

GENERAL SPECIFICATION

TELECOMMUNICATIONS

GS EP TEL 700

Telecommunications Engineering services

08	06/2018	Update of Deliverables
07	05/2015	Organisation change – January 2015
06	10/2014	General update
05	10/2013	Add deliverables, glossary and Opercom references
04	01/2011	Add some deliverables
03	10/2008	Telecom Spec summary and revision
00	05/2001	First issue
Rev.	Date	Purpose of the revision

Owning entity: SG/ISB	Managing entity: SG/ISB/SURF
Other Approving entity(ies):	

General Specification		GS EP TEL 700
Telecommunications Engineering services		
Rev.: 08	Effective date: 06/2018	Page: 2 of 24

Contents

1. Scope	3
2. Reference documents	3
3. Engineering scope of work	4
3.1 Pre-project study	4
3.2 Basic engineering	4
3.3 Detailed Engineering, Procurement, Construction, Commissioning	7
4. Performance of the work	15
4.1 Liaison with local administrations	15
4.2 Quality assurance	16
4.3 Drawings	16
4.4 Documents	17
Appendix 1 Glossary	19
Appendix 2 Content Structure guidelines for diagrams and documents	20

General Specification		GS EP TEL 700
Telecommunications Engineering services		
Rev.: 08	Effective date: 06/2018	Page: 3 of 24

1. Scope

This General Specification applies to engineering services to be supplied during the design and fabrication of telecommunication equipment intended for use in hydrocarbon production and/or processing plants.

The contracting parties mentioned in this General Specification are listed hereafter:

- Company: The party which signs the contracts and purchase orders
- Contractor: The party which works for the Company. In Basic Engineering phase, the contract is an Engineering activities contract. After EPCC contract award, the contract is an Engineering, Procurement, Construction, Pre-commissioning and/or Commissioning contract
- Subcontractor: The Telecom integrator qualified by Company which handles all Telecom EPCC discipline activities under a contract either from Company or from EPCC Contractor(s)
- Vendor: The supplier of the equipment.

2. Reference documents

The reference documents listed below form an integral part of this General Specification.

External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published at the effective date of this document.

Reference	Title
Directive 94/9/EC	Directive 94/9/EC of the European Parliament and the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres
IECEX 01	IEC System for Certification to Standards relating to Equipment for use in Explosive Atmospheres (IECEX System) - Basic Rules

General Specification		GS EP TEL 700
Telecommunications Engineering services		
Rev.: 08	Effective date: 06/2018	Page: 4 of 24

Total General Specifications

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published.

Reference	Title
GS EP EXP 101	Pre-commissioning and Commissioning specification
GS EP EXP 103	Pre-commissioning and Commissioning Engineering and preparation
GS EP EXP 105	Pre-commissioning Execution
GS EP EXP 107	Commissioning Execution
GS EP SAF 216	Area classification

3. Engineering scope of work

The Contractor / Subcontractor scope of work shall vary according to the phase of the project and according to the type of project (Green field project or Brown field project). The Basic Engineering phase of the project shall be based on the Pre-Project documents generally produced by Company. The Detailed Engineering phase of the project shall be based on the Basic Engineering project documents.

3.1 Pre-project study

For Telecom discipline, the pre-project documents are produced by Company: Telecom philosophy shall be produced and general telecom block diagram may also be produced.

The Telecom philosophy has to include the minimum deliverables expected in the basic engineering phase, in order for the basic engineering contractor to take it into account during basic engineering call for tender phase.

3.2 Basic engineering

3.2.1 Scope of work

During the basic engineering study, Contractor shall define the telecommunication systems architecture and performance substantiated by calculation sheets. Contractor shall prepare the telecommunication systems specifications, systems block diagrams, equipment lay out drawings and schedules.

Radio studies shall be made by a specialized company, sub contracted by the Contractor. Documents such as calculation notes, interferences document, link budgets, coverage and all necessary documents shall be issued. All these documents shall take into consideration all the existing radio networks potentially interfering with the future radio networks, even if they are not related to the project. To be noted that some projects require a detailed level of the basic engineering documents, in which case the documents shall be accordingly detailed.

PAGA coverage shall be developed enough to be able to define the sizing of the central systems.

General Specification		GS EP TEL 700
Telecommunications Engineering services		
Rev.: 08	Effective date: 06/2018	Page: 5 of 24

Contractor scope of work shall include :

- The telecom philosophy, the specifications of the telecom systems and the overall Telecom block diagram. This study will also list the applicable regulations and standards.
- The telecom shutdown philosophy, according to the SAF Company referential and to the project safety concept.
- The telecom systems architecture to meet the project requirements. This will imply liaison with other disciplines to define the additional requirements arising from their basic engineering design.
- A PAGA coverage study done with a professional licensed software, with a view to specifying the required sound pressure level, the loudspeaker loop distribution, the power amplifier and power supply sizing. The study shall also detail the PAGA system philosophy and operational requirements.
- General layout drawings including equipment arrangements, field equipment layout, equipment rooms' layouts and main cable routing.
- The telecommunication tower design, if any.
- Electrical power consumption and heat dissipation analysis for all telecommunication systems.
- Interfaces with the other project packages and discipline such as the Telemetry system, the Process Control system, the Fire and Gas system, the Emergency Shutdown system, etc.
- Interfaces with the existing systems, if relevant.
- Radio frequency plan with allocation requirements.
- The telecom equipment list.
- The Telecom Integrators list and the Telecom Vendors List.
- The Request For Quotation documents.
- The Call For Bids and the technical evaluation matrix if relevant

3.2.2 List of deliverables

According to project type, contractor shall produce the following documents:

Document Title	General description
All projects requirements	
Telecom philosophy	Overall description of all telecom systems
Telecom shutdown philosophy	Autonomy and security level shutdown of all telecom systems
Telecom general systems specifications	Specifications per system except PAGA, CCTV, IDS, Radio, Data network

Document Title	General description
Telecom PAGA specification	Specification for PAGA system
Telecom CCTV specification	CCTV specification for Operation, safety, security needs
Telecom Perimeter Intrusion Detection System specification	Specification for Intrusion Detection System
Telecom radio specifications	Specifications for radio systems: operation, marine, aero, point to point, multipoint, NDB
Telecom voice / Data network specification including cyber security	Data network specification, including SIE/SII segregation and cyber security
Telecom cables specifications	Specifications for project telecom cables
Telecom equipment numbering specification	Equipment numbering
Telecom systems general block diagram	General block diagram showing all telecom systems
Telecom block diagrams per systems	Can be regrouped per systems family (eg radio) except precabing, PAGA.
Telecom Precabing and fiber optic block diagram	Precabing and fiber optic diagrams on site, off site, inter technical rooms
Telecom PAGA block diagram	Block diagram PAGA with all main equipment
Telecom Voice/Data network architecture including cyber security	Network architecture with all data / voice equipment (except terminal user devices) including Industrial networks and enterprise networks, interconnection and cyber security main equipment
Telecom equipment list	Designation, quantity, of telecom equipment. Shall provide sufficient information for bidding phase.
Telecom interfaces and battery limits	Detailed contract interfaces per system including company items, inter packages interfaces, inter disciplines interfaces
Radio frequency plan	List of frequencies with allocation requirements
Telecom Equipment Rooms layout drawings	Layout per telecom rooms
Telecom field equipment layout drawings	Layout for telecom equipment implantation
Radio aerials layout drawings including telecom tower	Antennas position on field (building, mast, etc .)
Telecom Main cable routing drawings	Main cables (FO, copper, coax) routing inter technical rooms and sites

General Specification		GS EP TEL 700
Telecommunications Engineering services		
Rev.: 08	Effective date: 06/2018	Page: 7 of 24

Document Title	General description
Telecom electrical power supply single line diagrams	Electrical diagram showing distribution board to telecom cabinets
Telecom systems power consumption and heat dissipation study	Power consumption per system
Radio systems coverage, line of sight and interference study	Radio coverage, Line of sight feasibility (Antennas height shall be shown)
Public Address and General Alarm coverage study	PAGA coverage study in order to determine quantities of loudspeakers, flashing beacons, amplifiers
Telecom subcontractors list and telecom vendors list	
Company provided item list (to be included in relevant contract Exhibit)	
Telecom package Request for Quotation (when Telecom package out of EPC SOW)	
Call For Tender dossier (when Telecom package out of EPC SOW)	
Subcontractors bids analysis procedure and evaluation matrix (when Telecom package out of EPC SOW).	
Brownfield projects requirements	
Telecom site survey scope of work	Scope of work for survey existing facilities
Telecom site survey report	Site survey report
Existing telecom systems modification specifications	Modification of existing telecom systems for new systems integration
Existing telecom systems modification block diagrams	Modification of existing telecom systems for new systems integration
Temporary sites (construction) requirements	
Temporary telecom systems specification for construction sites	Telecom systems needed in temporary site (Accommodation barges, Crane barges, Jack-up platforms, construction camps, etc.)

3.3 Detailed Engineering, Procurement, Construction, Commissioning

Depending upon the Project contracting policy, two main contractual frames may be selected:

- Either a contract between Company and Subcontractor, awarded during the Basic Engineering and Call For Tender phase, and then endorsed by Contractor

- Or a contract between Contractor and Subcontractor, part of the main EPC contract.

Depending upon the Project contracting policy and according to project phases, Scope of work may be splitted between different contractors.

However a single subcontractor shall be selected for all project packages

3.3.1 Scope of Work

3.3.1.1 Contractor

Contractor shall be responsible of the Subcontractor performance of work but shall also ensure in particular the following points :

- Shall ensure inter-discipline coordination of the work and shall resolve the interface problems with other packages or systems whether internal or external to the plant or installation.
- Shall be responsible of detailed design, procurement, installation, pre-commissioning and commissioning of infrastructures:
 - Technical rooms and facilities (false floors, false ceilings, power supply, HVAC, cable entries, etc.) according with telecom technical rooms layouts issued by the Subcontractor
 - Telecom masts and antennas supports and brackets
 - Field items' supports (PAGA LS and FL, telephone booths, CCTV cameras and monitors, metocean sensors, etc.)
 - Cable trays routing, according to Company and Subcontractor specifications
 - Cables and sockets, including connections except intra-cabinets cabling, according to Company and Subcontractor specifications,
- Shall be responsible for installation, connection, pre-commissioning and commissioning of field items (supplied by Subcontractor): PAGA LS and FL, telephone booths, CCTV cameras and monitors, metocean sensors, etc.

3.3.1.2 Subcontractor

- Shall endorse and update the telecommunication documents produced at the Basic Engineering stage of the project. Any missing document from basic engineering phase shall be produced.
- Shall be responsible for the detailed design and procurement of all telecommunication systems, including their power supplies (except main power supply), as described in the Basic Engineering documents.
- Shall resolve the interface problems with existing telecommunication systems, whether internal or external to the plant or installation.
- Shall verify that the telecommunication systems design fully meet the project requirements.