



Exploration & Production

GENERAL SPECIFICATION

INSTRUMENTATION

GS EP INS 108

Instrumentation for the design of plant rooms and control rooms

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1. Scope

This standard specification defines the conditions and precautions to be taken into account for installation of the instrumentation in technical rooms and control rooms.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

Standards

Reference	Title
IEC 60364	Parts related to the Low-voltage electrical installations and Electrical installations of buildings
IEC 60529	Degrees of protection provided by enclosures (IP Code)
IEC 61000	Parts related to the Electromagnetic compatibility (EMC)

Professional Documents

Reference	Title
Not applicable	

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
Not applicable	

Other documents

Reference	Title
SIREP-WIB-EXERA report	"Ergonomics in process control rooms" No. M 2656 X 98 part 2: Design guideline



Total General Specifications

Reference	Title
GS EP INS 101	Instrumentation engineering, supply and construction general requirements
GS EP INS 107	Design and installation of instrumentation links
GS EP INS 135	Cyber security requirements for design and supply of ICSS and Package Systems
GS EP TEC 007	Obsolescence and Lifetime Cycle Management

3. Glossary

CCR	Central Control Room
ICSS	Integrated Control and Safety System
ITR	Instrument Technical Room
MCT	Multi Cable Transit
UCP	Unit Control Panel

4. Design life

Facilities are typically designed with an expected design life in the order of 25 years. It is not practical to achieve such a design life for electronic based equipment without the requirement for upgrading.

The design shall therefore take into account the requirement that the electronic systems will require to be upgraded during the design life of the facilities. These requirements shall be incorporated from Basic Engineering.

The ITRs and CCR shall therefore be engineered to allow replacement of all systems and associated components during the design life of the facility with a minimum of disruption and facility shutdown.

A dedicated study shall be developed during the FEED/Basic Engineering in accordance with **GS EP TEC 007** requirements. It shall define which design provisions of the initial equipment are required to facilitate future revamps with minimal disturbance to the process, utilities, fixed cabling infrastructure, such as:

- Allocation of sufficient revamp footprint space for the hook up of future equipment (e.g. partial or full duplication of the Control desk /cabinets for on-line swap-over, transit penetrations, cable trays...)
- Definition of required size of access doors, outdoor access platforms, maneuvering space inside technical rooms, equipment handling facilities.

5. Arrangement Design

The statements and requirements of this specification shall be completed by the Company's General Specification [GS EP INS 101](#).

Recommendations and prescriptions of [IEC 60529](#) and [IEC 61000](#) shall also be followed.

The end-products provided shall comply with the reference documents, as amended by the differences and/or options specified below.

However, all regulations or directives applicable in the country of final destination of the structure shall be taken into consideration if they are stricter than the documents cited for reference.

5.1 Requirements for plant rooms

The plant rooms shall be designed to incorporate the following points:

5.1.1 Arrangement

The architecture of the room and access to it shall be designed so that control cabinets assembled in pairs can be brought in, carried vertically.

The raised floor shall be provided with a minimum free height of 0.8 m.

The general lay out and the design of the cabinets and MCT frames shall allow easy distribution of all cables inside the rooms. Special attention shall be paid to the cable tray layout and the distribution and arrangement of the cables on the tray.

In addition, the room layout shall be arranged so as to minimise the length of inter-cabinet cables.

The way the cabinets are positioned, preferably at right angles to a wall, shall be in accordance with the process and the functions of the cabinets.

HVAC: There must be no circulation of cooling liquid or condensation above the cabinets.

The furniture shall include at least: a desk, a chair and a cabinet or shelving for storing documentation.

Spare floor space and structural provisions will be provided for allowing installation of 30% additional cabinets unless otherwise specified within the project specifications.

5.1.2 Electrical wiring

There shall be, as a minimum, one power outlet near the control desk fed by a 230V AC inverter supply. This outlet shall be labelled.

Cable entries into the plant room:

- Cables shall enter directly into the raised floor void; the point of entry inside the room must not be located under a cabinet
- Entries in explosive areas shall use MCT frames approved for the area concerned
- Outside of potentially explosive areas, entries through walls shall be removable and ingress protected to IP 65 as per [IEC 60529](#)



- In addition to the requirements of [IEC 60364](#), the physical distribution of the cables inside the MCT frames must be in accordance with safety/control segregation requirements
- At least 50% spare capacity shall be provided inside the MCT frames.

Cables under the raised floor shall be run on cable trays as per signals segregation requirements.

The earthing of marshalling/system cabinets shall be achieved under the raised floor as per the [GS EP INS 107](#).

5.2 Control room

An ergonomic study shall be carried out and focus on the ergonomic engineering of the consoles and its environment, including not only the workstations but also the ancillary equipment, in accordance with the recommendations of [SIREP-WIB-EXERA report No. M 2656 X 98 part 2: "Ergonomics in process control rooms: Design guidelines"](#).

It will focus on the following points:

- Interaction between lighting and control screens
- Generation of noise by the equipment (power supplies, printers, etc.)
- Positioning of consoles to optimise movement of personnel
- Ergonomic engineering of consoles, incorporating, in addition to the control stations, all ancillary equipment such as communication resources, security control panels, and so on.

5.3 Computer room

A specific room with restricted access to protect specific sensitive systems shall be designed ("computer room") as required by [GS EP INS 135](#), with restrictive and controlled physical access.

These specific sensitive systems are, but not limited to: configuration workstations, databases configuration, historical data base, network management tools, network devices and security devices.

Engineering / Users stations of specific systems such as, but not limited to, Data Management and Condition Monitoring System, Multiphase Flow Meter Overall Flow Metering System will not be installed in such Computer room.

5.4 Gas and fire detection

Plant rooms shall include a gas and fire detection system.



Bibliography

IEC 60079

Parts related to the Electrical apparatus for explosive gas atmospheres