zone d'installation de télémétrie                                                                                                            |
| For installation of more than one transmitter, distance min 100 mm                                         | Pour l'installation de plusieurs émetteurs, la distance minimale est de 100 mm                                                               |
| Weld-in thermowell after expanding to $> DN80$                                                             | Puits thermométrique à souder après élargissement $> DN80$                                                                                   |
| Date                                                                                                       | Date                                                                                                                                         |
| Drawn                                                                                                      | Dessiné                                                                                                                                      |
| Check                                                                                                      | Vérification                                                                                                                                 |
| Index                                                                                                      | Indice                                                                                                                                       |
| Modified                                                                                                   | Modifié                                                                                                                                      |
| Date                                                                                                       | Date                                                                                                                                         |
| Name                                                                                                       | Nom                                                                                                                                          |
| Assembly drawing                                                                                           | Dessin de montage                                                                                                                            |

**Figure B.40 – TC002 dessin de montage**

## Bibliographie

ISO 7200, *Documentation technique de produits – Champs de données dans les cartouches d'inscription et têtes de documents*

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