Base Load Power Hub (BLPH)

VENDOR FINAL DOCUMENT REQUIREMENTS & MANAGEMENT

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N.A.

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.

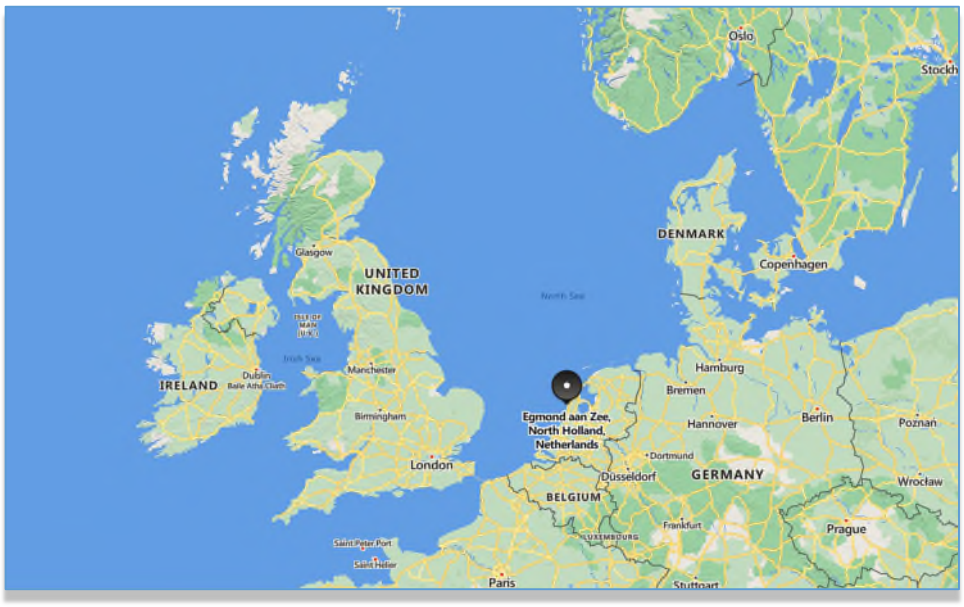


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map

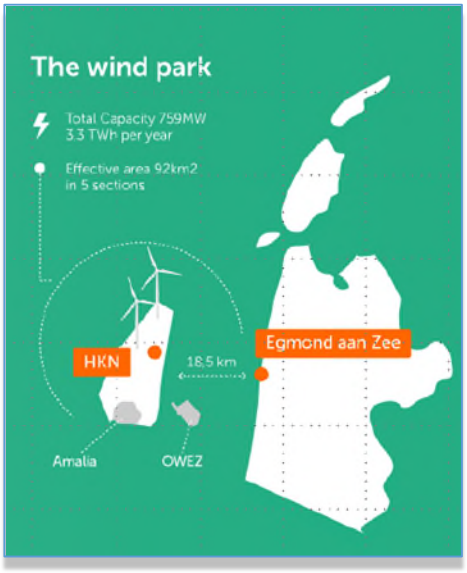


Figure 2 - Wind Park Details

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.

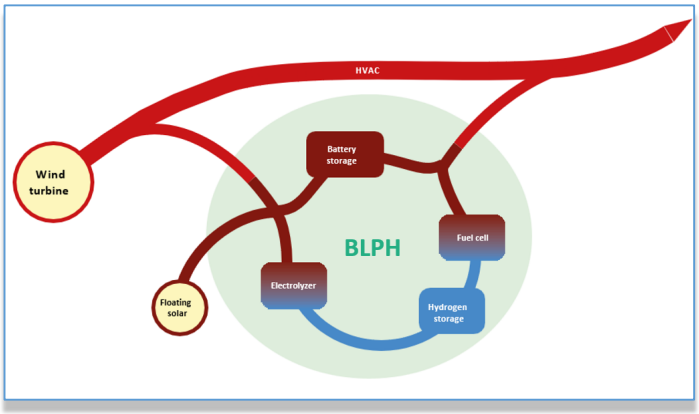


Figure 3 – BLPH Concept

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 PURPOSE

This document is established as a guideline to assist vendors in organizing the MRB in a structured and coherent manner. It offers a framework to guide vendors through the preparation process, ensuring all necessary criteria are met with precision. Additionally, vendors are encouraged to propose their standards, which will be evaluated against this document as a term of reference.

3 SCOPE

This procedure applies to all vendors involved in supplying materials and equipment for the Base Load Power Hub (BLPH) project for Crosswind. It outlines the necessary steps and requirements for the creation and submission of the Manufacturer Record Book (MRB) to ensure compliance with project specifications and quality standards.

This procedure does not apply to bulk supplies for which only material certificates are required.

4 REFERENCES

Doc. No.	Description
123A90-PML-QHSE-QP-00002	PROJECT QUALITY PLAN

Table 1 - Reference Documents

4.1 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project
VENDOR OR SUPPLIER	Any organization employed by Rosetti Marino to supply either products or services.
MRB	Manufacturing Record Book

Table 2 - Definitions and Abbreviations

5 RESPONSABILITIES

5.1 VENDOR

- The VENDOR is responsible for providing the Index of the MRB and the final documentation (both electronic and paper copies) in the quality and quantity specified in the Material Requisitions, the Contract, and this specification. This must be done within the specified timeframe.
- The VENDOR is responsible for mobilizing the necessary resources and tools to fulfill its contractual obligations effectively.

- In cases where the VENDOR procures materials and equipment integrated into a Package or Equipment, the VENDOR must compile and review the sub-Supplier MRB, incorporating it into its own MRB as per the provided instructions and the PO, unless otherwise specified.
- The VENDOR is also responsible for conducting as-built checks of the equipment to ensure alignment with the provided drawings and vendor data tables.

5.2 CONTRACTOR

- The CONTRACTOR is responsible for forwarding the contractual requirements pertaining to the Manufacturer Record Book (MRB) to the Vendor. This includes expediting and verifying both the Preliminary and Final versions before submitting them to the COMPANY.
- The CONTRACTOR's review, approval, or control of the SUPPLIER Final MRB does not relieve the VENDOR of their responsibilities.
- The CONTRACTOR maintains the authority to provide comments, approve, or reject the Supplier Final MRB. In all cases, the documentation must be updated and reissued in accordance with the provided comments.
- The CONTRACTOR shall ensure that the information contained in the MRB accurately reflects the as-built condition.

6 MANAGEMENT OF MRB REVIEW / COMMENTS

The Vendor must commence the preparation and assembly of the MRB immediately after the approval of the MRB index. This ensures ongoing design, engineering, manufacturing, and maintenance monitoring. The Vendor is responsible for ensuring that all Sub-vendors' quality assurance and quality control meet the order's certification requirements.

6.1 APPROVAL OF MRB INDEX

For equipment categorised under inspection levels I and II, the discussion regarding the MRB Index will take place during the Pre-inspection Meeting.

For all other equipment types, the VENDOR shall transmit the MRB Index to the CONTRACTOR no later than one month after the effective date of the Purchase Order (PO+1 month).

The MRB index must include the following components: external cover sheet(s) of the MRB, spine cover sheet(s), internally completed front page(s), and an Index for each volume.

The indexes and contents of the Dossier are specified in this document, and the VENDOR is requested to create their own MRB Index based on these specifications.

The MRB Index will be either commented on or approved as Code 1 (approved with no comments), 2 (approved with comments), or 3 (rejected).

In the event of a Code 3 marking, indicating rejection, the VENDOR shall submit modified MRB Index for reconsideration.

After CONTRACTOR approval, the COMPANY retains the right to review the MRB index as well.

6.2 APPROVAL OF PRELIMINARY MRB

For equipment falling under inspection levels I and II, an initial documentation review of the Supplier Final Dossier will be carried out at the VENDOR's premises.

For each inspection level, and following the approval of the MRB Index, the VENDOR shall provide the CONTRACTOR with soft copy of the Preliminary MRB for review. This submission should occur no later than 2 weeks after the final inspection. If any documents within the Preliminary MRB are not approved, the VENDOR shall prepare a list of outstanding documents.

The Preliminary MRB will undergo review by the CONTRACTOR, who will provide the VENDOR with the duly completed MRB Comment Sheet.

In the event of rejection of the MRB by the CONTRACTOR, the VENDOR shall revise and resubmit the MRB.

6.3 MRB REVIEW AT VENDOR'S PREMISES

During expediting Inspection at vendor's premises, the MRB preparation status will undergo a review by the CONTRACTOR.

Any comments or recommendations made by the CONTRACTOR Inspector or representatives from the COMPANY must be promptly addressed. Making necessary corrections during intermediate reviews is crucial to ensuring the timely submission of the Vendor's MRB.

During the Final Inspection, the CONTRACTOR Inspector will review the MRB, which shall have been updated in accordance with the comment sheet. After the inspection the CONTRACTOR Inspector shall record the status of the MRB in the release note.

6.4 FINAL APPROVAL OF MRB

Within three (3) weeks of supply delivery, the VENDOR shall submit a preliminary soft copy of the SUPPLIER MRB to the CONTRACTOR for review.

Upon receiving written approval from the CONTRACTOR, the VENDOR is responsible for issuing the SUPPLIER MRB in both electronic and paper formats.

It's important to note that the scope of supply will not be deemed complete until the MRB has been issued, reviewed, and officially approved.

7 STRUCTURE OF THE SUPPLIER FINAL DOSSIER

The Vendor is required to create a comprehensive index, based on the guidelines provided below. It's important to note that this index may not be finalized during the preliminary stage. Additionally, some sections of the index may not apply, depending on the nature of the SUPPLY.

In cases where a paragraph is not relevant to the specific material being considered, it should still be included in the index with the notation "NOT APPLICABLE."

MRB shall be divided in 2 parts listed here below:

Part 1 – Design Dossier

Part 2 – Certification Dossier

7.1 PART 1 – DESIGN DOSSIER

This section encompasses a thorough compilation of all the "As Built" design data, drawings, and documents.

Documents should be sub-categorized as follows.

The documents listed below serve as examples and do not constitute a comprehensive list of requirements:

- **List:**
  - Documents register
- **Diagrams**
  - PFD
  - P&ID
  - ESD
  - Isometrics
  - Systems diagrams
  - Block diagrams
  - Computer Systems Architectural Diagrams.
- **Drawings**
  - General arrangement drawings
  - Plot Plans
  - Layouts
  - Discipline Drawings (Structure, Piping…)
  - Detail shop drawings (excluding detailed machining drawings).
- **Project Procedures and Specification**
  - Project Management –
  - Engineering –
  - Procurement/Supply
  - Construction
  - Manufacturing and Testing procedures
  - Installation -Transportation
  - Hook-up
  - Start-Up
- **Piping Classes**
- **Calculation Notes**
  - Discipline Calculation notes/sheets (process, structural, piping…)
  - Activities Calculation notes/sheets (supports, sail-away, transportation, installation…)
  - Weight and centre of gravity reports.
- **Equipment requisitions**
- **Data Sheets**

7.2 PART 2 – CERTIFICATION DOSSIER

This section encompasses a thorough compilation of all Quality Records documents.

It contains all evidence certifying that the required quality level has been attained (e.g., all Certifying Authority Reports/Certificates).

The documents are to be organized by "discipline section" as outlined in Part 1.

Documents should be sub-categorized as follows.

The documents listed below serve as examples and do not constitute a comprehensive list of requirements.

- **Acceptance**
  - Derogations and queries registers with signed copies
  - Internal and External Inspection certificates/reports (Vendors)
  - Conformity with technical specification certificates
  - Acceptance qualifications list (equipment/construction)
  - Documents confirming Takeover/Hand over between parties.
- **Manufacturing and testing Record**
  - Authorities and Third parties' acceptance and release certificates/reports
  - Materials certificates (including consumables, such as electrodes and paint)
  - Weighing and Centre Of Gravity certificates
  - Warranty Surveyor's certificates.
  - Floating and Marine Registrations (Classifications)
  - Quality Control plan /Inspection & test Plan / Inspection Reports
  - Marking drawings and associated traceability
  - Non-Destructive Testing certificates/reports
  - Dimensional control certificates/reports
  - Painting certificates
  - NCR's and Waivers reports
  - Welding and preheating book/procedures
  - Painting procedures
  - Workers qualifications (welders, painters…).
  - Compliance with CE Marking, ATEX, and PED requirements as relevant to the scope of supply.
  - Relevant equipment Design IRCs (where applicable)
  - Pressure & Function Test Reports
- **Test Record.**
  - Test records included any qualification testing that has been performed when applicable.
  - Production test result records.
  - Mechanical Completion records
  - FAT reports

8 FORMAT OF THE DOCUMENTATION PACKAGE

The Final dossier package submitted by the Vendor will be part of the overall Final Documentation of the whole project.

Therefore, following rules to harmonize the format must be followed strictly.

All documents in the MRB shall be legible and of quality suitable for reprography, size reduction and microfilming, irrespective of their origin.

All prints of drawings and documents that are to be included in the MRB shall be reduced in size to A4 and A3 size where reprography results in legible copies.

This document, designated as the Master Copy, is archived by the Contractor. The durability of the packaging is influenced by its quality, which encompasses the quality of the binders, paper, and craftsmanship involved.

When making the Master Copy, the electronic documents are printed (in colour) and collected to create the binders. The use of "recto-verso" is accepted.

The documents are placed in numbered binders. Each one contains the general table of contents (Master index) and the summary of the volume the binder belongs to.

Each volume of each final dossier shall be carried out progressively and consistently as the work progresses as individual documents achieve "approved" status (AFC or ASB) and returned code 1 by CONTRACTOR and COMPANY (Code 1 ~ Accepted without Comments).

In the Master Copy, documents common to multiple sections should not be duplicated; instead, references should be provided in the section where the duplicated document would ordinarily be placed.

The use of colour markers and highlighting pens is not permitted in order that information is not lost during subsequent monochrome photocopying or electronic imaging.

All documents shall be in the English (United Kingdom) language.

8.1 PAPER SUPPORT

Hard-copy process for the document shall be initiated ONLY after approval by the CONTRACTOR and COMPANY of the Master File.

It's required one (1) hard copy of the MRB and one soft copy of the MRB.

8.2 BINDERS SPECIFICATIONS

- Colour White
- System 4 spring – loaded "D" Rings
- Paper retaining clip Chrome plate
- Post length 35 or 55mm heavy duty
- Covers PVC cover with clear full depth PVC pocket on front & spine
- Size 310mm high x 280mm wide, able to contain documents in A4 format according to ISO 216, or A3 folded in such a way that they are the same size as an A4.

A non heavy duty binder will be rejected by CONTRACTOR. The binders shall not be overfilled (no more than 80%).

The size required for the frame of the cover page is 15pt or 10mm, and the size of the binders' spines shall be 15pt or 5mm.