Base Load Power Hub (BLPH)

Technical Specification for Instrument Air Package - A-63000

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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.

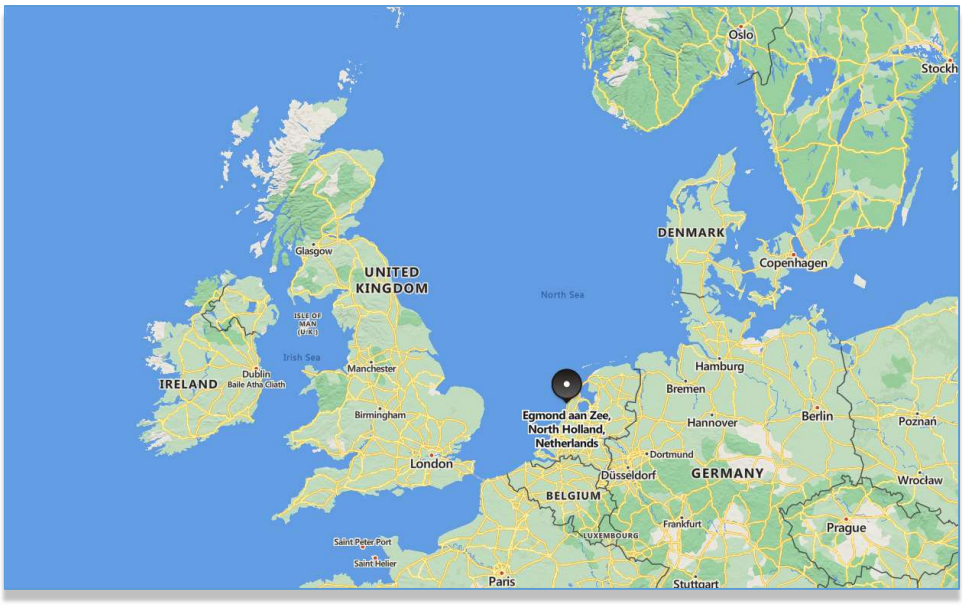


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map

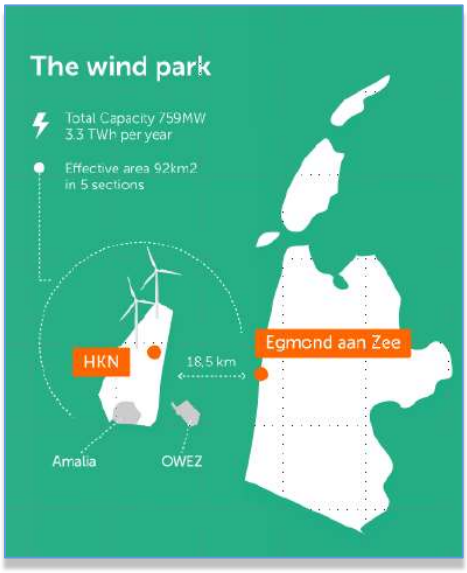


Figure 2 - Wind Park Details

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.

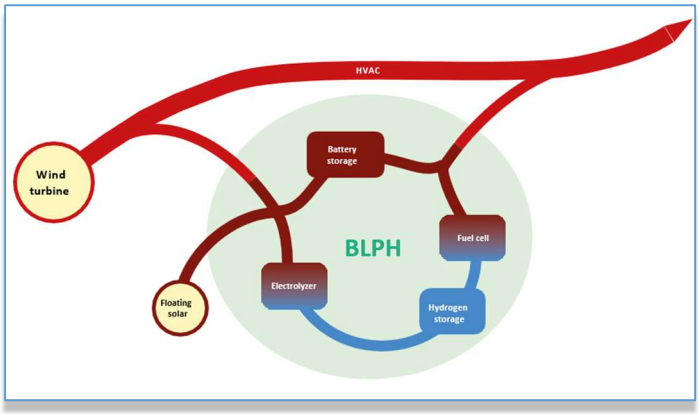


Figure 3 – BLPH Concept

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 describes the design, manufacturing, inspection, testing and supply requirements for Instrument Air Package - A-63000.

The Unit A-63000 include:

- N° 2 Rotary Screw Compressor (2x100%) Duty/Standby
- N°2 (2x100%) Instrument Air dryers: Duty/Standby
- N°1 (1x100%) Instrument Air receiver

Due to reduced space Vendor shall confirm the below maximum dimensions:

Instrument air receiver:

Capacity: 22,9 m3 (De 2500mm x TL-TL 4026mm)

Air package installation:

6500 mm (Length) x 2500 mm (Width) h=2500 mm (Height)

The Supplier is responsible for the equipment design, quality of materials, and full compliance with the requirements of all the applicable specifications, data sheets, standards, codes, and regulations. Any deviation from the present specification shall be clearly highlighted in writing by SUPPLIER during to the Bid Phase and must be approved in writing by COMPANY/CONTRACTOR before proceeding with any kind of activity.

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2.1 REFERENCES

2.1.1 General

Instrument Air Package - A-63000 shall be designed, manufactured tested and delivered according to the requirements of this specification, referenced project documents, data sheets and appropriate European and International standards. Codes and Standards to be used shall be the latest revisions including all addenda available at the date of the requisition for enquiry.

2.1.2 Reference documents

For reference documents please refer to doc:

123A90-DDL-MAC-MR-50030- Rev 01

2.1.2 External, Industry and/or Supplier Standards, local laws and regulations

See also K559-2254-PM-PLN-003 - Basic Design Engineering Package (note: DEP are not applicable for the air compressor package item)

Doc. No.	Description
2014/68/EU	Directive 2014/68/EU (PED - ''Pressure Equipment Directive'').
1999/92/EC	ATEX 153 Workplace Directive
2014/34/EU	ATEX Directive
2014/35/EU	Low Voltage Directive
2006/42/EC	Machinery Directive MD)
2004/22/EC	Measuring Instruments (MID)
305/2011/EU	Regulation (EU) for marketing of construction products
ASME B 16.47	Large diameter steel flanges – NPS 26 through NPS 60.
ASME B 16.5	Pipe flanges and flanged fittings – NPS ½ through NPS 24.
API 520 2020	Sizing, Selection, and Installation of Pressure-relieving Devices - Part 1 - Sizing
API 521 2020	Pressure-relieving and Depressuring Systems
API 526 2017	Flanged Steel Pressure-relief Valves
ASME B31.3	Process Piping
ASME VIII Div 1	Boiler and Pressure Vessel Code - Rules for Construction of Pressure Vessels
ASME IX	Welding, Brazing, and Fusing
ASME V ed. 2021	Non Destructive Examination
ASME II ed. 2023	Ferrous Material Specification
NACE TM 0284 ed. 2016	Evaluation of Pressure Vessels Steels for Resistance to HIC
ASME B 16.5 ed. 2020	Pipe Flanges and Pipe Fittings
IEC 60079	Installation & Maintenance of Electrical apparatus for use in Potential explosive

ASME B 16.47 Series B ed. 2020	Large Diameter Steel Flanges (over 24")
IEC 61892	Mobile and fixed offshore units - Electrical installations
ISO 12944 ed. 2018	Corrosion Protection
EN 10204:2004	Metallic products - Types of inspection documents
ISO 8573-1	Compressed air –Part 1:Contaminants and purity classes
ISO 9001	Quality Management Standard

Table 1 - Reference Documents

The Supplier shall provide the Company/Contractor, with a detailed listing of the Codes, Standards and Regulations complied with in the Supplier's proposal.

Equivalent alternatives may be offered but shall be highlighted in the Supplier's proposal.

Any applicable local Government Regulation, including any additional production / inspection / test / certificate requirement shall be considered by SUPPLIER during Detailed Engineering Phase

2.2 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project

Table 2 - Definitions

API	American Petroleum Institute
TDS	Technical Data Sheet
PID	Process and Instrument Diagram
Asme	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
°C	Centigrade Degree
T.L.	Tangent Line
CS	Carbon Steel
CE	Carbonium Equivalent
EC	European Council
EN	European Norms
°F	Fahrenheit Degree
ISO	International Standards Organisation
NDE	Non-Destructive Examination
OEM	Original Equipmet Manufacturer
PWHT	Post Weld Heat Treatment
RF	Raised Face
RTJ	Ring Type Joint
SS	Stainless Steel
SWL	Safe Working Load
QCP	Quality Control Plan
WPAR	Welders Procedure Approval Records
WPQR	Welders Performance Qualification Records
WPS	Welding Procedure Specification

Table 3 - Abbreviations

3 UTILITY AND SITE DATA

The site condition requirements shall be as per Document No: K559-2254-PM-PLN-003 "Basic Design Engineering Package"

4 HAZARDOUS AREA CLASSIFICATION

The complete Unit, associated equipment and components shall be suitable for no classified area

The unit shall fulfil the requirements of IEC 60079 standards for design. Instrumentation, electrical devices, mechanical parts and all components of the unit shall fulfil also the requirements of European Directive for Atmospheres Explosives, 2014/34/EU (ATEX).

ATEX certification shall be provided for individual equipment and for the complete system/assembly

5 ACOUSTIC REQUIREMENTS

The Noise Level for each single equipment and/or unit shall not exceed the Noise Limit indicated below:

Noise limit: 85dB(A) max PRESSURE LEVEL at 1 m.

6 DESIGN LIFE, RELIABILITY AND MAINTENANCE

The complete Unit, associated equipment and components shall be designed for a minimum service life of 2 years, for outdoor operation, generally in offshore marine environment and/or as specified on the datasheet and others applicable documents. Thus, equipment components should be of a proven design for reliability and shall require minimum maintenance.

Vendor shall also inform Customer about expected additional design life, after expiration of two years

7 SCOPE OF SUPPLY

The scope of supply shall include but not be limited to, the following:

a) Mechanical design, complete fabrication, certification & guarantee of the package as specified in the Mechanical data sheets 123A90-DDL-MAC-DS-50047.
b) Attached to inquiry documents, Supplier shall include: the lay out of the equipment (with equipment dimensions and preliminary weight) and a preliminary PID
c) Mechanical calculation, according to Asme VIII Div.1, including nozzles loads verification, foundation loads calculation, anchor bolts check-up, structural calculation, lifting and transportation calculation, etc.

d) Tests, Inspection, Non-Destructive Examination (NDE), heat treatment(s), pressure testing and HIC Test in accordance with Company/Contractor approved Test and Inspection Data Sheet and/or others applicable documents.
e) Electrical design, complete fabrication, certification & guarantee of the package, including local control panel, battery limit junction box, bounding/earthing etc.
f) AISI 316L Stainless Steel Nameplates & Bracket.
g) All pipes, fitting flanges, manual valves… necessary for the operating of the package as per piping class 01SS
h) Surface preparation and Painting as per 123A90-DDL-MAT-SP-60006_00 Coating and Painting spec
i) Piping clips, platforms and ladders if necessary for maintenance, or for access to valves and instruments (all valves and instruments shall be accessible)
j) Lifting lugs, trunnions and tailing lugs (as specified).
k) Sizing/Design and material specification for foundation bolting. Supplier shall also make provision for embedded plates, levelling screws and shims. If required, the supplier shall provide a foundation template for the vessel.
l) PMI
m) Pickling and Passivation for stainless steel materials.
n) HIC Test according to ISO 15156
o) Post Weld Heat Treatment (PWHT) on welds if required by code
p) Preservation, packing and preparation for shipment including temporary saddles, supports or bracing as required, and nozzle covers. Transportation load calculations shall be provided by Supplier.
q) Certified lifting frame complete with all necessary lifting tackle, including slings and shackles as required to enable a single point lift.
r) Commissioning and start-up spare parts
s) Recommended operational spare parts list for 2 years operation (quotation only with separate, optional price)
t) Drawings and documentation for fabrication, installation, Final Books (Operation and Certifications Manuals)
u) Instrumentations (as per PID and per TDS) cables, junction box and any further item necessary to complete the supply.
v) Quality documents and Procedures e.g., QCP, Welding procedures (WPS/WPQR), welders/operators' qualification, inspection, and test procedures, etc.
w) Special tools, if any, for installation, commissioning, maintenance and start up.
x) the package shall be designed, inspected and certified acc. to PED 2014/68/EU and applicable CE marking directives and CE Marked;
y) Any further material/equipment not indicated in the above list, but necessary to complete the supply and to make it suitable for a proper safe operation;

8 PROCESS PERFORMANCE GUARANTEES

SUPPLIER shall guarantee the performance of Supplied Equipment specified in the contractual Duty Specification: 123A90-DDL-MAC-DS-50047 issued by CONTRACTOR.
SUPPLIER shall guarantee all operating points specified in aforementioned data sheet.
In case of performances not fulfilment SUPPLIER shall make good. All necessary modifications shall be made at SUPPLIER care and expenses.
The SUPPLIER shall guarantee the mechanical behavior and the performance of the equipment to be in accordance

9 BATTERY LIMIT

The SUPPLIER's limit of supply or terminal points shall be as follows:

- Piping

Flanged connections according to ASME/ANSI at battery limits of the supplied equipment.
Refer to package termination points on datasheet and to Piping and Instrument Diagram attached to the MR.
3.4.2. Electrical
Grounding connection
unique interface point for supply power
All necessary documents for calculation, list, etc for electrical system of package
3.4.3. Civil / Steel Structure
Foundation anchor bolts holes for package and for skirt or legs of Air receiver

CONTRACTOR will perform all calculation for foundation/structure design on the basis of the Loads qualified by SUPPLIER.
On the basis of the project standard, SUPPLIER shall specify the proper anchor bolts (provided by others) for package unit/equipment installation.

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10 DESIGN BASIS

10.1 GENERAL

The package shall meet the process and mechanical design conditions specified on the equipment data sheets 123A90-DDL-MAC-DS-50047.

11 DESIGN REQUIREMENTS

11.1 MECHANICAL DESIGN REQUIREMENTS

Unless otherwise indicated in relevant Data Sheet, pressure vessels shall be designed in accordance with ASME Section VIII, Division 1.

The Supplier is responsible for ensuring that the pressure vessel and components provided are suitable for the operating conditions stated in the datasheets and/or others applicable documents, and available utility supplies.

Pressure vessels shall be designed for the most severe loads combination, which may be experienced in construction/fabrication, hydrotest, site erection, normal operation, and maintenance activities. The load combinations shall be defined as per applicable design code.

The Supplier shall co-ordinate the complete design and supply of all the equipment and ensures the satisfactory performance of any sub suppliers. Where the Supplier provides equipment that he has not manufactured, he shall ensure that the items are compatible with all other equipment supplied. The Supplier shall be responsible for guaranteeing all equipment including that provided by any sub suppliers.

11.2 ELECTRICAL DESIGN REQUIREMENTS

Refer to document "123A90-DDL-EL-SP-20085 Technical Specification, IDS and DDS for Electrical Requirement in Packaged Units"

11.3 INSTRUMENTATION AND CONTROL DESIGN REQUIREMENTS

For Instrumentation and control requirements the supplier shall follow the instruction within the following documents:

123A90-DDL-IN-SP-40094: "Instrumentation for Package Unit Specification"

123A90-DDL-IN-DD-40029: "Automation Detailed Design and Construction Package"

11.4 CIVIL AND STRUCTURAL REQUIREMENTS

Structural baseframe/package/supports according to:

K559-2254-PM-PLN-003: "Basic Design Engineering Package"

Design load:

K559-2254-AR-SPE-001: "Architectural Material and Construction Specification" (Appendix A).

Material selection:

123A90-DDL-MAT-RE-60011: "Materials Selection Report"

Vendor construction and architectural finishing type is permitted as long as it meets all the above requirements, subject to our approval.

The package shall be provided with No. 4 support/fixing points, preferably at the corners.

The package shall be provided with adequate lifting points such that no spreader bar is required.

The package (architectural enclose) shall meet the acoustic requirements as stated in Sec. 5.

All welds must be continuous and sealed (no point or alternating welds permitted)

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11.5 DIGITAL DOCUMENTS REQUIREMENTS

3D CAD MODEL FROM SUBCONTRACTORS & SUPPLIERS

As part of the scope of supply, the SUPPLIER shall develop and deliver a 3D model of the supplied equipment to be integrated by CONTRACTOR in the overall 3D model of the Plant.

Package equipment shall be modelled in sufficient detail to facilitate the review of access to all components and instrumentation for operation and maintenance, ergonomic design, piping, instrument and electrical connections.

All interfaces including nozzles and tie-ins shall be detailed and identified, as per the following example, with the same level of detail of the CONTRACTOR's overall 3D model of the Plant:

As a general requirement, model information for all package equipment shall contain information and details to ensure overall design integrity of the plant and to support inspection and maintenance programs. SUPPLIER is requested to specify in the offer which items will be modelled and with which tool, considering the selected 3D model SW for the Project is Aveva E3D 3.1.

It may be tolerated to receive 3D CAD Model of equipment or packages in an exchange format compatible with Aveva E3D, provided that the equipment or package hasn't process functionality and is not represented on a PID (e.g., Crane, Pig Trap, Drum, Tanks & Vessels, Vent tip, CO2/Nitrogen skids, Pumps, Actuators, ELE I&C TCOM bulk items etc.).

The exchange format shall be one of the following:

- AutoCAD Files (.dwg dxf)
- Autodesk DWF Files (.dwf*.dwfx)
- Inventor Files (*.ipt, *.iam)
- Revit Files (*.rvt, *.rfa)
- Rhino Files (*.3dm)
- SolidEdge Files (*.par, *.asm, *.pwd,*.psm)
- SolidWorks Files (*.sldprt, *.sldasm, *.sldfpp, *asm)
- STEP Files (*.stp, *.step, *.stpz, *.stp.z) / STEP XML (*.stpx, *.stepxz, *.stpxml)

In the other cases, i.e. for packages/skids with tagged objects on PID, the Aveva E3D is the preferred option.

Any deviation must be specified and agreed with CONTRACTOR.

Supplier's Data Management

As per COMPANY contractual requirement, all plant main assets and all assets with high impact on operation & maintenance activities must be tagged as per the below specification:

123A90-PML-DIG-PRO-00002 Equipment and System Tag Numbering

For example, all items shown on SUPPLIER's PIDs must have a project specific tag, as well as any other major component even if PID doesn't exist.

Asset Register

SUBCONTRACTOR will develop and deliver a complete Asset Register consistent with the information in process flow diagrams, equipment drawings and maintenance manuals, for loading into COMPANY Asset and Maintenance Management Systems.

This Asset Register will contain a list of all Production Assets split over Process Assets (e.g. process, process support, utility, materials handling, etc.) and Non-Process Assets (e.g. buildings, special tools, personnel movement related, etc.), together with below information, ref to documentation and data, including:

a. Item Tag
b. Description
c. Location in the plant
d. Manufacturer
e. SUBCONTRACTOR
f. Model
g. Specifications project number
h. Maintenance item & plan project number
i. Criticality (HSSE, Production or other)

PURCHASER will submit to SUBCONTRACTOR during the PO execution phase an excel template with the list of concerned tags. It shall be SUBCONTRACTOR duty to validate the tag list and return to PURCHASER the filled list.

11.6 NAMEPLATES

a) Manufacturers name.
b) Manufacturers serial number.
c) Purchasers order number and item number
d) Manufacturers type designation (if applicable)
e) Tag number (if applicable)
f) Operating Process Conditions
g) Design Process Conditions
h) Weights
i) PED CERTIFICATION
j) ASME "U" STAMP + NBR CERTIFICATION (if applicable)
k) Hazardous area classification (if applicable)

Nameplates shall be made of stainless steel AISI 316L with the information being punched or engraved on.

PWHT vessels shall additionally be marked with letters 150mm high:

11.7 EC DECLARATION OF CONFORMITY AND CE MARKING

As per scope of supply, Supplier shall be subjected to the Conformity Assessment according to the applicable EU as Manufacturer of each of the below mentioned Items to be considered as Products to be placed on the EU Economic Area (EEA).

11.8 PAINTING

Surface preparation and Painting as per 123A90-DDL-MAT-SP-60006_00 Coating and Painting spec

11.9 MATERIALS

If not otherwise specified in Data Sheet, materials used shall be new and shall be exclusively those listed in the relevant tables of the applicable Design Code. Materials quality shall be as specified in the datasheets. However, the supplier shall confirm the suitability of specified materials in accordance with the process conditions, environmental conditions, design codes and good industry practice. The use of different materials from the specified ones shall require the written approval of the Company/Contractor during to the Bid Phase.
All Carbon Steel Materials shall be supplied in fully killed and normalized conditions. Low temperature materials shall be supplied with impact test at the minimum design temperature.
If not otherwise specified in Data Sheet, maximum carbon content on ladle analysis and maximum carbon equivalent base on ladle analysis shall be maintained in the suitable range as per applicable materials standards to assure the metal weldability.
All Stainless-Steel Materials for the pressure parts shall be supplied with relevant intergranular corrosion test certificate
Plate material shall not be used for flanges. Only forged materials shall be used for nozzle and manholes flanges.
Gaskets containing asbestos shall not be allowed.
Materials substitution during manufacturing activities is forbidden.
Materials shall be certified EN 10204 type 3.1 for pressure parts and type 2.2 for other parts.

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11.10 FABRICATION

11.10.1 General Requirements

Prior to commencement of manufacture, the Supplier shall submit fabrication drawings and welding, heat treatment, Coating, NDT and final testing procedures for Company/Contractor review and approval.
Upon completion of construction, testing, and final acceptance the Supplier shall provide as- built drawings.

All welds joining pressure-containing parts and welds which are subjected to mechanical loading, shall be made in accordance with a dedicate WPS/PQR which complies with ASME Section IX. A separate WPS shall be defined for weld repairs, including all relevant details about the repair procedure.

Testing shall be carried out on welds in their final condition (after post weld heat treatment if applicable). The test records shall be verified by the Company/Contractor inspector.

Welders/operators employed on the fabrication of pressure vessels within the scope of this specification shall be qualified in accordance with ASME IX. The WPQR shall be verified by the Company/Contractor before starting of fabrication activities.

The vessel or parts of the vessel that require PWHT shall be supported and protected so that deformation cannot occur. Machined surfaces, flange faces, etc., shall be protected from oxidation during heat treatment. No welding, hammering or deformation is permitted after PWHT.

11.11 QUALIFICATION OF WELD PROCEDURES

Welding procedures that are used, qualified by a previously Recognized Authority approved by the Company/Contractor at Supplier's expense, shall be approved by the Company/Contractor and shall be in compliance with the codes referred to in the drawings or specifications and by the laws in force in the locality where the vessel is to be installed.
Welds on pressure vessels shall be carried out by welders or welding operators suitably qualified for the welding procedure, the filler material used and the position of the welds to be made.
All welding parameters detailed in the ASME IX WPS format shall be measured during weld procedure qualification. Each welding pass shall be monitored for Volts, Amps, travel speed and arc time and an average Heat Input calculated.
Preheat and interpass temperatures shall be continuously monitored throughout the qualification.

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12 INSPECTION AND TESTING

12.1 GENERAL

The responsibility for inspection and testing rests in the Supplier scope of work. However, the Company/Contractor reserves the right to inspect the vessels at any time during fabrication to ensure that the materials and workmanship are in accordance with the specification and drawings.

Inspection and testing shall be carried out by the Supplier in accordance with the quality inspection and testing plan submitted by the Supplier and approved by the Company/Contractor.

Material certificates shall be available at the time of inspection. The material markings shall be stamped on the material used for the pressure vessels and *shall be ringed in white*.

12.2 VISUAL INSPECTION

The pressure vessel shall be visually inspected to assure conformity with the approved design drawings, datasheets, and specifications. The visual inspection shall be in accordance with the approved test and inspection plan and will include the following as a minimum:

a) dimensional check.
b) surface quality.
c) paint quality.
d) execution of appurtenances.
e) die-stamped identification.
f) marking and shipping requirements.

12.3 NON-DESTRUCTIVE EXAMINATION (NDE)

Unless otherwise indicated, the butt-welds of pressure parts (shell, heads, nozzles) shall be spot RT as indicated in vessel Data Sheet and as for ASME VIII. Radiographic examination, technique and evaluation shall be in fully compliance with ASME V. If radiography is not possible ultra-sonic (UT), magnetic-particle (MPI) or liquid penetrant (LPI) examination shall be carried out, in that order.

NDE reports shall be verified by the purchaser's inspector.

Pressure vessels requiring radiographic inspection, ultrasonic and PWHT shall be subject to ultrasonic (radiographic as per Supplier requirements) examination before PWHT and radiographic examination after PWHT.

12.4 HYDROSTATIC TEST

All slag, loose scale, dirt, grit, welding splatter, paint, oil, and foreign materials shall be removed thoroughly prior to the hydrostatic pressure test and the final inspection of the pressure vessel.

Hydrostatic testing shall be carried out before installing removable internals and before coating and painting. The test shall be carried out using potable water with less than
50 ppm of chlorides content
Unless otherwise indicated, the test pressure shall be held for at least 1(one) hour per 25 mm of plate thickness but in no case less than 1(one) hour
Hydraulic test certificate shall be released by the Supplier. Hydraulic test chart, gauges calibration certificates, water test certificate, etc., shall be attached to the hydraulic test certificate.
Gaskets used for the pressure tests shall be of the same type and quality as the service gaskets. No repairs, welding or heat treatment should take place after hydrostatic testing without the Company/Contractor permission.

Welds on reinforcing pads shall be tested with bubble (soap) solution and compressed air at a pressure of 0.5 to 1.0 bar (g), before PWHT and hydrostatic testing of the vessel.

After completion of hydrostatic test, all vessels shall be drained and thoroughly dried. Stainless steel, stainless steel clad/overlaid and duplex vessels shall be dried using swabs or airflow at ambient temperature in accordance with a Company/Contractor approved procedure.

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12.5 SUPPLIERS QUALITY SYSTEM

The Supplier's quality control system shall be in accordance with the applicable codes. Moreover, the following requirements shall be met:

a) Identification of the materials used in the fabrication of the vessel or parts thereof ensuring that parts taken from semi-finished materials are punch marked.
b) Welding procedure qualifications and qualifications of manual welders and automatic welding machine operators shall be available before beginning fabrication.
c) Employers' approval of any type of repair.
d) Availability of documents for repairs attesting that they have been carried out using appropriate methods required by the codes and specifications.
e) Availability of documents relating to all heat treatment performed on the vessel or parts thereof.
f) Availability of documents relating to non-destructive tests performed on the vessel or parts thereof. If the results of examinations and inspections show defects, the Supplier shall take the necessary corrective action. In the event of serious or systematic deficiencies or of difficulty in interpreting the result of checks the Supplier shall carry out
additional examinations and consider alternative tests and inspection. In particular:
   - Ultrasonic examination of welds where radiographs are difficult to interpret.
   - Re-qualification of the welding procedure if there are systematic defects.

13 APPENDIX 2 - IDS

COMPRESSED AIR SYSTEM (IDS)

CONCERNED COMPANIES:
[C] COMPANY [B] EPC CONTRACTOR [T] CERTIFYING AUTORITY [S] SUPPLIER

CERTIFYING AUTHORITIES:

OTHER: OFFICIAL AUTHORITY:

TYPE OF INTERVENTION:

H BINDING PRESENCE. The cycle continuationis bound to the presence
P BINDING PRESENCE FOR THE % INDICATED IN THE NOTES
W NOT BINDING PRESENCE. In case of unwitnessed test the Supplier is authorized to continues the production cycle supplying the appropriate documents.
R CHECK OF THE CERTIFICATES AND/OR DOCUMENTS.
C CHECK CARRIED OUT WITH RELEASE OF CERTIFICATE.
N CHECK CARRIED OUT WITHOUT RELEASE OF CERTIFICATE.
D SIMPLE DOCUMENTATION.

SPECIFICATIONS / DRAWINGS / REFERENCE STD:

INTERNATIONAL CODE AND STD:

1) **ANSI / ASME**
2) **PNEUROP / CAGI**
3) **MACHINERY DIRECTIVE 2006/42/EC**
4) **PED 97/23/EC**
5) **ISO 1217 2009**
6) **ATEX (if applicable) 94/9/EC**

AIR COMPRESSORS (IDS)

ITEM	DESCRIPTION OF CHECKS AND TESTS	CODE OF INTERVENTION				REFERENCE
		C	B	T	S	
1	Drawings & Data Sheets approval check	R	R		R	
2	Review of material mill's certificates (chemical analysis & mechanical properties) for casing, shaft, rotors	R	R		R	EN 10204
3	Welding procedures and welders qualification (WPS+WQP+PQR) approval check	R	R		R	ASME IX
4	NDT (Non Destructive Test) according to codes for type of material	R	R		R	ASME V
5	Electric motor rough materials tests certificates (origin/Std.Manufacturer): rotor, stator	R	R		R	
6	Electric motor materials tests certificates during the fabrication: visual dimensional; NDT (according to codes for type of material)	R	R		R	
7	Electric motor type, routine and performance test	R	R		W	CEI / IEC
8	Electric motor final tests certificates: Nameplate check; Visual, dimensional check; Official certification for EEx-d-execution (if applicable); Type test; Individual test	R	R		R	
9	Weldings check	R	R		R	
10	Test procedure approval check	R	R		R	
11	Hydrostatic test of pressure parts	W	W		W	Testing Procedure
12	Mechanical running test	W	W		H	Testing Procedure
13	Performance test	W	W		H	Testing Procedure
14	Visual inspection of internal parts after test	W	W		W	Testing Procedure
15	Vibration measurement	W	W		H	Testing Procedure
16	Noise measurement	W	W		H	Testing Procedure
17	Auxiliary consoles and panel FAT	W	W		H	Testing Procedure
18	Full functional	W	W		H	Testing Procedure
19	Visual and dimensional check	W	W		H	
20	Weight control	R	R		W	
21	ATEX certificates (if applicable)	R	R		R	
22	Nameplate check	R	R		R	
23	Painting Inspection (type, colour, surface preparation, primer, final, dry film thickness and certifications)	R	R		R	

This document undergoes an issuance cycle within EDMS Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

AIR COMPRESSORS (IDS)

ITEM	DESCRIPTION OF CHECKS AND TESTS	CODE OF INTERVENTION				REFERENCE
		C	B	T	S	
22	Spare parts check (type, quantity and labelling)	R	R		C/R	
23	Completeness supply check according to the purchase order	R	R		H	
24	Packing inspection, marking and packing list check	R	R		W	
25	Final documentation review (Data Book)	R	R		H	
26	EC declaration of conformity of the complete unit	R	R		H	

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AIR DRYER PACKAGE (IDS)

ITEM	DESCRIPTION OF CHECKS AND TESTS	CODE OF INTERVENTION				REFERENCE
		C	B	T	S	
1	Check of completeness of the supply according to the purchase order	R	R		N	
2	Work Programm	R	R		R	
3	Welding procedures and welders qualification (WPS+WQP+PQR) approval check	R	R		R	
4	NDT (Non Destructive Test) according to codes for type of material	R	R		R	
5	Test procedure approval check (Hydrostatic test of pressure parts, Mechanical running test	R	R		R	
6	Performance test	R	R		H	Testing procedure
7	Visual and dimensional check	R	R		H	Testing procedure
8	Weight control	R	R		H	
9	ATEX certificates (if applicable)	R	R		R	
10	PED certificates (if applicable)	R	R		R	
11	Nameplate check	R	R		R	
12	Painting Inspection (type, colour, surface preparation, primer, final, dry film thickness and certifications)	R	R		R	
13	Spare parts check (type, quantity and labelling)	R	R		C/R	
14	Packing, marking and packing list check	R	R		W	
15	Final documentation check (Data Book)	R	R		H	
16	ATEX certificates (if applicable)	R	R		R	
17						
18						
19						
20						
21						

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FILTER / VESSELS (IDS)

ITEM	DESCRIPTION OF CHECKS AND TESTS	CODE OF INTERVENTION				REFERENCE
		C	B	T	S	
1	Drawings, Data Sheets & Calculations approval check	R	R		R	
2	Review of unrefined materials certificates (visual/dimensional, NDT, chemical analysis & mechanical properties)	R	R		R	
3	Welding procedures and welders qualification (WPS+WQP+PQR), approval check	R	R		R	
4	Test procedure approval check	R	R		R	
5	NDT (Non Destructive Test) according to codes for type of material	R	R		R	
6	Visual and dimensional examination of internal parts prior to installation	R	R		W	
7	Visual and dimensional check of the assembled vessel	R	R		H	
8	Hydrostatic test	R	R		H	
9	Check of name plate and marking	R	R		R	
10	Painting inspection (type, colour, surface preparation, primer, final, dry film thickness and certifications)	R	R		R	
11	Spare parts check (type, quantity and labelling)	R	R		C/R	
12	Completeness supply check according to the purchase order	R	R		W	
13	Packing, marking and packing list Check	R	R		W	
14	Final documentation review (Data Book)	R	R		H	
15	Filtering elements check	R	R		W	
16	Check of filtering elements disassembling	R	R		W	
17	ATEX certificates (if applicable)	R	R		R	
18						
19						
20						

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14 ATTACHMENT 1 - SMIR

GENERAL NOTES:

1) All documents must be issue in PDF file created from native file.

2) The Supplier shall re-issue the documents including Contractor and/or Company comments within 2 weeks from the relevant transmittal.

3) All documents necessary for the tests, must be issued for Construction and approved by Rosetti Marino.

4) If necessary, Supplier has issue Technical Clarification / Deviation Request before to proceed with activities in order to receive approval.

5) Manufacturer Record Book must be sent in PDF files with bookmarks, also native file of all documents (final copy approved) must be supplied.

6) The editable file is attached and, in case of order Supplier shall issue it as a separate document

This document undergoes an issuance cycle within EDMS Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

SMIR - REGISTRO DOCUMENTI / *SMIR - SUPPLIER MASTER INFORMATION REGISTER*

Ordine n°/*order nr.*		Fornitore/*Supplier*:		
data / *dated*:		Codice F./ *S. Code*:		
Commessa / *Job*:		Indirizzo/ *address* :		
Descrizione / *Description*	AIR COMPRESSOR AND DRYER SYSTEM	Persona di riferim./ *contact person*:		
Macrofase / *Phase*				

Pos.	Document nr. Client (1)	Doc Client Rev. (1)	Document nr. Internal	Document nr. Internal Rev. (2)	Document nr. Supplier (3)	Doc Supplier Rev. (3)	SMIR -SUPPLIER MASTER INFORMATION REGISTER AIR COMPRESSOR AND DRYER SYSTEM	Disciplina / *Discipline* (5)	Blocco Classe / *Class Block* (6)	Docum. Format (7)	first issue date (8)	Third Party Approval (I/A)	KEY Document Ingegneri-	Documents subject to liquidated damages	Document Approval (I/A)
							CONTROL DOCUMENTS								
1							SMIR - SUPPLIER MASTER INFORMATION REGISTER	Eng-Mechanical							A
2							SUB-SUPPLIER AND SUB-CONTRACTOR LIST	EXP							A
3							FABRICATION / PRODUCTION SCHEDULE	EXP						X	I/A
							QUALITY DOCUMENTS								
4							INSPECTION TEST PLAN (ITP)	QUA						X	A
							ENGINEERING DOCUMENTS								
5							SYSTEM/PACKAGE FUNCTIONAL DESCRIPTION	Eng-Mechanical							I
6							STATIC AND DYNAMIC LOADS AT PACKAGE SUPPORT BASEFRAME	Eng-Mechanical					X	X	A
7							PACKAGE CAUSE EFFECT MATRIX /LOGIC DIAGRAMS	Eng-Mechanical							A
8							CERTIFIED PACKAGE GENERAL ARRANGEMENT AND DIMENSIONAL OUTLINE DRAWINGS (INCLUDING : NAMEPLATE, BASEFRAME, FOUNDATION LOADS, NOZZLES LOADS, NOZZLES LIST, BATTERY LIMITS)	Eng-Mechanical						X	X	A
9							GENERAL ARRANGEMENT - AIR COMPRESSOR	Eng-Mechanical					X		A
10							GENERAL ARRANGEMENT - AIR DRYER	Eng-Mechanical					X		A
11							GENERAL ARRANGEMENT - AIR PRE AND POST FILTRATION SYSTEMS	Eng-Mechanical					X		A
12							GENERAL ARRANGEMENT - COOLING SYSTEMS AND EQUIPMENT	Eng-Mechanical							I
13							EQUIPMENT SECTIONAL DRAWING WITH BILL OF MATERIAL	Eng-Mechanical							I
14							PACKAGE 3D MODEL DRAWING AND ELECTRONIC FILE	Eng-Mechanical						X	A
15							AIR COMPRESSOR CROSS SECTIONAL DRAWING AND BILL OF MATERIAL	Eng-Mechanical							I
16							AIR DRYER CROSS SECTIONAL DRAWING AND BILL OF MATERIAL	Eng-Mechanical							I
17							PACKAGE PIPING SCHEMATICS AND BILL OF MATERIALS	Eng-Mechanical					X		A
18							PACKAGE BLOCK DIAGRAM	Eng-Mechanical							I
19							PACKAGE WIRING DIAGRAM - ELECTRICAL	Eng-Mechanical					X	X	A
20							PACKAGE WIRING DIAGRAM - INSTRUMENT	Eng-Mechanical					X	X	A
21							PACKAGE INTERCONNECTING DIAGRAM	Eng-Mechanical					X	X	A
22							PACKAGE ELECTRIC AND INSTRUMENTATION CONNECTION DIAGRAM OF JB AND LOCAL BOARD	Eng-Mechanical					X	X	A
23							PACKAGE EARTH GROUNDING DRAWINGS AND DIAGRAMS	Eng-Mechanical							I
24							PACKAGE INSTRUMENTS POSITION AND CABLES RUNNING LAYOUT	Eng-Mechanical							I
25							PACKAGE STRUCTURAL CALCULATION REPORT	Structural							I
26							PACKAGE STRUCTURAL DETAIL DRAWINGS INCLUDED FIXING POINTS and LIFTING POINTS	Structural					X		I/A
27							PACKAGE WALLS & ROOF DETAIL DRAWINGS INCLUDED DETAILS	Structural							I
28							PACKAGE ARCHITECTURAL DRAWINGS	Architectural							I
29							LAYOUT OF PACKAGE CONTROL PANEL	Eng-Mechanical							I
30							PACKAGE WEIGHT DATA SHEET	Eng-Mechanical					X		A
31							MOTORS DATA SHEETS	Eng-Mechanical					X	X	A
32							DATA SHEETS - AIR COMPRESSOR	Eng-Mechanical					X	X	A
33							DATA SHEETS - AIR DRYER	Eng-Mechanical					X	X	A
34							DATA SHEETS - PRE/POST AIR FILTERS	Eng-Mechanical							I
35							DATA SHEET - AIR COOLERS	Eng-Mechanical							I
36							PACKAGE EQUIPMENT NOISE DATA SHEET	Eng-Mechanical					X	X	A
37							AIR COMPRESSOR NOISE DATA SHEET	Eng-Mechanical					X		A
38							AIR DRYER NOISE DATA SHEET	Eng-Mechanical					X		A
39							INSTRUMENT DATA SHEETS	Eng-Mechanical							I
40							VALVES DATA SHEETS	Eng-Mechanical							I
41							AIR COMPRESSOR PERFORMANCE CHART	Eng-Mechanical					X	X	A
42							AIR DRYER PERFORMANCE CHART	Eng-Mechanical					X		A
43							MATERIAL SAFETY DATA SHEETS	Eng-Mechanical							I
44							ELECTRICAL LOAD LIST	Eng-Mechanical					X		A
45							INPUT/OUTPUT LIST	Eng-Mechanical					X		A
46							UTILITIES CONSUMPTION LIST	Eng-Mechanical							I
47							PACKAGE INTERFACES MAP AND LIST (TERMINAL STRIPS, FLANGES, PIPES, ETC)	Eng-Mechanical					X		A
48							INSTRUMENT LIST WITH SET POINTS/CONTROL/ALARM/SHUTDOWN	Eng-Mechanical					X		A
49							CABLES LIST	Eng-Mechanical							I
50							PACKAGE P&ID	Eng-Mechanical					X	X	A
51							PAINTING SPECIFICATION	Eng-Mechanical					X		A
52							HYDROSTATIC AND OR PNEUMATIC TEST PROCEDURE	Eng-Mechanical							I
53							FAT (FINAL ACCEPTANCE TEST) PROCEDURES	Eng-Mechanical							I
							CERTIFICATES								
54							PERFORMANCE TEST CERTIFICATES	CERT							
55							FACTORY ACCEPTANCE TEST CERTIFICATE	QUA							I
56							MANUFACTURERS RECORD BOOK (FINAL DOSSIER)	CERT						X	A
57							MANUFACTURERS RECORD BOOK (FINAL DOSSIER) - INDEX	QUA							A
58							CERTIFICATION DOSSIER (INCLUDING ALL TEST CERTIFICATES)	CERT							
59							PURCHASER RELEASE NOTE	EXP							I
60							CERTIFICATION MATRIX (ATEX, PED, ANY OTHER CERTIFICATION REQUIRED BY THE STATUTORY DIRECTIVES)	QUA							A
61							ATEX REGISTER	Eng-Mechanical							A
62							DECLARATION OF CONFORMITY (SUPPLIER)	QUA							I
							SPARES & MAINTENANCE DATA								
63							SPECIAL TOOLS LIST FOR ERECTION AND MAINTENANCE	Eng-Mechanical							I
64							INSTALLATION, OPERATING AND MAINTENANCE MANUAL INDEX	Eng-Mechanical						X	I
65							INSTALLATION, OPERATING AND MAINTENANCE MANUAL (INCLUDING SITE ERECTION INSTRUCTIONS AND PROCEDURES)	Eng-Mechanical						X	I
							HANDLING, SHIPPING & SITE INSTALLATION								
66							PRESERVATION AND PACKAGING PROCEDURE	LOG							I

Notes:

(1) Numero documento Cliente
Document number assigned by final Client
(2) Numero documento interno
Document number internal
(3) Numero documento Fornitore (assegnato dal Fornitore)
Document number assigned by Supplier
(4) Assegnare il Titolo del documento (assegnato dal Fornitore)
Fill in the document title (to be assigned by Vendor)
(5) Specific are la disciplina (compilato da Rosetti)
Quality dep., Expediting. Dep., Commissioning dep., Engineering dep.
(6) Blocco Classe: Specifica, Disegno, Report, Data Sheet, etc. (compilato da Rosetti)
Procedure, list, drawing, data sheet, etc. (to be filled by Rosetti)
(7) A4, A3, A1 (compilato dal Fornitore)
A4, A3, A1 (Supplier)
(8) Data prevista per l'emissione del documento (compilato dal Fornitore)
Foreseen date for the first issue (Supplier)

15 ATTACHMENT 2 – STATEMENT OF COMPLIANCE

STATEMENT OF COMPLIANCE	

List of proposed deviations

All deviations shall be clearly stated on this sheet, with reference to SUPPLIER's quotation. Each proposed deviation shall be supported by a Deviation Request Form.
A proposed deviation is accepted if the related Deviation Request Form as been reviewed by Purchaser and APPROVED by COMPANY before the Purchase Order placement.
No deviations shall be accepted after the Purchase Order has been sent to SUPPLIER.

Item #	Subject	Proposed deviation description + reference to the section of the Requisition and SPECIFICATIONS concerned by the deviation

Remarks :

Date : Signature :

Name : Function :

Purchaser	**XXX**	**Requisition no**	**XXX**
PO number	**XXX**	**Sheet**	**1 of 1**
Project		**Rev.**	

16 ATTACHMENT 3 – ELECTRICAL AND INSTRUMENTATION EQUIPMENT EX CERTIFICATION LIST

ATTACHMENT 3 TO DOC 123A90-DDL-MAC-SP-50031

CROSSWIND ROSETTI MARINO

Revision	Discipline	Tag Number	Description	Location	Manufacturer	Model/Type/ Catalogue Number	Serial N°	ATEX Certification/Marking	Reference Document	ATEX certificate number	Notes / Comments
01	ELE	18-AL-3401	Actuator Louver	Lower Deck	Schischek	EX MAX – 5 .BF		Ex d [ia] IIC T6,T5 and T4	AR-VPL-10-DR03-000233	PTB 04 ATEX 1028X	

EXAMPLE

INSTRUCTIONS/NOTES:

1_Coloumn "Revision" will change when info in the row should be change

2_ Coloumn "Location" owner is CTR (RM) and not the Vendor

3 _ For All Vendors of : Lightings,Fire&Gas Sensors,Junction Boxex ; Vendor will fill only column of "Serial Number" , the Column "Tag Number" the owner will be CTR(RM) during Pre commissioning activities

4_Column "Reference Document" the owner are Vendor (where applicable) anche CTR (RM).