Base Load Power Hub (BLPH)

Technical Specification, IDS and DDS for Navigation Aid Systems

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

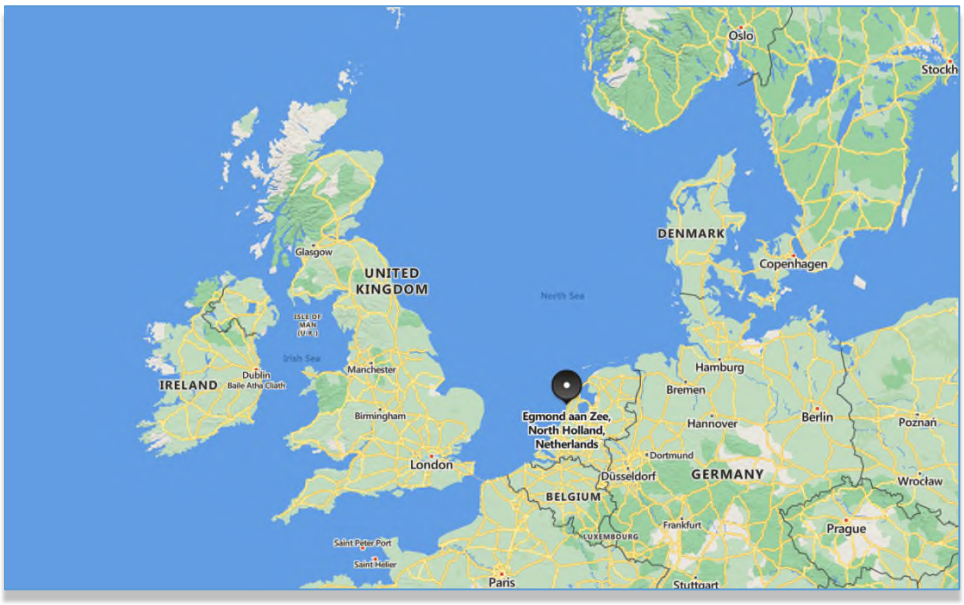


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map

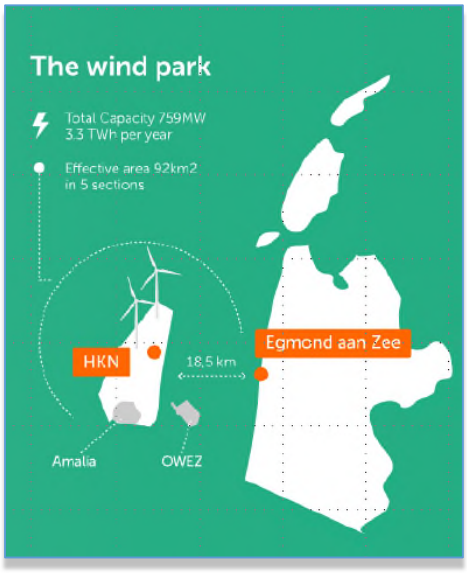


Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

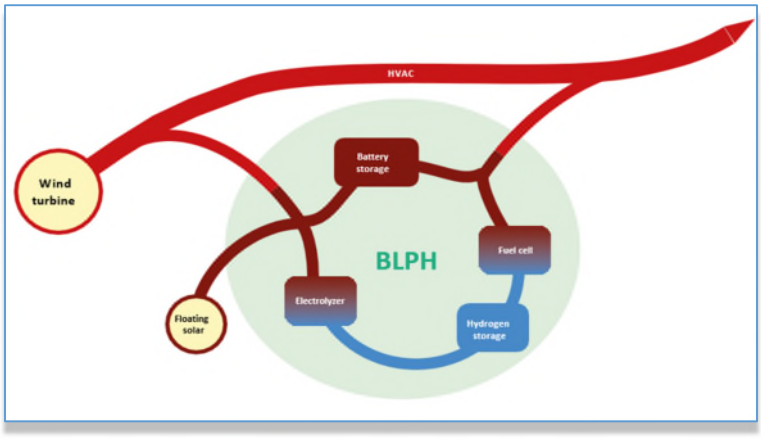


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

2 DOCUMENT SCOPE

This specification covers the general criteria, the scope of work and minimum requirement for the design, manufacture, installation, operation and testing of Navigational Aids and Aviation Obstruction lights system for use on offshore fixed structures.

Navigational aids system comprises of the following:

- Fog signals
- Main marine lanterns
- Red obstruction lights
- Status lights

It shall be the Vendor's responsibility to be, or to become, knowledgeable of the requirements of the references, standards and codes referenced in sections 2.1 and section 4.

Related to the quality assurance and test shall be apply the Quality requirements in Annex I – Inspection Data Sheet.

The Documents that shall be supplied along with the technical proposal and during the manufacturing phase are indicated in the information requirements in Annex II – Document Data Sheet.

2.1 REFERENCES

Doc. No.	Description
DEP 33.64.10.10	DEP Specification – Electrical Engineering Design
DEP 33.80.00.30	DEP Specification - Navigational Aids for Offshore Structures for Global Application
123A90-DDL-EL-MR-20086	MR for Navigation Aid System
123A90-DDL-EL-DS-20088	TDS for Navigation Aid System
123A90-DDL-EL-DL-20139	Navigation Aid System General Layouts
123A90-DDL-EL-SP-20085	Technical Specification for Electrical Requirement in Packaged Units
123A90-PML-QHSE-PRO-00113	Vendor Final Document Requirements & Management
123A90-PML-DIG-PRO-00002	Equipment and System Tag Numbering
123A90-DDL-SAF-RE-30013	Hazardous Area Classification Schedule

Table 1 - Reference Documents

2.2 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	CROSSWIND
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project
INSPECTION AUTHORITY:	The organization representing the Owner or Vendor /Contractor that verifies that the equipment and facilities have been designed, constructed, inspected and tested in accordance with the requirements of this specification and the Purchase Order/Contract.
INSPECTOR:	A qualified individual representing the Owner, Vendor/Contractor or the assigned Inspection Authority, who verifies that the equipment and facilities have been designed, constructed, inspected and tested in accordance with the requirements of this specification and the Purchase Order/Contract.
VENDOR:	Individual, firm or manufacturer that provide Materials/Equipment to COMPANY in accordance with this specification and terms of the Purchase Order.
EMI:	Electromagnetic Interference
EMC:	Electromagnetic Compatibility
Ex:	Explosion Protection Technique
Ex ''dc''	Explosion Protection Technique - Flameproof
Ex ''ec''	Explosion Protection Technique - Increased Safety
Ex ''de''	Explosion Protection Technique – combining Increased Safety and Flameproof approach in design
GRP:	Glass Reinforced Plastic
IALA:	International Association of Lighthouse Authorities
IEC:	International Electro-technical Commission
IP:	Ingress Protection
LED:	Lighting Emitting Diode
LV:	Low Voltage (<1000V)
MCB:	Miniature Circuit Breaker
MCCB:	Moulded Case Circuit Breaker

PE:	Protective Earth
PO:	Purchase Order
SHALL	An absolute requirement
SHOULD	This word indicates a recommendation that whilst preferred may not be implemented provided some equivalent is proposed and agreed by COMPANY. The full implications must be understood and carefully weighed before choosing a different course
THD:	Total Harmonic Distortion
TN-S:	Three Phase and Neutral System (with separate neutral and earth)
UPS:	Uninterruptible Power Supply

Table 2 - Definitions and Abbreviations

3 GENERAL CONDITIONS

3.1 LANGUAGE

All correspondence, engineering documents and manuals shall be in the English language.

4 APPLICABLE CODES AND STANDARDS

VENDOR shall comply with relevant IALA, CAP guidelines and recommendations for the Navigation Aid systems.

The following documents list shall constitute an integral part of this specification.

IEC - International Electro-technical Committee (latest edition shall be applied).

CODES & STANDARDS	TITLE
IEC 60068	Environmental testing
IEC 60079 (All parts)	Explosive atmospheres – All parts
IEC 60331-21	Tests for electric cables under fire conditions. Circuit integrity – Part 21: Procedures and requirements – Cables of rater voltage up to 0.6 /1.0 kV
IEC 60332-3-22	Tests on electric and optical fiber cables under fire conditions – Part 3-22: Tests for vertical flame spread of vertically mounted bunched wires or cables – Category A.
IEC 60529	Degrees of protection provided by enclosures (IP Code)
IEC 61000 (All parts)	Electromagnetic compatibility – All parts
IEC 61204	Low voltage power supply devices, D.C. output – Performance characteristics
IALA Recommendation R0130 (O-130)	Categorization and Availability Objectives for Short range Aids to Navigation
IALA Guideline 1035	Availability and Reliability of Aids to Navigation – Theory and Examples
IALA Guideline G1162	The Marking of Offshore man-made structures
CAP 437	Visual AIDS for denoting obstacles

Table 3 – Codes and Standards

5 ENVIRONMENTAL AND OPERATING CONDITIONS

The Metrological and Oceanographic Data are as given below (source: HKN2018 data @ 1979-2018)

Description	Value	Unit
Ambient Conditions		
Ambient Temperature (min/nom/max) – hourly @ +10m	-8.4 / 10.5 / 25.0	° C
Atmospheric Pressure (nominal) – hourly @ +10m	1013.7	mbar
Specific Humidity (min/nom/max) – hourly @ +10m	4.2 / 6.5 / 9.5	x 10^{-3}
Wind conditions		
Annual average wind speed (at 100m)	9.56	m/s
Extreme Wind Speed for 1-Year Recurrence Period (at 100 m)	33.1	m/s
Extreme Wind Speed for 50-Year Recurrence Period (at 100 m)	41.0	m/s
Marine conditions		
Sea Water Temperature (min/max)	1.2 / 20.2	° C
Average Sea Water Density	1025	Kg/m^3

Table 4 - Metrological and Oceanographic Data

6 ELECTRICAL SYSTEM

1. The A.C. supply to the navigational aids control panel shall be one of the following:
    a. Single-phase (230 Volts, 50Hz)
    b. Symmetrical three-phase with a nominal voltage and frequency. (400 Volts, 50Hz).
    c. One normal and one essential power supply will be provided to NavAid system rectifiers.
2. The navigational aids equipment shall operate satisfactorily under the following simultaneous input supply variation:
    a. Voltage permanent variation : +6 %, -10 %;
    b. Voltage transient variation : ± 20 % with 1.5 second recovery time;
    c. Frequency permanent variation : ± 5 %;
    d. Frequency transient variation : ± 10 % with 5 second recover time.
3. The navigational aids equipment shall operate satisfactorily during transient high-frequency voltages up to 2kV peak which might be superimposed on the input voltage as a consequence of system switching operations.

7 ELECTROMAGNETIC COMPATIBILITY

1. The equipment shall comply with the following:
    a. IEC 61000-6-4 or ANSI C63.12, whichever is applicable, for emission;
    b. IEC 61000-6-2 or ANSI C63.12, whichever is applicable, for immunity.
2. The performance of the navigational aids systems shall not be affected or in any way degraded by the use of portable radio transmitters.
3. Shall be designed and manufactured in accordance with the EMC directive (2004/108/EC).

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8 MARITIME NAVIGATIONAL AIDS SYSTEM

8.1 DESCRIPTION

8.1.1 GENERAL

1. The navigational aids system for offshore installation shall comprise the following in part or total:

   a. Maritime visual
   b. Power supply units
   c. Navigational Aids Central Control Panel (NCCP)

2. Each Aids to Navigation (AtoN) shall have a minimum availability of 0.998 with availability calculated in accordance with IALA Recommendation O-130 on Categorization and Availability Objectives for Short Range AtoN and IALA Guideline 1035 on Availability and Reliability of AtoN.

3. Each Aids to Navigation (AtoN) shall have a minimum reliability of 0.84 with reliability calculated in accordancw with IALA Guideline 1035 on Availability and Reliability of AtoN.

4. The navigational aids shall be purchased as integral packages complete with all wiring between panels which are mounted on a common frame.

5. The Manufacturer/Supplier shall provide type approval for each individual AtoN from the relevant local authorities or an independent third party.

6. The navigational aids system has to be suitable for use in Hazardous area at least zone 1 – IIC (IIB+H) – T1 (e.g. lamps, control panel, battery and isolator box)

7. The navigational lights shall be powered, controlled and monitored from the NCCP.

8. The navigational aids system shall be designed to include remote access capability. For cyber security requirements refer to 123A90-DDL-EL-MR-20086 - MR for Navigation Aid System.

8.2 MARKING OF MAN-MADE STRUCTURES

1. The relevant Hydrographic Office must be informed of the marking, location and extent of any manmade structure, to permit the appropriate charting.

2. Notices to Mariners must be issued to publicize the establishment of a man-made structure. The Notice to Mariners has to include the marking, location and extent of such structure.

3. The competent authority shall be satisfied that the selected lighting has a suitable nominal range and sufficient autonomy to remain powered through all seasonal conditions especially in higher latitudes.

4. The aviation authorities may require additional marking of the structure.

8.3 MARKING OF OFFSHORE PLATFORMS

The offshore platform is recommended to be marked as a single unit. It is recommended that marking of offshore structures meets the minimum requirements identified by the competent authority. The recommended requirements are that:

1. Lights are ideally located not less than six meters and not more than 30 meters above highest astronomical tide (HAT).

2. Have a vertical divergence of the projected beam such that the light will be visible from the immediate vicinity of the structure to the maximum luminous range of the light.

3. Any structure shall be marked at night by one or more yellow lights so constructed and fixed as to ensure that at least one light is visible upon approaching the structure from any direction. Minimum nominal range is recommended to be 5 Nautical miles or as directed by the competent authority (AtoN).

4. are operated when the meteorological visibility is two nautical miles or less – a visibility detector shall be used.

8.4 MARITIME VISUAL NAVIGATIONAL AIDS

8.4.1 Main Marine Lights

- Marine Lights shall be installed in such a way that at least one light has to be visible upon approaching the structure from any direction.
- Light intensity requirements are country-specific and shall follow the applicable National Authority/Coastal State requirements.
- Shall have a nominal range of 5 Nautical Miles.
- Shall be synchronized with each other and emit the Morse letter "U" every 15 seconds.
- The use of LED is allowed when technology is available. In this case, a 100.000 h nominal lamp life shall be guaranteed.

8.4.2 Control of Lights

1. Control of lights shall be fully automatic by means of an outdoor mounted photocell and visibility detector (primary control), for hazardous Zone 1 IIC or (IIB+H2).
2. Photocell and visibility detector shall be managed by the NCCP.
3. The visibility detector shall automatically switch the lights on during daytime when the visibility has decreased below the range specified by the applicable National Authority/Coastal State.
4. The possibility of override switch shall be provided for the photocell and visibility detector.

5. The lens operation shall not be affected by condensation, salt deposits and dust.
6. The final position and orientation of the visibility detector and outdoor mounted photocell shall be advised by the Supplier.

9 OBSTRUCTION LIGHTS

9.1 OBSTACLE MARKING AND LIGHTING

Indicating the presence of obstacles by marking or lighting is intended to reduce the hazards to aircraft operating at low level or moving on the surface, according to applicable CAP 437 recommendations.

Medium intensity steady obstacle lights shall be used for obstacles higher than 45 m.

The combination of white and red obstacle lights shall not be used at the same time to light an obstacle.

Obstruction lights shall be connected to the NCCP and provide protection, health monitoring and control functions.

Obstruction lights shall have selectable manual control option.

9.2 HYDROGEN VENT BEACON REQUIREMENTS

Hydrogen vent beacon shall be lit by means of top and intermediate lights.

9.2.1 Top Lights

- One or more lights shall be located at the top of the obstacle. The layout of these lights shall enable omnidirectional signaling and be visible from the top.
- The lights shall be so arranged as to indicate the highest points or edges of the obstacle relative to the obstacle limitation surface.
- The top light shall be placed between 1.5 m and 3.0 m below the top in order to reduce the effects of discoloration or corrosion from the exhaust fumes.
- Top lights shall be designed to withstand hazardous area according to 123A90-DDL-SAF-RE-30013 – Hazardous Area Classification Schedule.
- Light intensity shall be 2000 cd, steady burning red.

9.2.2 Intermediate Lights

- Intermediate lights shall be spaced as equally as practicable between the top light and ground level.
- When low or medium intensity obstacle lights are used the spacing shall not exceed 52 m.
- The number of lights and the light spacing shall be determined according to CAP 437.
- At each level the lights shall be arranged to give full cover in azimuth.
- Light intensity shall be 2000 cd, steady burning red.

10 STATUS LIGHTS

1. Platform status lights shall be provided at strategic locations to indicate the state of platform security.
2. Status lights shall be connected to the NCCP and provide protection, health monitoring and control functions.
3. The system shall be made up of flashing red lights and automatically initiated at the appropriate hazard level (e.g. gas release) as well as being capable of manual activation.
4. The light system shall be integrated with platform safety system such that it is activated automatically in the event of any occurrence or activity that could endanger its occupant.
5. The platform status lights shall comply, where applicable, with CAP 437.

11 MARINE NAVIGATION AIDS CONTROL PANEL

The maritime visual and audible navigational aids signals shall be controlled and monitored from the Navigational aids central control panel (NCCP).

The NCCP shall be of vendor standard according to IALA and CAP guidelines.

12 POWER SUPPLIES

The navigational aid system shall be supplied from a suitably rated UPS having a minimum 96 hours autonomy.

The design will be based on continuous and reliable service, safety of personnel and equipment, ease of maintenance of equipment and ease of interchangeability.

The electrical equipment shall be selected, designed and manufactured taking into account the site conditions indicated in the relevant Technical Data Sheet.

The UPS will be located within the AC UPS Equipment room and shall be provided with two (2) 100% rated rectifiers connected to a common (shared) battery rated for the full rated load for the autonomy time, as indicated in the relevant Technical Data Sheet.

A NavAid UPS system is only considered to be robust where the overall availability is greater than 99.95%. The overall Mean Time Between Failures (MTBF) shall exceed 200,000 hours with a Mean Time to Repair (MTTR) of eight (8) hours. (These exclude outage time for battery discharge testing and assume that spare parts are available at site).

The charger shall be fed from the three-phase essential switchboard at 400V AC.

Battery voltage and capacity shall fulfil the power requirements when delivering the rated kVA output (whilst also maintaining the output voltage within permissible tolerances for the entire autonomy time).

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The units shall be equipped with all the necessary current transformers, relays, instruments, communication card, and other ancillaries needed for the correct functioning.

Units of measurements shall be in S.I. (System International) units; British unit to be shown between brackets.

12.1 TECHNICAL CHARACTERISTICS

All equipment listed here below shall be designed in compliance with Technical Data Sheet. Withstanding momentary overload shall be taken in account designing equipment, as required in the Technical Data sheet.

Typical NavAid UPS System and Batteries can consist of:

- An incoming breaker.
- A rectifier/battery charger fed by the network thought an isolation transformer.
- Electrics Batteries.
- A dedicated Molded Case Circuit Breaker (MCCB) for the Electric Batteries. EEx-d execution is required if MCCB is installed in a separate box.
- Integrated distribution section.

UPS shall be designed for permanent supply the overall power and for the required autonomy specified on Technical Data Sheet. The rectifier/battery charger shall fulfil the power requirement meanwhile recharge the battery, starting also in the worst discharge condition.

System shall be able to operate directly from the rectifier's output, assuming for example that the battery bank is disconnected.

Plug-in type components shall be used to the maximum extent in the battery charger, and their arrangement shall permit easy replacement of the components.

The output shall be always maintained within the voltage tolerances of the load.

A positive blocking diode must be realized in each rectifier circuit connecting to the common DC bus, to avoid power transfer in the event of that one rectifier unit malfunction or disabled.

Each rectifier shall be able to operate also with disconnected battery.

12.2 COOLING

DC UPS shall be static type, stabilized, and preferably naturally cooled.

12.3 BATTERIES

Storage batteries and their accessories will comply with the requirements of IEC standards with particular reference to IEC-60896 "Stationary lead-acid batteries"or IEC-60623 "Vented Nickel-Cadmium prismatic rechargeable single cell".

Batteries type shall be specified on Technical Data Sheet. The reference temperature for the correct sizing of capacity shall be assured at 25°C.

The batteries shall be suitable to:

- Feed the specified power of loads for the autonomy period specified on the Technical Data Sheet with the rated voltages and the voltage tolerances.
- Operate with a charging system that will perform floating and boosting charge.

For VRLA batteries, temperature compensation of the battery charging voltage shall be provided for the rectifier, with an accuracy of plus and minus 1%. The temperature sensor shall be located in the centre of the battery rack and shall adjust the rectifier output voltage in line with the battery Manufacturers' recommendations. Temperature compensation shall also be considered for other batteries in locations where sustained ambient temperature variations in excess of plus or minus 5 °C are expected.

12.3.1 Installation

Based on what specified on Technical Data Sheet, batteries shall be installed on:

- Steel free standing rack. Rack shall be painted with acid or alkali-resistant paint.
- Free standing cabinet equipped with:
  - removable battery trays;
  - easy accessibility to battery terminals;
  - earthling stud;
  - painted with acid or alkali-resistant paint;
  - lifting bolts.

When batteries are mounted on rack in a separate room, a MCCB shall be installed in a box, closed to batteries to protect cables between batteries and UPS. The MCCB box shall be EEx-d execution, suitable for installation in hazardous area.

12.4 OPERATING PRINCIPLE

Under normal operating conditions the loads shall be shared equally between the two UPS. If the back-up line is provided it shall be in stand-by (stand-by passive redundancy).

Each rectifier/battery charger shall guarantee float charge and the equalising charge of the batteries.

In case of a mains failure, batteries shall supply power to the loads until reaching the minimum residue voltage value.

When normal operating conditions are restored, the UPS can automatically feed the loads while the battery/ batteries that supplied power shall be automatically charged.

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12.5 RELAYS AND INSTRUMENTS

The UPS unit shall incorporate all the necessary equipment to enable operation, protection and control of the UPS in comply with this specification and to safeguard the unit and its components from the consequences of internal and external short circuits, over voltages and any main or control circuit malfunctions, howsoever caused.

Diagnostic, measurement, alarms, operating and status indications on front panel shall be provided.

Microprocessor based protection, control and metering shall be provided for monitoring.

12.6 ALARM AND SUPERVISION SYSTEM

All the alarms shall be visible and audible across panel interface, placed in front of the unit.

A general unique hardwired alarm for the overall system shall be provided. This common alarm shall be wired to the terminal strip, suitable for external connection.

13 HAZARDOUS AREA CLASSIFICATION

All the Navigational Aid System (maritime navigational aids, obstruction lights and status lights) as described in the previous paragraphs, shall be for hazardous Zone 1 IIC (or IIB+H2), T1.

14 CONSTRUCTION REQUIREMENTS

All the components shall be of vendor standard in compliance with the document 123A90-DDL-EL-SP-20085 - Technical Specification for Electrical Requirement in Packaged Units, IALA and CAP 437 recommendations.

VENDOR standard quality materials shall be used for parts and accessories not detailed in the specifications.

Different materials may be offered as an alternative, and they shall meet or exceed the specified requirements. A technical justification for these changes will be submitted with the Quotation. All modifications will be evaluated before acceptance by the CONTRACTOR and updated in Specifications and Technical Data Sheets.

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15 ANNEX – I : INSPECTION DATA SHEET (IDS)

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1 DOCUMENT SCOPE

The purpose of this Inspection Data Sheet (IDS) is to specify the Inspection, Test and Quality intervention activities for the Navigation Aid Systems in accordance with Technical Specification (Doc. 123A90-DDL-EL-SP-20087).

Purchaser intervention activities are identified through the selection of one of four conformity assessment system (CAS) levels based on a risk and criticality assessment. The applicable CAS level is specified by the purchaser in the procurement data sheet or purchase order.

This IDS shall be used in conjunction with the Technical Specification, IDS and DDS for Navigation Aid System (Doc. 123A90-DDL-EL-SP-20087) and the Document Data Sheet (DDS) which together comprise the full set of specification documents. The introduction section in the specification provides further information on the purpose of each of these documents and the order of precedence for their use.

To specify Inspection and Quality requirements for the Navigation Aid System including:

a) supplier quality management system requirements;

b) purchaser conformity assessment (surveillance and inspection) activities;

c) traceability requirements.

2 NORMATIVE REFERENCES

For the purpose of this document, the documents referenced in Technical Specification, IDS and DDS for Navigation Aid System (Doc. 123A90-DDL-EL-SP-20087) and those listed below, in whole or in part, are normatively referenced in this document and are indispensable for its application. For undated references, the latest edition of the referenced document (including any amendments) applies.

API Specification Q1, *Specification for Quality Management System Requirements for Manufacturing Organizations for the Petroleum and Natural Gas Industry*

ISO 9001, *Quality management systems – Requirements*

ISO 29001, *Petroleum, petrochemical and natural gas industries – Sector-specific quality management systems – Requirements for product and service supply organizations*

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3 TERMS, DEFINITIONS AND ABBREVIATIONS

For the purpose of this document, the terms and definitions given in Technical Specification for Electrical Requirement in Packaged Units (Doc. 123A90-DDL-EL-SP-20085) and ISO 9000 (normative to ISO 9001), and the following shall apply.

CAS	Conformity assessment system
DDS	Document Data Sheet
QMS	Quality management system
QRS	Quality requirements specification (this document)

Table 1 - Definitions and Abbreviations

Conformity assessment

Demonstration that specified requirements are fulfilled.

Note 1 to entry: Conformity assessment (or assessment) includes but is not limited to review, inspection, verification and validation activities.

Note 2 to entry: Assessment activities may be undertaken at a supplier/sub-supplier's premises, virtually by video link, desktop sharing, etc. or by review of information.

4 QUALITY REQUIREMENTS

Quality management system

The manufacturer shall operate and maintain a quality management system (QMS) that conforms with ISO 9001, ISO 29001, API Specification Q1 or an equivalent quality management system standard.

Conformity assessment system (CAS)

The conformity assessment system (CAS) provides different levels of assessment of the supplier control activities. The CAS level is defined by the purchaser, using a risk-based approach, and included in the purchase order/contract. The defined CAS level may be adjusted by the purchaser during manufacture based on supplier performance and re-assessment of risk.

NOTEFor industrial proven solutions, CAS level D is specified unless risk assessment indicates that a more stringent CAS level is required.

Quality plans and inspection and test plans shall include provision for purchaser intervention activities based on the CAS level selected in the procurement data sheet or purchase order. See Annex A.

Supplier performance in meeting the requirements may be routinely assessed during execution of the scope and where appropriate, corrective action requested and conformity assessment activities increased or decreased consistent with criticality and risk.

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5 CERTIFICATION AND TRACEABILITY

The manufacturer shall maintain traceability of sub-assembly components to the original component manufacturer tag / serial number and where applicable, associated certification.

6 EVIDENCE – CONFORMANCE RECORDS

Documents and information shall be provided for in accordance with the associated DDS.

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7 ANNEX A

Purchaser conformity assessment requirements

This annex defines four conformity assessment systems (CAS) or levels of purchaser assessment.

Vendor shall perform inspection and test at his shop during construction and before shipment.

The inspection and tests shall be carried out in accordance with applicable documents (Project specifications and Data sheets, Codes, COMPANY specifications, etc.)

The VENDOR shall submit for approval to CONTRACTOR a detailed Inspection and Testing Plan (ITP) based on the following table (I.D.S).

ITEM	DESCRIPTION	TESTING AUTHORITY				REMARKS
		SUP	CTR	CPY	CA	
1	GENERAL					
1.1	Review of the Purchase Order	N	R	R		
1.2	Review of the contractual technical specification	N	R	R		
1.3	Review of the design conditions	C	R	R		
1.4	Check of General Arrangement Drawing for Approval	C	R	R		
1.5	Check of commissioning procedure (SAT)	C	R	R		
1.6	Check of recommended installation procedures	C	R	R		
1.7	Check of the ITP for approval	C	R	R		
1.8	Check of the Quality Procedure (Visual and dimensional Procedure, FAT, NDT Procedure, PMI, etc.)	C	R	R		
1.9	Components datasheet	C	R	R		
2	CHECK OF INCOMING MATERIAL					
2.1	Check of mill certificates concerning mechanical properties, non-destructive examination, etc.,	C	N	R		
2.2	Check of proper material identification by tag/marking	C	N	R		
2.3	Visual, dimensional examinations	C	N	R		
3	NAVIGATION AID SYSTEM					
3.1	TYPE TESTS OF NAVAID SYSTEM					
3.1.1	MAIN LANTERNS					
3.1.1.1	Visibility range measurement	C	R	R		
3.1.1.2	Check on protection degree	C	R	R		
3.1.2	FOG HORNS					
3.1.2.1	Audibility range measurement	C	R	R		
3.1.2.2	Check on protection degree	C	R	R		
3.1.3	RED OBSTRUCTION LIGHTS					
3.1.1.1	Visibility range measurement	C	R	R		
3.1.2.2	Check on protection degree	C	R	R		
3.1.4	STATUS LIGHTS					

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ITEM	DESCRIPTION	TESTING AUTHORITY				REMARKS
		SUP	CTR	CPY	CA	
3.1.4.1	Visibility range measurement	C	R	R		
3.1.4.2	Check on protection degree	C	R	R		
3.1.5	Type tests of abovementioned equipment and components performed according to reference codes	C	R	R		
3.1.6	Type tests of safety execution apparatus for explosive atmosphere	C	R	R		
3.2	ACCEPTANCE TESTS FOR NAVAID SYSTEM					
3.2.1	Accessibility and maintainability of components	C	W	W		
3.2.2	Wiring check	C	W	W		
3.2.3	NCCP Check of correct installation of components, operation of control and devices, interlocks and mechanisms.	C	W	W		
3.2.5	Check of protection degree	C	R	R		
3.2.6	Check of nameplate, wiring cables and terminal blocks identification	C	W	W		
3.2.7	Earthing circuit check (check of continuity of the protection conductors)	C	W	W		
3.2.8	Check fabrication of boards, frames and racks (carpentry)	C	W	W		
3.2.9	Check of Calibration Certificate of standard instruments or equipment used for tests	C	R	R		
3.2.10	Dielectric test (applied voltage test on power and auxiliary circuits)	C	W	W		
3.2.11	Check of electric operation of operation sequence	C	W	W		
3.2.12	Electric continuity and insulation resistance test according to IEC rules	C	W	W		
3.2.13	Check of communication channels (alarm, monitoring values, setting etc.)	C	W	W		Test of exchanged signals performed by simulator instrument
3.2.14	Hardwired interface signal test	C	W	W		
3.2.15	Functional check of all control and tripping devices and circuitry, to prove correct operation of all equipment and its ability to meet specific requirements	N	W	W		
3.3	ACCEPTANCE TESTS FOR BATTERY CIRCUIT BREAKERs					
3.3.1	Visual and dimensional check	C	W	W		

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ITEM	DESCRIPTION	TESTING AUTHORITY				REMARKS
		SUP	CTR	CPY	CA	
3.3.2	Check of cabling and rated data of circuit breakers	C	W	W		
3.3.4	Check of identification nameplate and equipment labels	C	W	W		
3.3.5	Check of ATEX certification	C	W	W		
3.4	ACCEPTANCE TESTS FOR BATTERY					
3.4.1	Rated data check and dimensional check	C	W	W		
3.4.2	Check of compliance with purchase order (battery, connection accessory and battery rack)	C	W	W		
3.4.3	Check of identification nameplate and equipment labels	C	W	W		
3.4.4	Check of battery discharge test report (by manufacturer)	C	R	R		The ordered batteries will be accepted after charge and discharge test, recording the output charger parameters (I- V), check load disconnection during battery discharging and subsequent load re-connection upon first main incoming recovery the tests, performed and certified during the commissioning activities at yard.
3.5	FACTORY ACCEPTANCE TESTS OF COMPLETE UNIT					
3.5.1	Construction drawing and data sheet approval	C	W	W	R	

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ITEM	DESCRIPTION	TESTING AUTHORITY				REMARKS
		SUP	CTR	CPY	CA	
3.5.2	FAT procedure approval check	C	W	W	W	
3.5.3	Visual and dimensional check according to General Arrangement and Data Sheet	C	W	W	W	
3.5.4	Check of accesses for inspection, maintenance and removal.	C	W	W	W	
3.5.5	Nameplate check	C	R	R	W	
3.5.6	Check of weight report or certificate	C	W	W	R	
3.5.7	Grounding connections check (and shielded parts, if applicable)	C	W	W	W	
3.5.8	Cleanliness check before Final Assembly	C	W	W	R	
3.5.9	Battery limits interface connections (JB, terminal blocks, cable entries)	C	W	W		
3.5.10	Packing, and preservation check according to specification (transportation is not included)	C	W	R	R	
3.5.11	Special tools check (if applicable)	C	W	R	R	

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ITEMS	DESCRIPTION	TESTING AUTHORITY				REMARKS
		SUP	CTR	CPY	CA	
4	PAINTING					
4.2	Check of appearance and thickness of different coats (where applicable)	C	W	W	R	Note: All documents must report date of checks, results and operator signature
4.3	Check of documentation: - Verification of painting procedure and technical documentation -Certificates of conformity to specified application cycle -Documentation of atmospheric condition controls day by day. (where applicable)	C	R	R	R	
5	SPARE PARTS					
5.1	Visual and dimensional check Supply status Identification marking/labelling and correspondence with relating documentation/certifications Commitment technical documents correspondence	C	W	W		
6	FINAL DOCUMENTATION					
6.1	Issuing of Release Note (for shipping)	R	H	R		
6.2	IVB / Certification Body Release Note				H	
6.3	Manufacturer Data Book Review	C	R	R		
6.4	Instruction, Operating and Maintenance Manual Review	C	R	R		

Testing Authorities:

SUP	SUPPLIER
CTR	CONTRACTOR (ROSETTI MARINO)
CPY	COMPANY (CROSSWIND)
CA	CERTIFYING AUTHORITY

Type of Action:

H	HOLD POINT
W	WITNESS POINT
R	REVIEW OF THE CERTIFICATES / DOCUMENTS
SW	SPOT WITNESS
M	MONITORING
C	CHECK PERFORMED AND CERTIFICATES / DOCUMENTS ISSUED
N	CHECK PERFORMED BUT NO CERTIFICATES / DOCUMENTS HAS BEEN ISSUED

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16 ANNEX – II : DOCUMENT DATA SHEET (DDS)

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Introduction

The purpose of this Document Data Sheet (DDS) is to define information requirements for the procurement of Navigation Aid System. The DDS defines the information requirements, including format, timing and purpose, for information to be provided by the VENDOR. It also defines the specific conditions which must be met for conditional information requirements to become mandatory. The information requirements listed in the DDS provide references to the source of the requirement.

Instructions

In response to the offer request

Vendor shall submit information as defined in column F 'Issued for Approval' in 'Requirements' sheet and in accordance with the Technical Specification for Navigation Aid System (Doc. 123A90-DDL-EL-SP-20087)

Structure Contents

'Instructions' sheet

The 'Instructions' sheet provides instructions that suppliers shall follow in response to this DDS.

'Requirements' sheet

The 'Requirements' sheet lists information requested during tendering and shall be supplied following award of the PO.

The information requirements are grouped under three broad categories:

— Contract Management Information Requirements
Key information requirements relating to planning, managing, assuring and reporting the execution of the technical scope.

— Technical Information Requirements
Technical information developed by the supplier or their sub-suppliers, during the execution of the PO.

— Purchase Order Specific Information Requirements
Information requirements specified by the purchaser in addition to those detailed by the IRS to meet specific operational, project or legislative requirements.

The 'Requirements' sheet comprises columns A to M.

Column A — 'No.' contains consecutive number of the requirement.

Column B — 'Information Requirements' contains data, documents or models to be provided by suppliers.

Column C — Delivery in Bid - 'Yes' or 'No'

Column D, E — Issue for Information - Required ('Yes' or 'No') / within weeks and Note

Column F, G — Issue for Approval - Required ('Yes' or 'No') / within weeks and Note.

Column H, I — Issue for Construction - Required ('Yes' or 'No') / within weeks and Note

Column J, K — Required As Built — Any information incorporating all changes that have been made to the procured equipment original information prior to the completion of the purchase order.

Column L — Key Document - 'Yes' or 'No

Column M — Documents subject to liquidated damages

'Definitions' sheet

The 'Definitions' sheet comprises columns A to E.

Column A — No. — consecutive number.

Column B — 'Information Requirements' — Contains data, documents or models to be provided by suppliers, based on the Technical Specification, IDS and DDS for Navigation Aid System (Doc. 123A90-DDL-EL-SP-20087)

Column C — 'Description' provides a description of the information requirement.

Column D — 'Format' identifies the format of the relevant information deliverable to be submitted by the supplier as described in Table 1 below.
Note: Project or software specific formats shall be specified by the purchaser by means of their hand over specifications.

Drop-down value	Definition
Native	A native file is the default file format that a software application is designed to work with.
PDF	A universal file format developed by Adobe® and standardized as ISO 32000 which preserves all the fonts, formatting, graphics, and colour of any source document, regardless of the application and platform used to create it. PDF's must be in Optical Character Recognition (OCR) format which is text searchable and indexed.
Hardcopy	A permanent reproduction or copy of data which cannot be easily edited or manipulated, in the form of a physical object, of any media suitable for direct use by a person (e.g. paper).

Table 1 — Deliverable Formats

Abbreviations and definitions

The following abbreviations, terms and definitions have been used in the various sheets of this workbook.

Buyer	Organisation placing a contract or purchase order with supplier for equipment or services on project; may be alternatively referred to as 'user' or 'purchaser'
Company	Project operating entity or the organisation the contractor is under contract to
Contractor	Project contractor responsible for procuring equipment.
Information	Data, documents and/or models
DDS	Document Data Sheet
PO	Purchase Order
IDS	Inspection Data Sheet
SMIR	supplier master Information register
Vendor/Suplier	Organisation supplying equipment or services to the company and/or contractor on project; may alternatively be referred to as "vendor", "seller" or “manufacturer”.

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CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project	ROSETTI MARINO	
	Contract No. CW-I-WP4-2023-05		
Document Title:	Document Data Sheet for Navigation Aid System	Sh. 35 of	41
		Date:	13/01/2025
		Rev.	3

Requirements

Column	Heading — Details and requirements
A	No. — consecutive number of the requirement.
B	Requirement — Contains data, documents or models to be provided by Vendor.
C	Delivery in Bid - 'Yes' or 'No'
D, E	Issue for Information - Required ('Yes' or 'No') / within weeks and Note
F, G	Issue for Approval - Required ('Yes' or 'No') / within weeks and Note
H, I	Issue for Construction - Required ('Yes' or 'No') / within weeks and Note
J, K	Required As Built — Any information incorporating all changes that have been made to the procured equipment original information prior to the completion of the purchase order.
L	Key Document - 'Yes' or 'No
M	Documents subject to liquidated damages

Col A	Col B	Col C	Col D	Col E	Col F	Col G	Col H	Col I	Col J	Col K	Col L	Col M
POS.	DESCRIPTION OF DOCUMENTATION	Delivery in Bid	Delivery after Order (revision issued for……)								KEY DOC.	Documents subject to liquidated damages
			IFI (Information)		IFA (Approval)		IFC (construction)		ASB (as-built)			
			Required / Within weeks	Note	Required / Within weeks	Note	Required / Within weeks	Note	Appr. Required / Within weeks	Note	YES NO	
	CONTROL DOCUMENTS											
1	SUPPLIER MASTER INDEX REGISTER (SMIR)	Y					Y				Y	
2	SUB-SUPPLIER LIST / SUB-ORDER SCHEDULE / SUB-ORDER COPIES				Y / 2							
3	FABRICATION / PRODUCTION SCHEDULE (Bar Chart [A3 max.]) / PROGRESS REPORT				Y / 2			(4)				X
4	SUB-ORDER SCHEDULE / SUB-ORDER COPIES				Y / 2							X
5	TIME SCHEDULE PROGRAM				Y / 2							X
	MANAGEMENT DOCUMENTS											
6	TQ - TECHNICAL QUERY (A4 document)						Y					
7	DR - DEVIATION REQUEST (A4 document)						Y					
8	CR - CONCESSION REQUEST (A4 document)						Y					
	QUALITY DOCUMENTS											
9	QUALITY CONTROL PLAN or INSPECTION AND TEST PLAN (A4 sheets)				Y / 3	(2)	*Y / 5*	(2)				X
	ENGINEERING DOCUMENTS											
	CA - CALCULATIONS											
10	EQUIPMENT SIZING CALCULATIONS (A4 report)				Y / 2		Y					
11	HEAT DISSIPATION				Y / 2		Y					
	DA - GENERAL ARRANGEMENT											
12	GENERAL ARRANGEMENTS (Maximum size A1. drawing scale)	Y			Y / 4		Y		Y		X	X
	DD - DETAIL DRAWING											
13	NAMEPLATE DRAWING				Y / 4		Y		Y			X
	DG - DIAGRAMS											
14	INSTRUMENT/ELECTRICAL LOGIC DIAGRAM (Symbolic and functional logic diagram)				Y / 4		Y		Y		X	X
15	ELECTRICAL SINGLE LINE DIAGRAM or Block Diagram showing functional relationships	Y			Y / 2		Y		Y		X	X
16	INTERCONNECTION DIAGRAMS				Y / 4		Y		Y		X	X
17	WIRING DIAGRAM & TERMINAL SCHEDULE				Y / 4		Y		Y		X	X
18	INSTRUMENT/ELECTRICAL LOGIC DIAGRAM (Symbolic and functional logic diagram)				Y / 4		Y		Y		X	X

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project	ROSETTI MARINO	
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Requirements

Column	Heading — Details and requirements
A	No. — consecutive number of the requirement.
B	Requirement — Contains data, documents or models to be provided by Vendor.
C	Delivery in Bid - 'Yes' or 'No'
D, E	Issue for Information - Required ('Yes' or 'No') / within weeks and Note
F, G	Issue for Approval - Required ('Yes' or 'No') / within weeks and Note
H, I	Issue for Construction - Required ('Yes' or 'No') / within weeks and Note
J, K	Required As Built — Any information incorporating all changes that have been made to the procured equipment original information prior to the completion of the purchase order.
L	Key Document - 'Yes' or 'No
M	Documents subject to liquidated damages

Col A	Col B	Col C	Col D	Col E	Col F	Col G	Col H	Col I	Col J	Col K	Col L	Col M
POS.	DESCRIPTION OF DOCUMENTATION	Delivery in Bid	Delivery after Order (revision issued for……)								KEY DOC.	Documents subject to liquidated damages
			IFI (Information)		IFA (Approval)		IFC (construction)		ASB (as-built)			
			Required / Within weeks	Note	Required / Within weeks	Note	Required / Within weeks	Note	Appr. Required / Within weeks	Note	YES NO	
	DS – DATA SHEET											
19	WEIGHT DATA SHEET (Purchaser's A4 sheet completed by Supplier) [NAVIGATION AID SYSTEM]		Y / 4									
20	EQUIPMENT TECHNICAL DATA SHEETS (Purchaser's A4 sheets completed by Supplier)	Y			Y / 2		Y		Y		X	X
	LIS – LIST											
21	ELECTRICAL CABLE LIST				Y / 4		Y		Y		X	X
22	LOAD LIST				Y / 4		Y		Y		X	X
23	INPUT / OUTPUT LIST				Y / 4		Y		Y		X	X
	SP – SPECIFICATION											
24	COATING PROCEDURE (including surface preparation) (A4)				Y / 4		Y					
	PRO – PROCEDURES (Valid for NAVIGATION AID SYSTEM)											
25	WEIGHT CONTROL / WEIGHING PROCEDURE (A4 Procedure)		Y / 12	(2)								
26	FACTORY / SITE ACCEPTANCE TEST PROCEDURE / PRE-COMMISSIONING / COMMISSIONING PROCEDURES (A4				Y / 8		Y / 12					X
27	EQUIPMENT MANUFACTURER RECORD BOOK (FINAL DOSSIER) - INDEX				Y / 8		Y / 12					
	CERTIFICATES (Valid for NAVIGATION AID SYSTEM)											
28	FACTORY ACCEPTANCE TEST (FAT) REPORT (A4 report) / SITE ACCEPTANCE TEST (SAT) REPORT (A4 report)		Y	(5)								
29	CODE / STANDARD / COMPLIANCE CERTIFICATE (A4 document)					(1)						
30	INSULATION RESISTANCE CHECK (A4 certificate)					(1)						
31	MEASUREMENT OF RESISTANCE (A4 certificate)					(1)						
32	SUPPLIER CERTIFICATE OF COMPLIANCE (A4 document)					(1)						
33	PAINTING / INSULATION COMPLIANCE CERTIFICATE					(1)						
34	CERTIFICATION MATRIX (ATEX, PED, ANY OTHER CERTIFICATION REQUIRED BY THE STATUTORY DIRECTIVES)				*Y/4*		*Y/12*	(3)				
35	EQUIPMENT MANUFACTURERS RECORD BOOK – COMPLETE (A4 bound volume(s) to Purchaser specifications)				Y	(6)					Y	X
36	ELECTRONIC COPY OF EQUIPMENT MANUFACTURERS RECORD BOOK (FINAL DOSSIER)				Y	(6)						
37	PURCHASER's RELEASE NOTE (Issued by Purchaser)		Y	(3)								
38	CERTIFYING AUTHORITY RELEASE NOTES / WAIVERS		Y	(3)								

Requirements

Column	Heading — Details and requirements
A	No. — consecutive number of the requirement.
B	Requirement — Contains data, documents or models to be provided by Vendor.
C	Delivery in Bid - 'Yes' or 'No'
D, E	Issue for Information - Required ('Yes' or 'No') / within weeks and Note
F, G	Issue for Approval - Required ('Yes' or 'No') / within weeks and Note
H, I	Issue for Construction - Required ('Yes' or 'No') / within weeks and Note
J, K	Required As Built — Any information incorporating all changes that have been made to the procured equipment original information prior to the completion of the purchase order.
L	Key Document - 'Yes' or 'No
M	Documents subject to liquidated damages

Col A	Col B	Col C	Col D	Col E	Col F	Col G	Col H	Col I	Col J	Col K	Col L	Col M
POS.	DESCRIPTION OF DOCUMENTATION	Delivery in Bid	Delivery after Order (revision issued for……)								KEY DOC.	Documents subject to liquidated damages
			IFI (Information)		IFA (Approval)		IFC (construction)		ASB (as-built)			
			Required / Within weeks	Note	Required / Within weeks	Note	Required / Within weeks	Note	Appr. Required / Within weeks	Note	YES NO	
SPARES & MAINTENANCE DATA (Valid for NAVIGATION AID SYSTEM)												
39	SPARE PART INDEX REGISTER (COMMISSIONING, 2-YEAR's OPERATION, INSURANCE)		Y / 8									
40	TECHNICAL OPERATING AND MAINTENANCE MANUAL – COMPLETE (A4 bound volumes to Purchaser's specification)				Y / 8		Y / 12				X	X
41	TECHNICAL OPERATING AND MAINTENANCE MANUAL – INDEX				Y / 8		Y / 12				X	X
HANDLING, SHIPPING & SITE INSTALLATION (Valid for NAVIGATION AID SYSTEM)												
42	SHIPPING PROCEDURES (A4 procedure)		Y	(3)								
43	HANDLING AND STORAGE PROCEDURES (A4 procedure)		Y	(3)								
44	ERECTION AND INSTALLATION PROCEDURES (A4 Manuals & Drawings)				Y / 8		Y / 12		P			
45	LIFTING BEAM / FRAME / SLING DRAWINGS / LIFTING ARRANGEMENT DRAWINGS		Y / 8									

Notes (refer to brackets above):

(1) - The list of the certificates shall be comprehensive of all the certificates required according to contract and to applicable Codes / Standard / compliance (e.g: ASME STAMP, PED compliance and technical dossier). The certificates shall be collected and submitted as part of the Manufacturer Record Book. All the certificates shall be made available by the Supplier in due time during the manufacturing activities.

(2) - The delivery due date is within the indicated number of weeks after the PO or at least 4 weeks in advance prior the start of the first activity/test covered by the procedure.

(3) - To submit before the shipping of the supply.

(4) - To be updated every 2 weeks.

(5) - To be submitted as soon as the FAT is completed and ignatures of the involved party taken

(6) - MRB - complete - to be delivered in the due time as specificed in the PO and, in any case, not later than 30 days of the delivery date of the manufactured item

Definitions

Column	Heading — Details and requirements
A	No. — consecutive number.
B	Requirement — Contains data, documents or models to be provided by suppliers, based on the Technical Specification, IDS and DDS for Navigation Aid System (Doc. 123A90-DDL-EL-SP-20087)
C	Description — Provides a description of the information requirement.
D	Format — Defines the required format of the relevant information requirement to be submitted by the supplier.
E	Remarks — Additional information needed to clarify the information requirement.

Col A	Col B	Col C	Col D	Col E
No.	**Requirement**	**Description**	**Format**	**Remarks**
		Contract Management Information Deliverables		
1	Supplier master information register		PDF	
2	Delivery schedule	Schedule depicting, as applicable to the service or product scope, design, supply, manufacture, inspection, testing and delivery activities to be executed by manufacturer/suppliers. Schedule details typically** include;. a) Contractual milestones b) Activity early/late start/completion dates, durations, dependencies (Calendar Dates) c) Critical path and float d) Outsourced services and equipment (cross referenced to purchase order and supplier) e) Information deliverable submission dates identifying any execution activity dependencies Once agreed , changes to planned dates are subject to agreement by user. Progress against planned dates is measured and the schedule updated and reported to the user in accordance with contract reporting agreements. ** Schedule development tools, formats and submission protocols follow the manufacturer's standard practice unless otherwise agreed in the contract.	PDF	
3	Progress report	Report detailing activities completed in the period, percent complete against planned, activities planned for the next period, risks/areas of concern, cause of any delays and proposed recovery plans, concessions, internal and outsourced inspection and audit activities.. Note: may also include actionable items such as Health, Safety, Security & Environment (HSSE) incidents & status if required under the Contract.	PDF	
4	Quality plan	Plan specifying the actions, responsibilities and associated resources to be applied by the manufacturer, and when applicable sub-suppliers, to deliver the services or procured item(s) in conformance with the agreed requirements. ISO9001 Clause 8.1 and ISO10005 may be used to inform the development of quality plans for specific applications, processes or products..	PDF	
5	Sub-supplier delivery schedule	Definition of processes, products or services that will be externally provided and the controls to be applied by the [supplier] to ensure conformance with agreed requirements. The schedule includes evidence of the basis of capability assessment , quality management system certification (or equivalent), process or product qualification for proposed suppliers of outsourced products and services when nominated in the Contract or Quality Requirements Specification (QRS) . Note: ISO9001, API Specs Q1/Q2 define requirements for assessing risks and establishing controls for outsourced products and services.	PDF	
6	Inspection and test plan (ITP)	Tabular presentation of a quality plan typically used for process or product applications to define the specific sequence of operational activities, instructions, acceptance criteria, records and associated manufacturer, user and independent conformity assessment activities. ISO9001 Clause 8.1 and ISO10005 may be used to inform the development of inspection and test plans for specific processes and products.	PDF	
7	Handling, shipping and storage procedure	Definition of practices to be followed during the; storage, transport, lifting and preservation of the equipment and materials included in the scope of supply to maintain their functionality and guarantees. Procedures typically define: a) Packaging requirements; contents, identification, size, weight and number of packages/container (s), b) special packing/unpacking/handling requirements c) storage location and requirements, d) preservation requirements detailing inspection periods and required maintenance, materials required etc., both prior to installation and post installation, but prior to commissioning.	PDF	
8	Non-conformance records	Details of non-conformances raised by or to the manufacturer/sub suppliers against technical requirements prior to or during the delivery of the products or services. Non-conformance is managed by the manufacturer in accordance with ISO9001 Clause 8.7 and associated records typically include; description of non-conformance, analysis and disposition, correction implemented and details of any retesting or inspection taken to demonstrate subsequent conformance. Note: Instances where the proposed disposition is to accept a nonconforming condition are subject to agreement by the user in accordance with the concession management protocols defined in the Contract.	PDF	

Definitions

Column	Heading — Details and requirements
A	No. — consecutive number.
B	Requirement — Contains data, documents or models to be provided by suppliers, based on the Technical Specification, IDS and DDS for Navigation Aid System (Doc. 123A90-DDL-EL-SP-20087)
C	Description — Provides a description of the information requirement.
D	Format — Defines the required format of the relevant information requirement to be submitted by the supplier.
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9	Concession request	Formal submission seeking user agreement to accept deviations from the contracted scope or technical requirements. Requests may be raised as a result of, as examples, material or service availability, obsolescence, innovation, non-conformance. Requests are typically raised as required during execution with a summary report detailing concessions raised, user directions, agreed action status provided with progress reports and at contract closeout.	PDF	
10	Obsolescence management plan	Plan defining the manufacturer's co-ordinated activities to direct and control the strategies for the identification and mitigation of the effects of obsolescence to the user, through all stages of the life of all components within the Navigation Aid systems. An example of the principles of this plan is defined within IEC 62402, Obsolescence management – Application guide.	PDF	
		Technical Information Deliverables		
	Functional design specification	A document containing specific design data and performance requirements for the equipment. This document covers the design, available functionality and the hardware included in the scope. This document can also include images of hardware, topology sketches and extracts from general arrangement drawings in addition to text to provide a common understanding of the assemblies.	PDF	
	General arrangement details	The manufacturer's standard general arrangement drawing showing overall dimensions and critical interface dimensions. The drawing contains references to main specifications and standards. For equipment / components the drawing may include cross sectional views.	PDF	
	Foundation and Installation details	The manufacturer's standard installation drawing showing; • Critical interface dimensions • Interface connections • Weight of assemblies, equipment and components • Centre of gravity • Withdrawal/installation and maintenance space. • Installation and mounting details • Lifting arrangement The drawing to reference to main specifications and standards.	PDF	
	Connection diagram	Drawing providing information about the external physical connections per functional unit including hydraulic, pneumatic and electrical connections.	PDF	
	Circuit and wiring diagram	Drawing detailing in schematic form the functional unit in respect of electrical and instrument circuit connections based on the principles in IEC 61082-1, Preparation of documents used in electrotechnology – Part 1: Rules. The circuit(s) to be shown to the extent necessary for the understanding of the circuit(s) functions and how the components are interconnected. The drawing includes details of all device hardwired connections within the functional unit and external interfaces to terminal blocks. Hardwired connections internal to the functional unit, devices and external interface terminal blocks are to be identified as per manufacturers standard.	PDF	
	Inter-panel wiring diagram	Wiring diagram detailing the control and auxiliary interfaces between functional units. The wiring diagram identifies functional unit inter-connection and field run connections to be made during assembly of transport units.	PDF	
	Probability of failure on demand reliability data	Identifies reliability input data for functional unit and protection relay probability of failure on demand (PFD) to enable user to perform functional safety requirements assessments to IEC 61511-1.	PDF	
	Installation manual	The manufacturer's standard information manual. This document includes sufficient information to install the equipment. It is acknowledged this may be provided as part of an overall IOM manual.	PDF	

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	Maintenance manual	The manufacturer's standard maintenance manual. This document includes sufficient information to maintain the equipment. It is acknowledged this may be provided as part of an overall IOM manual. If required a supplementary sheet can be added identifying components that are not suitable for 5 years continuous operation without inspection or replacement under the user specified service conditions. This will include maintainance of assembly subcomponents.	-	
	Operating manual	The manufacturer's standard operating manual. This document includes information to operate the assembly and subcomponents. This document includes sufficient information for troubleshooting. It is acknowledged this may be provided as part of an overall IOM manual.	-	
	Recommended spare part list (RSPL)	Identified products which may require replacement are listed in a spare parts list identified and described so that the necessary spare, the whole item or parts can be obtained. The spare parts list includes: - reference to project documentation (e.g. drawing number and position number); - the manufacturer's catalogue/unique and unambiguous parts number; - for standardized parts: the real manufacturer's name and catalogue/unique and unambiguous parts number. - reference to tag (where applicable) The list includes equipment manufacturer's recommendation for commissioning and two years operational spares.	PDF	
	Special tools list	The special tools list identifies special tool and equipment necessary for handling, installation, dismantling, operation and maintenance of the Navigation Aid System	PDF	
	Chemical inventory and material safety data sheets	A structured form containing information on the safety, health and environmental protection aspects of the chemical, including protective measures and emergency actions. Safety Data Sheets (SDS) to be in accordance with local/national regulations and in the official operating language of the plant, or in English if accepted by local authorities. A collection of SDS to be delivered to User for chemicals delivered as part of equipment, as first fill or used for preservation before operation. Exceptions are • grease • fat • surface preservatives • coatings • oils in volume per equipment below 10 litres. The report includes one SDS per unique chemical trade name. The report to include a cross reference table with each unique chemical trade name, equipment tag number(s) and SDS file name.	PDF	
	Bill of materials	A list of parts, components and sub-assemblies for equipment with part numbers, item numbers, quantities, material designations and references to specifications including sub-suppliers and associated purchase orders. To include OEM part numbers for components not manufactured by the supplier.	PDF	
	Type test certificate	A document providing objective evidence that the equipment is compliant to relevant standards. To include equipment designation, manufacturer, testing authority name and address, specific year and edition of the IEC used to perform verification and a summary of the proving tests performed.	PDF	
	Lifting equipment test certificate	Lifting equipment test certificate in relation switchgear load certified hoist	PDF	
	Weight data sheet	Document with weight of individual shipping sections	PDF	
	Remote control simulation test procedure	User-agreed functional test procedure of the ECMS or its parts using the parameter set for the planned application including communication interfaces with integrated control and safety systems.	PDF	
	Remote control simulation test report	Results from the execution of ECMS simulation test procedure including communication interfaces with integrated control and safety systems.	PDF	
	Routine verification test (FAT) procedure	Procedure documenting the manufacturers recommended testing activities and acceptance criteria according to applicable standards, specifications and requirements, to document the condition of the equipment as tested from factory. Procedure to define test set-up and test equipment.	PDF	
	Routine verification test (FAT) results	This document records and documents all results from the activities performed in accordance with the FAT procedure. Include any observation rework or retesting.	PDF	

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO
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	Site acceptance test (SAT) procedure	Procedure documenting the manufacturers recommended site tests including discrete functional unit and overall assembly.	PDF	
	Site acceptance test (SAT) report	Site acceptance test report including discrete functional unit and overall assembly.	PDF	
	Cyber security certification	Certification confirming compliance with IEC 62243-4-2 for industrial automation and control system components.	-	
	Certificate of conformity	The manufacture's or other party's confirmation that the product is designed, manufactured and tested as specified. To be delivered according to applicable authorities requirements.	PDF	
Purchase Order Specific Information Requirements				