Base Load Power Hub (BLPH)

PACKING, HANDLING, SHIPPING,

PRESERVATION AND STORAGE PROCEDURES

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Table of contents

1 INTRODUCTION 5

1.1 PROJECT OVERVIEW 5

1.1.1 Project Location 5

1.1.2 Project Concept 6

PACKING, MARKING, PRESERVATION & SHIPPING PROCEDURE

1) SCOPE 9
2) GENERAL REQUIREMENTS 9
3) HANDLING OF VALVES 9
4) PACKING/RESPONSIBILITY 9
5) MARKING OF CASE 10
6) PROTECTION WITH WATERPROOF BAGS (WHEN REQUESTED BY THE CUSTOMER) 11
7) STORAGE AND MAINTENANCE AT SITE 11

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List of Figures

Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map 5

Figure 2 - Wind Park Details 6

Figure 3 – BLPH Concept 6

List of tables

Table 1 - Reference Documents 8

Table 2 - Definitions and Abbreviations 8

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.

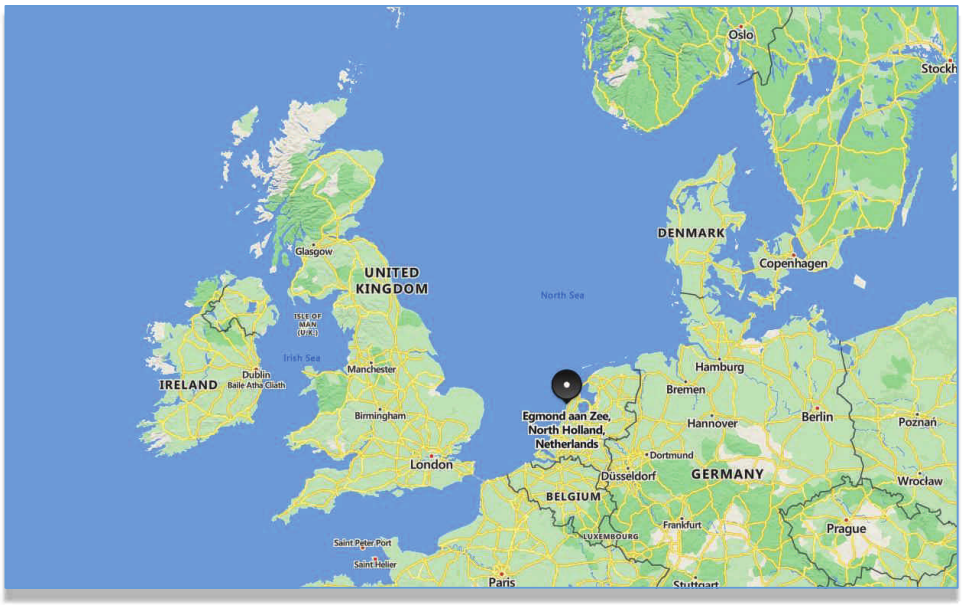


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



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.

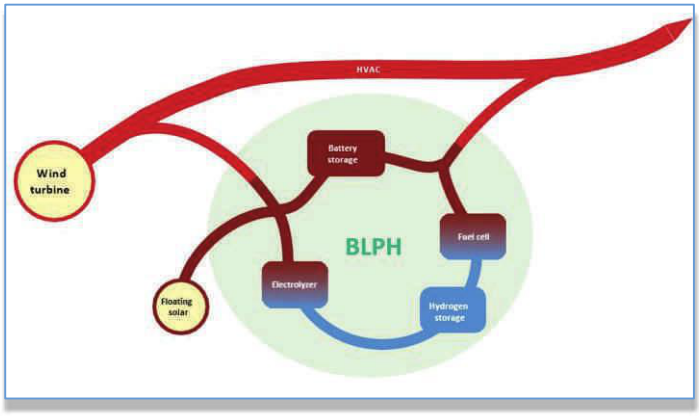


Figure 3 – BLPH Concept

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.

PRODUCTS:

"VSP" NEEDLE VALVES/MANIFOLDS
"VSF" BALL VALVES
"CVH" CHECK VALVES

INDEX

1) SCOPE
2) GENERAL REQUIREMENTS
3) HANDLING OF VALVES
4) PACKING/RESPONSIBILITY
5) MARKING OF CASE
6) PROTECTION WITH WATERPROOF BAGS (WHEN REQUESTED BY THE CUSTOMER)
7) STORAGE AND MAINTENANCE AT SITE

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Date	27/11/2023	27/11/2023	27/11/2023
Signature	L.Imbriani	E. Ranzani	C. Cattaneo

1) SCOPE

This manual procedure deals with the procedures and methods to manage the handling, packaging, storage, preservation and delivery of the manufactured valves and valve components.
This procedure manual specifies the requirements and responsibilities that should be applied in order to prevent thermal diffusion, obstruction, damage and misuse of the valve.

2) GENERAL REQUIREMENTS

The solvents and/or corrosion inhibitors shall be used with adequate ventilation. Adequate ventilation is required for curing of corrosion inhibitors used, and to avoid formation of an explosive atmosphere. The partially cured film of corrosion inhibitors should not be exposed to ignition sources such as flares, flames, sparks, excessive heat, or torches.

3) HANDLING OF VALVES

Handling of valves shall be done using correct and proper handling equipment considering their capacity, limits and their maintenance conditions to avoid damages of the material itself and any potential cause of injury/harm to involved personnel. The valves shall be lifted using the established lifting points.

4) PACKING/RESPONSIBILITY

For the preparation of the goods for the shipment we must proceed as follows:

1. Take the delivery note

2. Proceed to pick up the material from the warehouse and tick off each item mentioned in the document

3. Check if on the delivery note there are special instructions for the packaging of the goods requested by the customer

4. Prepare the packaging for any item indicated in the delivery note (for example if on the delivery note there are three positions we must proceed to issue three different packaging)

5. Set the foaming machine; lower the bag, place it on the bottom of the box and press with the appropriate template to create a homogeneous and compact plan

6. Connections Protection:
Stick rubber or Plastic cups protection on Flanges & HUBs
Plastic Cap/Plug on non plugged threads

7. All uncoated metallic components are in in 316 minimum and do not required additional treatment/coating

8. Recheck that all the items indicated in the delivery note are present before storing the material in the box

9. Place the goods to be packed on a flat surface

10. With another bag of foam composing the upper layer which will take the shape of the product. After this operation make sure that the product is perfectly adherent to the bag in order to prevent that during the transport will be damaged because of bumps

11. Close the carton box, making sure that the layer of foam is completely fills the box

12. Close the box with tape above and below

13. After closing the package, attach the label on the package, add the reference /positions of the order, the weight

14. On the delivery note indicate the weight and dimensions of the shipment

5) MARKING OF CASE/CARTON BOXES

Our standard packing is carton boxes on pallets. The marks will be printed in black colour on DYMO labels and will be clearly legible. Minimum content of marking as follows:
- Consignee/delivery address

- Customer

- Purchase Order No.

- Item No.

- Case No. of

- Gross Weight (Kg)

- Net Weight (Kg)

- Dimensions : x x (cm)

When requested by the customer we can use wooden cases and all the markings shall be legible, permanent and not covered by banding or in any other way. Package shall be marked on at least two sides (long side and short side). All information will be fixed to each package in a Waterproof A4 size labels.

6) PROTECTION WITH WATERPROOF BAGS (WHEN REQUESTED BY THE CUSTOMER)

The protection is an action directed at satisfying the needs connected to the maintenance of the integrity of the contents and it is used to guarantee the insulation of the products against the action of atmospheric or degrading agents, such as water, water vapour, salt air, pressure/depression. In all this case, the choice is the waterproofing bag with vacuum.

The materials for fitted barriers are compounds of polyethylene and aluminium and are selected according to their degree of permeability to water vapour and their mechanical resistance. They have a low transpiration grade and are therefore the only not rigid products that allow the protective sheet to keep its vacuum status for long time. All this conforming to standards MIL/TL.

These coupled barriers that we called barrier bags, must be hermetically sealed and a depression must be created inside that will reduce the volume of air it containts and eliminate as much as possible the quantity of relative humidity in the barriers.

Inside the barrier certain amount of dessicant salts must be inserted, sufficient to keep the relative humidity below a certain level. The quantity must be calculated according to the climatic conditions that the package will be subject to, during the journey.

Climate conditions, place of departure, transport method, destination are all factors on which we base to calculate the units of dessicant salts to use, to maintain the humidity inside the vacuum barrier.

7) STORAGE AND MAINTENANCE AT SITE

Type of packing : - Carton boxes on pallet

- Wooden case

- Wooden case with bag barrier (fumigated HT-ISPM15)

- Seaworthy packing

Type of storage : Closed warehouse without humidity

Preservation Expiration: goods stored in their original packing in a dry, clean and safe area can guarantee the correct operation even after the expiring of the product's warranty period. Storage longer than the contractual warranty term it is up to the user's to preserve the goods properly as per common practice for storage & handling.

Due to the mechanical properties of the internal seals, the storage temperature must never be lower and maintained at -15°C.