Base Load Power Hub (BLPH)

PRESERVATION PROCEDURE

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Revision / Change Log

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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.

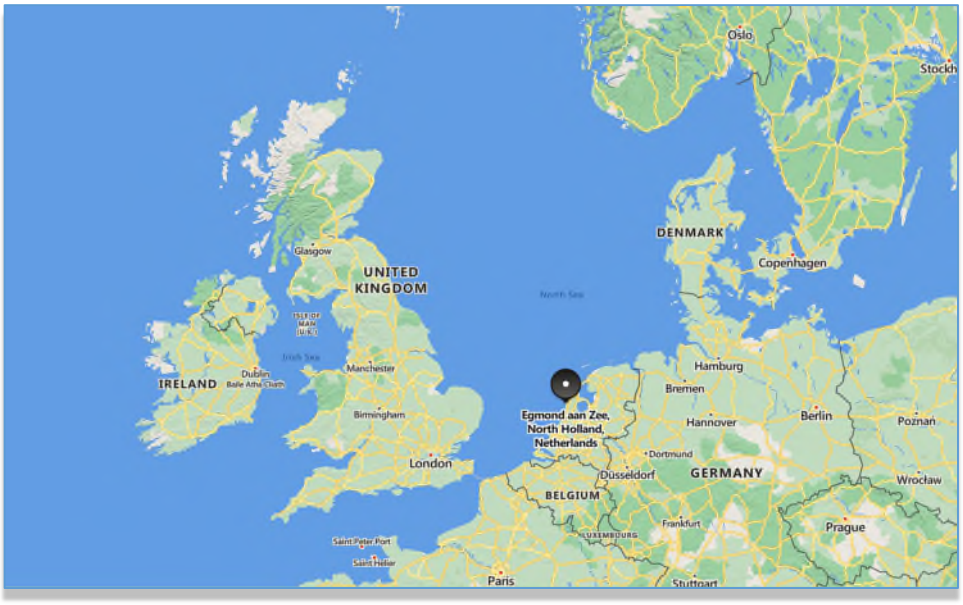


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map

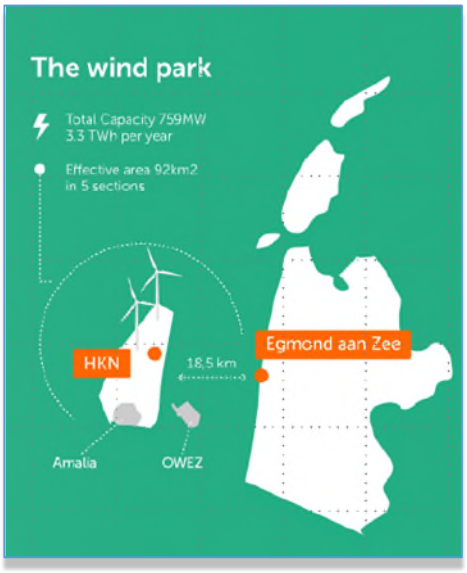


Figure 2 - Wind Park Details

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.

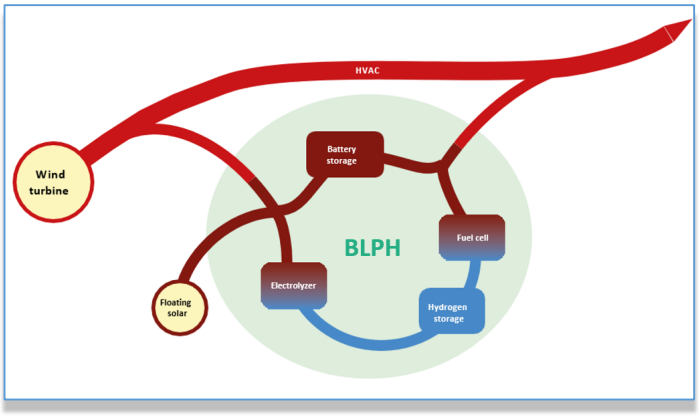


Figure 3 – BLPH Concept

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 procedure outlines the methodology that the CONTRACTOR will follow in managing, storing, and maintaining materials, instruments, and equipment throughout the lifecycle of the BLPH for the HOLLANDSE KUST NOORD WIND PARK Project.

The requirements for preservation are to apply and maintain the preservation condition and operability of systems, equipment and piping spools, before being taken into use.

The purpose of preservation is to maintain the quality of items by preventing their deterioration and corrosion through the use of specific materials.

The preservation approach focuses primarily on high-value items using simple and passive solutions (such as VPCI emitters, desiccants, and sealing). Low-cost or low-technical complexity items are normally excluded unless specific risks of degradation are identified. Some low-cost items have been included when deemed necessary for technical reasons.

For items supplied by Rosetti, no power or energisation is planned; only passive methods will be employed.

2.1. DEFINITIONS

COMPANY	CROSSWIND (SHELL&ENECO)
CONTRACTOR	ROSETTI MARINO - The party that holds the contract to carry out all or part of the design, engineering, procurement, construction, commissioning, or management on behalf of COMPANY

3. INITIAL PRESERVATION

Initial preservation must adhere to the specified storage conditions for the relevant duration. Suppliers should identify any unique preservation needs for specific equipment during storage and construction, providing detailed procedures or requirements as necessary.

3.1 PRESERVATION MAINTENANCE

Maintenance requirements for preservation are detailed in the preservation checklists. These checklists address mechanical/piping, electrical, and instrumentation disciplines. The mechanical checklist covers HVAC, piping, insulation, surface protection, structural, architectural, and safety equipment. Meanwhile, the instrumentation checklist includes fire and gas equipment, telecommunications, and computer-related devices. Preservation efforts for materials, equipment, and machinery will extend from their arrival on-site through storage, installation, and commissioning. Extra attention is necessary for preservation after commissioning. Preservation during this phase should either follow the practices established in earlier project phases or align with the manufacturer's instructions.

3.2 INTERVAL

Checklist intervals range from 1 to 24 weeks. Preservation plan intervals are established for each type of equipment, in accordance with vendor specifications. If preservation is compromised due to construction, commissioning, or other factors, it must be restored or replaced.

3.3 SAIL-AWAY PRESERVATION

The structure will be securely fastened to the barge through welding, and the barge will be ballasted and adjusted for sea tow, facilitating transfer to the offshore location. All unattached items must be properly anchored. Openings in loose pipes/spools should be fully sealed using plastic caps or equivalents. Bare metal components of carbon steel should be shielded with grease or a similar substance to deter corrosion. The employment of spring hangers and temporary supports for piping systems and equipment will be assessed by Engineering to ensure protection during transit.

The preservation activities related to the Sail Away phase are covered in document 123A90-PML-QHSE-PRO-00127. This procedure focuses only on Onshore NL preservation.

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4. SPECIAL INSTRUCTIONS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT

a) All electrical and electronic equipment exposed to humidity shall be protected with desiccants or vapour corrosion inhibitors.

b) Special precautions shall be taken regarding electrical heaters, as specified in the supplier's preservation instructions.

c) The executor is responsible for ensuring that anti-condensation heaters on electrical equipment are activated as soon as they are safely connected electrically.

d) Shafts on electrical motors and mechanical seals shall be protected with grease tape, silicon-based lubricant, and vulcanising tape or equivalent.

e) All non-terminated cable ends shall be sealed with heat shrink or shrinking shrouds.

f) All spare cable entries in panels and boxes shall be plugged.

g) All space/motor heaters on motors, generators, panels, etc., should be energised as soon as the installation phase is completed.

h) Gaskets/O-rings on electrical and electronic equipment shall be greased with acid free Vaseline or equal.

4.1 SPECIAL INSTRUCTION FOR INSTRUMENT EQUIPMENT

a) Instrument equipment containing electronics must be protected with a desiccant or vapour corrosion inhibitor. All instrument panels, cabinets, boxes, etc., that contain electronic components, relays, etc., must be sealed with heavy-duty tape following the installation of silica gel bags (1- 1.8 kg silica gel per cubic metre of internal volume). If sealing with tape is impractical, heavyweight polyethylene sheeting, sealed itself, must be used.

b) Individual instruments must be preserved either by enclosing the instrument together with silica gel bags in a sealed heavy-duty polyethylene bag or by inserting a silica gel bag within the instrument housing, reaffixing the housing cover, and sealing the joint with heavy-duty tape. Instruments with screwed dome covers (e.g. d/p cells), screw-fixing covers (e.g. junction boxes), and hinged doors (e.g. local controllers) must be preserved using the latter technique, while instruments such as air supply regulators shall be preserved using the former (polyethylene bag). Instead of silica gel bags for protecting electronic equipment in sealed enclosures, vapour-phase inhibitors may be used where applicable. Manufacturer's recommendations must be followed.

c) The preservation of computers, video units, and telecommunications equipment must be achieved by storing the equipment in a carefully controlled environment, e.g. vacuum packing. The manufacturer must be consulted to establish appropriate systems for specialised equipment.

d) Batteries must be stored on electrically non-conductive surfaces. The manufacturer must be consulted regarding battery shelf life and proper storage conditions.

e) All openings in hydraulic and pneumatic tubing shall be fitted with steel caps or solid shank steel plugs made of metallurgy equal to that of the component being capped or plugged. Non-metallic plugs shall not be employed.

f) Gaskets and O-rings on instrument equipment shall be lubricated with glycerine gel or an equivalent product.

g) All non-terminated cable ends shall be sealed using heat shrink or a shrinking shroud.

h) All spare cable entrances in panels and boxes shall be plugged.

4.2 SPECIAL INSTRUCTIONS FOR MECHANICAL EQUIPMENT

a) Open flexible hose connections shall be sealed with blinds or caps.

b) When units are installed and pipes are connected, all connection flanges shall be equipped with a 1mm galvanised dust blind featuring an adequately sized red-painted spade handle.

c) Greased bearings shall be lubricated; refer to the supplier information.

d) Insulated units, where insulation may be exposed to damage during storage and installation, shall be adequately protected.

e) All ends that have been bevelled for welding shall be fitted with closures designed to prevent foreign material and damage to the bevel.

f) All threaded openings shall be fitted with steel caps or solid-shank steel plugs made of metallurgy equal to that of the component being capped or plugged.

g) All valves shall be preserved in both open and closed positions; valves supplied for stock shall be preserved for long-term storage, and all exposed valve spindles shall be covered with grease tape (Denso), Teflon-based lubricant, and vulcanising tape or equivalent.

h) Gate valves shall be stored and installed in the closed position; globe and ball valves shall be placed in the open position.

i) Special connections, such as hubs and compact flanges, shall have protection that properly covers seal areas from mechanical damage.

j) Pipes with threaded ends shall be supplied with thread protectors of similar material that are fitted.

k) Pumps and motor shafts shall be turned 1¼ turns weekly where possible. This activity is mandatory if required by the Supplier.

l) Ensure that all HVAC ducting is cleaned internally before installation, and all open ends shall be sealed post-installation.

m) Open ends of AHU and extract units should be sealed prior to arrival on site.

4.3 ABBREVIATIONS AND ACRONYMS

SW	N/A	TBV	TBD	WH	VPCI
SAIL AWAY	*NOT APPLICABLE*	*TO BE VERIFIED*	*TO BE DONE*	*WAREHOUSE*	*VAPOR PHASE CORROSION INIBITOR*

5. SUPPLIED PRESERVATION MATERIALS

- VPCI 368 WAXY GREASE (mechanic)
- VPCI 369 LUBRICATING GREASE (mechanic)
- VPCI 126 FILM BLUE
- PLURIBALL 126 ANTICORROSION
- TERMO TAPE CD 20
- VPCI 130 EMITTER 25X25cm (electric&mechanic)
- VPCI 137 EMITTER 68X48 (electric&mechanic)
- SILICA GEL



VPCI 368 WAXY GREASE for carbon steel



VPCI 369 LUBRICATING GREASE for carbon steel



VPCI 126 FILM BLUE



PLURIBALL 126 ANTICORROSION

Vapor phase corrosion inhibitor 130 emitter 25x25cm(vpci130)



CORTEC CORPORATION
Environmentally Safe VpCI®/MCI® Technologies

Vapor phase corrosion inhibitor 137 emitter 68x48cm(vpci137)



The VPCI 137 66x48cm sponge has an absorption capacity of 1000 litres or 1.00 m3

Table of dimensions and absorption properties of VPCI 137/130

VPCI 130	Sizes (mm)	Protected Vol. (Litres)	Protected Vol. (m3)
5-off	5x (250x250)	1150 Liters	1.15 m^3
4-off	4x (250x250)	920 Liters	0.92 m^3
3-off	3x (250x250)	690 Liters	0.69 m^3
2-off	2x (250x250)	460 Liters	0.46 m^3
1-off	250x250	230 Liters	0.23 m^3
Half (1/2)	(250x125)	115 liters	0.12 m^3
1/4	(125x125)	57 liters	0.06 m^3
1/8	(125x60)	28 liters	0.03 m^3
1/16	(60x60)	14 liters	0.014 m^3
1/32	(60x30)	7 liters	0.007 m^3
1/64	(30x30)	3 liters	0.003 m^3

5.1.1 Product Specifications

Cortec VpCI-137 sponges are polymer sponges impregnated with a single product that guarantees effective anti-corrosion protection for packaged metals. They possess antistatic properties, protect against shocks, and offer slight desiccant action.

The sponges in this series provide a very effective method of dry protection, even in large volumes such as crates and containers. As the VpCI vaporises, it is attracted to metal surfaces, reaching every exposed area, including deep cavities.

This series of products protects against corrosion caused by moisture, condensation, residues, and impurities from previous processing, as well as galvanic corrosion.

VPCI emitters shall be applied based on the volume of the rooms, considering that sealed panels will be internally protected once the emitter is placed. External applications (e.g., in containers) are ineffective for internal protection.

Replacement interval for VPCI emitters is set at 12 months, unless otherwise indicated by OEM data sheets.

5.1.2 Features

The VpCI-137 Cortec sponges:

- They are nitrite-free or chromate free and are non-toxic. Thanks to their chemical content, in fact, they are considered safe and acceptable for industrial use.
- are more efficient than VCI papers and other materials VpCI for packaging, thanks to the highest concentration VpCI they have (about 10 times greater).
- have immediate use and the metal surface to be protected, beyond good previous cleaning, it does not require any special preparation.
- guarantee continuous protection for a period of up to 2 years. If the packaging needs to be opened, at once closed, it is still guaranteed by VpCi vapors, which recreate and regenerate a layer of protection.
- do not interfere with mechanical properties and chemical components of electronic components.
- are often used for the dry protection of vacuum zones that can be closed once the product has been applied.

5.1.3 Protected meters

They are excellent for protecting aluminium, brass, Carbon Steel, Copper, Iron, Steel, Steel Stainless, Galvanized Steel, Silver, Zinc

5.1.4 Storage of materials

To keep VPCI features intact, store unused sponges in a plastic container tightly closed.

5.1.5 Description

CORTEC VpCI-137 f.to 1 m2	Protects up to 3 cubic meters of volume
CORTEC VpCI-137 f.to 25x25 cm	A sponge frame protects up to 220 lt. Packs of 200 pcs
CORTEC VpCI-137 f.to 48x68 cm	A sponge frame protects up to 1000 lt. Packs of 40 pcs

5.2 SILICA GEL



5.2.1 Product specifications

Desiccant bags absorb water vapor inside the packaging. Their use allows goods to be protected from damage caused by moisture both during transport and storage.

The product is suitable for application in the Electronics, chemical - pharmaceutical, food, confectionery, industrial packaging, automotive- metalworking, protection of artistic heritage.

White Silica Gel is a synthetic product, chemically it is of an amorphous silicon oxide. The White Silica Gel used to manufacture desiccant bags, is following technical standards DIN 55473, MIL 3464E, NFH00320.

For more information, please refer to the safety data sheet of White Silica Gel.

5.2.2 Types of desiccant sachets and absorption characteristics

Grams	3 g	5 g	10 g	15 g	30 g	60 g	120 g	240 g	480 g	960 g
NFH Matching units m^3	1/200	1/100	1/50	1/32	1/16	1/8	1/4	1/2	1	2
Grams of water vapor absorbed by each bag	0,6 g	1 g	2 g	3 g	6 g	12 g	24 g	48 g	96 g	192g

5.2.3 Utilization

Place the sachets inside the packaging that contains the goods to be protected. Seal the packaging hermetically.

The sachet remains effective even if the packaging is not vacuum-sealed.

Use the correct number of sachets per packaging unit.

The dosage of sachets depends on the amount of moisture present in the air and in the materials contained within the packaging, the moisture that may enter from the outside during transportation and storage, the climatic conditions, and the desired humidity level to be achieved and maintained during the storage period.

The correct dosage can be determined with the help of technical data sheet TDS 85, which is useful for collecting the necessary data to calculate the number of sachets required to protect the goods.

Sachet expiration: Information regarding the expiration of the material can be found in technical data sheet TDS 57.

Sachet regeneration: Information regarding the regeneration of the material can be found in technical data sheet TDS 54.

5.2.4 Storage instructions

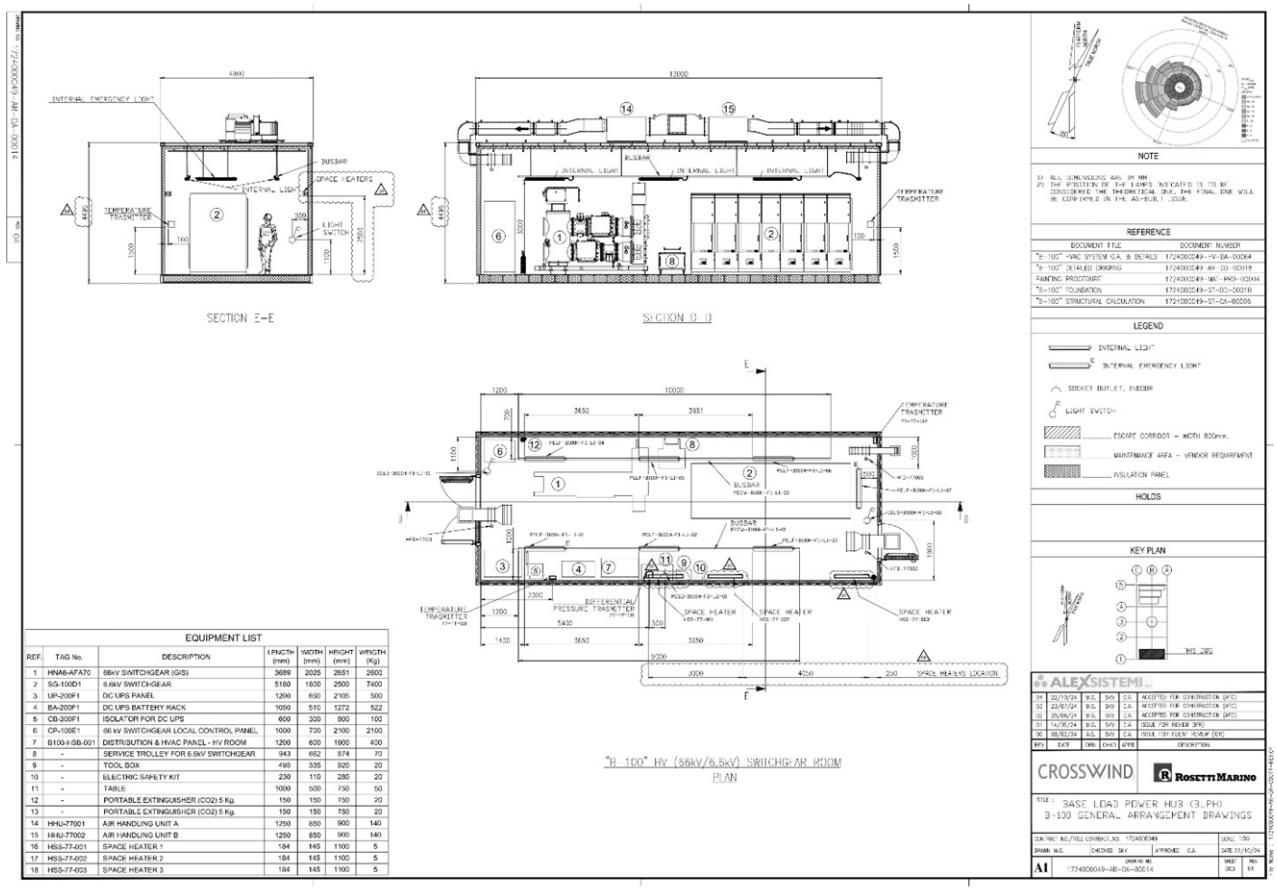
The storage conditions for the sachets prior to use are as follows:

The product must be stored in its original, undamaged packaging, in a covered warehouse. Once the packaging is opened, the desiccant sachets should be used within a short period of time.

The PE packaging must be resealed after each removal (preferably by heat sealing the bag).

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6. "B 100" HV (66KV/6.6KV) SWITCHGEAR ROOM



Emitting vapors will be applied respecting the table of dimensions and absorption properties

6.1 "B100" VPCI APPLICATION QUANTITY FOR EQUIPMENT



ISOLATOR FOR DC UPS CB-200F1. It has an internal volume of 0.144m^3, VPCI130 25x25 sponge will be applied Quantity 1



DISTIBUTION&HVAC PANEL-HV ROOM B100-HSB-001. It has an internal volume of 1.368m^3, VPCI130 25x25cm will be applied Quantity 2 and VPCI 137 66x48cm quantity 1.

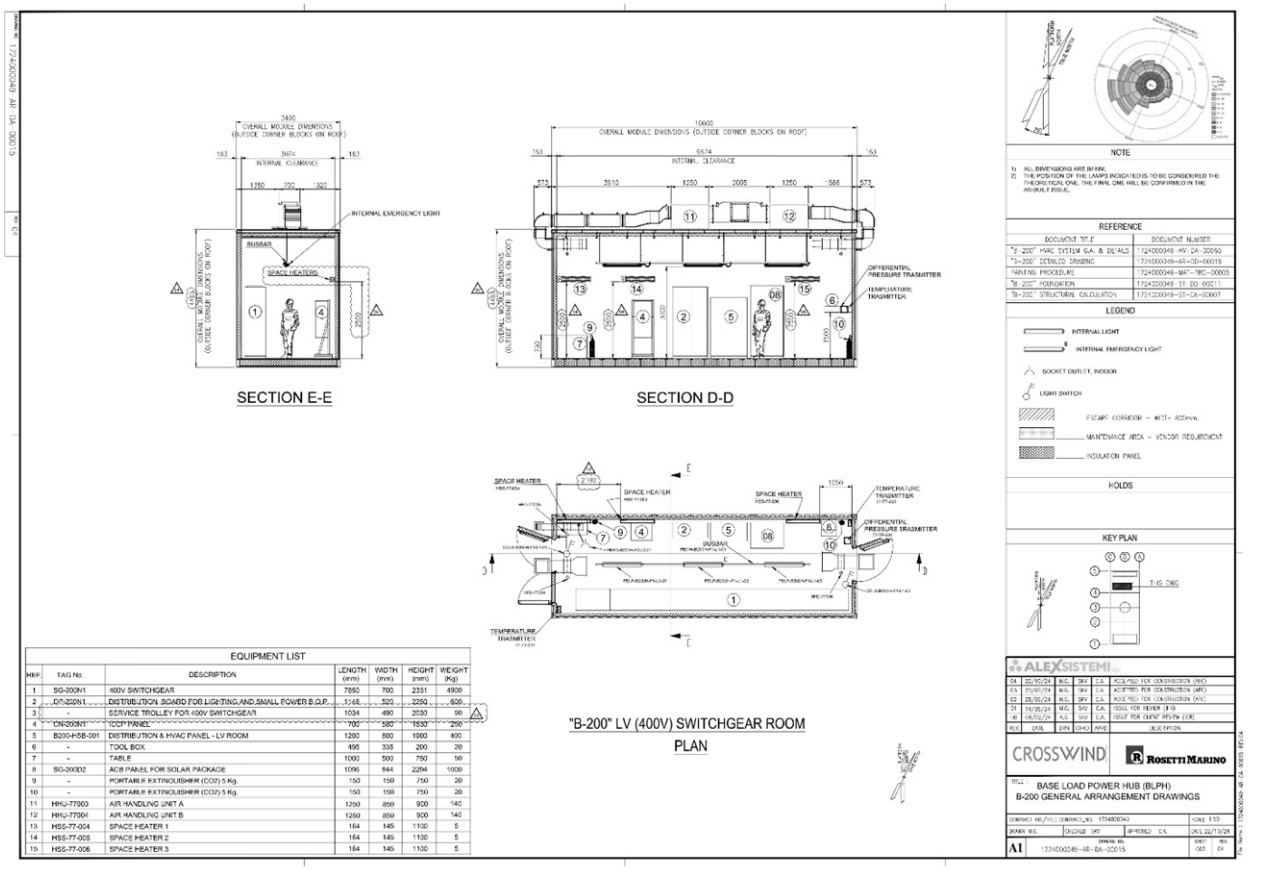


DC UPS PANEL UP-200F1. It has an internal volume of 1.36m^3, VPCI130 25x25cm will be applied Quantity 1 and VPCI 137 66x48cm quantity 2.



6.6kv SWITCHGEAR SG-100D1. It has an internal volume of 23.31m^3, VPCI 137 66x48cm will be applied Quantity 23.

7. "B 200" LV (400V) SWITCHGEAR ROOM



Emitting vapours will be applied, respecting the table of dimensions and absorption properties

"B200" VPCI Application quantity for equipment



400V SWITCHGEAR SG-200N1. It has an internal volume of 12.84m^3, VPCI 137 66x48cm will be applied Quantity 12.

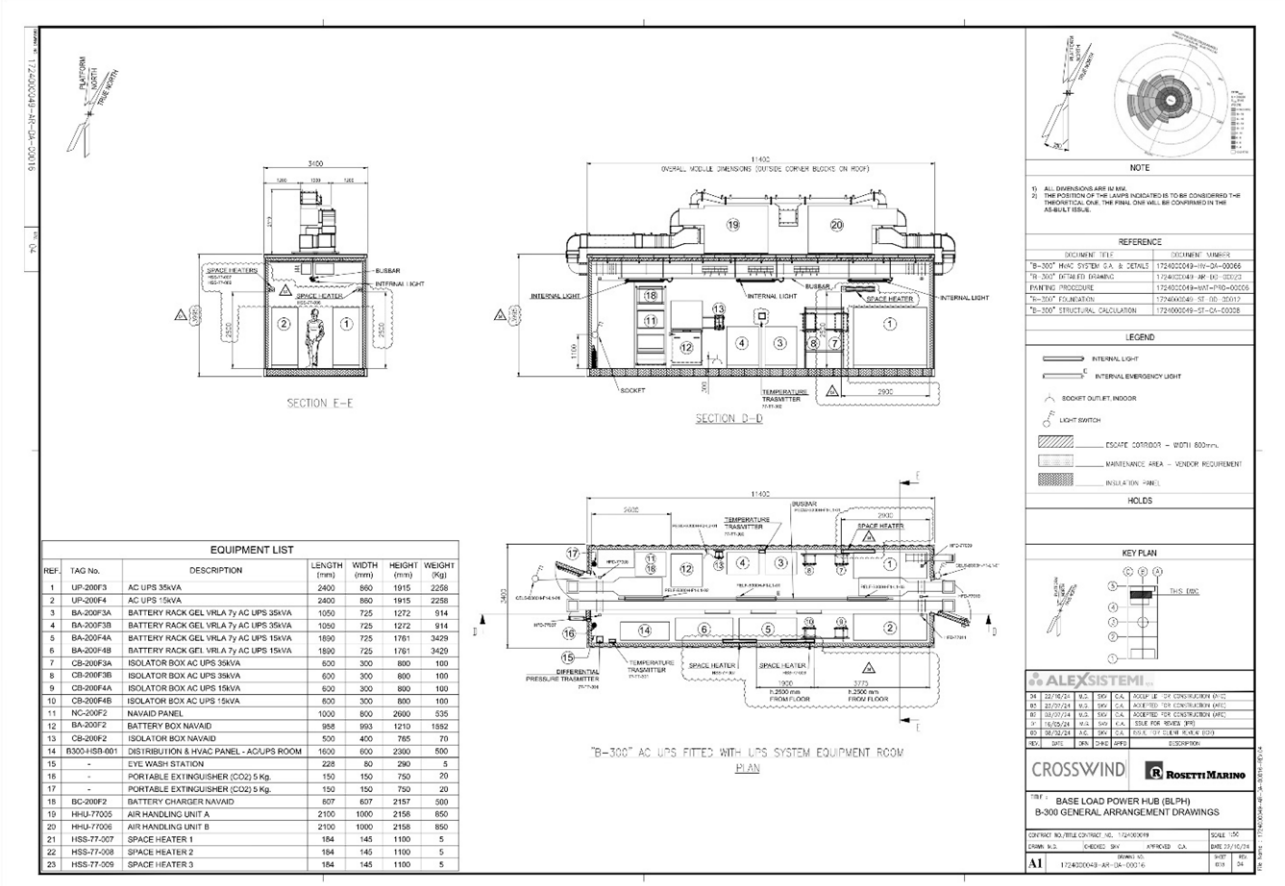


ICCP PANEL CN-200N1. It has an internal volume of 0.756 m^3, VPCI 130 25x25cm will be applied Quantity 3.



- DISTRIBUTION BOARD FOR LIGHTING AND SMALL POWER B.O.P DP-200-N1. It has an internal volume of 1.34m^{3,} , VPCI 137 66x48cm will be applied quantity 1 and VPCI 130 25X25 quantity 1.
- DISTIBUTION & HVAC PANEL-LV ROOM B200-HSB-001. It has an internal volume of 1.36m^{3,} VPCI 137 66x48cm will be applied quantity 1 and VPCI 130 25X25 quantity 1.
- ACB PANEL FOR SOLAR PACKAGE SG-200D2. It has an internal volume of 2.11m^3, VPCI 137 66x48cm will be applied quantity 2

8. "B 300" AC UPS FITTED WITH UPS SYSTEM EQUIPMENT ROOM



EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	WEIGHT (Kg)
1	UP-200F3	AC UPS 35kVA	2400	860	1915	2258
2	UP-200F4	AC UPS 15kVA	2400	860	1915	2258
3	BA-200F3A	BATTERY RACK GEL VRLA 7y AC UPS 35kVA	1050	725	1272	914
4	BA-200F3B	BATTERY RACK GEL VRLA 7y AC UPS 35kVA	1050	725	1272	914
5	BA-200F4A	BATTERY RACK GEL VRLA 7y AC UPS 15kVA	1890	725	1761	3429
6	BA-200F4B	BATTERY RACK GEL VRLA 7y AC UPS 15kVA	1890	725	1761	3429
7	CB-200F3A	ISOLATOR BOX AC UPS 35kVA	600	300	800	100
8	CB-200F3B	ISOLATOR BOX AC UPS 35kVA	600	300	800	100
9	CB-200F4A	ISOLATOR BOX AC UPS 15kVA	600	300	800	100
10	CB-200F4B	ISOLATOR BOX AC UPS 15kVA	600	300	800	100
11	NC-200F2	NAVAID PANEL	1000	800	2600	535
12	BA-200F2	BATTERY BOX NAVAID	958	993	1210	1552
13	CB-200F2	ISOLATOR BOX NAVAID	500	400	765	70
14	B300-HSB-001	DISTRIBUTION & HVAC PANEL - AC/UPS ROOM	1600	600	2300	500
15	-	EYE WASH STATION	228	80	290	5
16	-	PORTABLE EXTINGUISHER (CO2) 5 Kg.	150	150	750	20
17	-	PORTABLE EXTINGUISHER (CO2) 5 Kg.	150	150	750	20
18	BC-200F2	BATTERY CHARGER NAVAID	607	607	2157	500
19	HHU-77005	AIR HANDLING UNIT A	2100	1000	2158	850
20	HHU-77006	AIR HANDLING UNIT B	2100	1000	2158	850
21	HSS-77-007	SPACE HEATER 1	184	145	1100	5
22	HSS-77-008	SPACE HEATER 2	184	145	1100	5
23	HSS-77-009	SPACE HEATER 3	184	145	1100	5

Emitting vapors will be applied respecting the table of dimensions and absorption properties

B300 VPCI Application quantity for equipment





AC UPS 35KVA UP-200F3 and AC UPS 15KVA UP 200F4 have the usual volume of 3.95m^3 each, VPCI 137 66x48cm will be applied quantity 4 for equipment.





ISOLATOR BOX AC UPS 35KVA CB-200F3A/CB 200-F3B and ISOLATOR BOX AC UPS 15 KVA CB-200F4A/CB 200-F4B, each piece of equipment has an internal volume of 0.14m^3, VPCI 137 25x25cm will be applied quantity 1 for equipment.





The batteries will be covered with nylon to form a casing and vapor emitters or alternatively silica gel will be introduced inside it to reduce corrosion



BATTERY BOX NAVAID BA-200F2. It has an internal volume of 1.15 m^3, VPCI 137 66x48cm will be applied quantity 1.

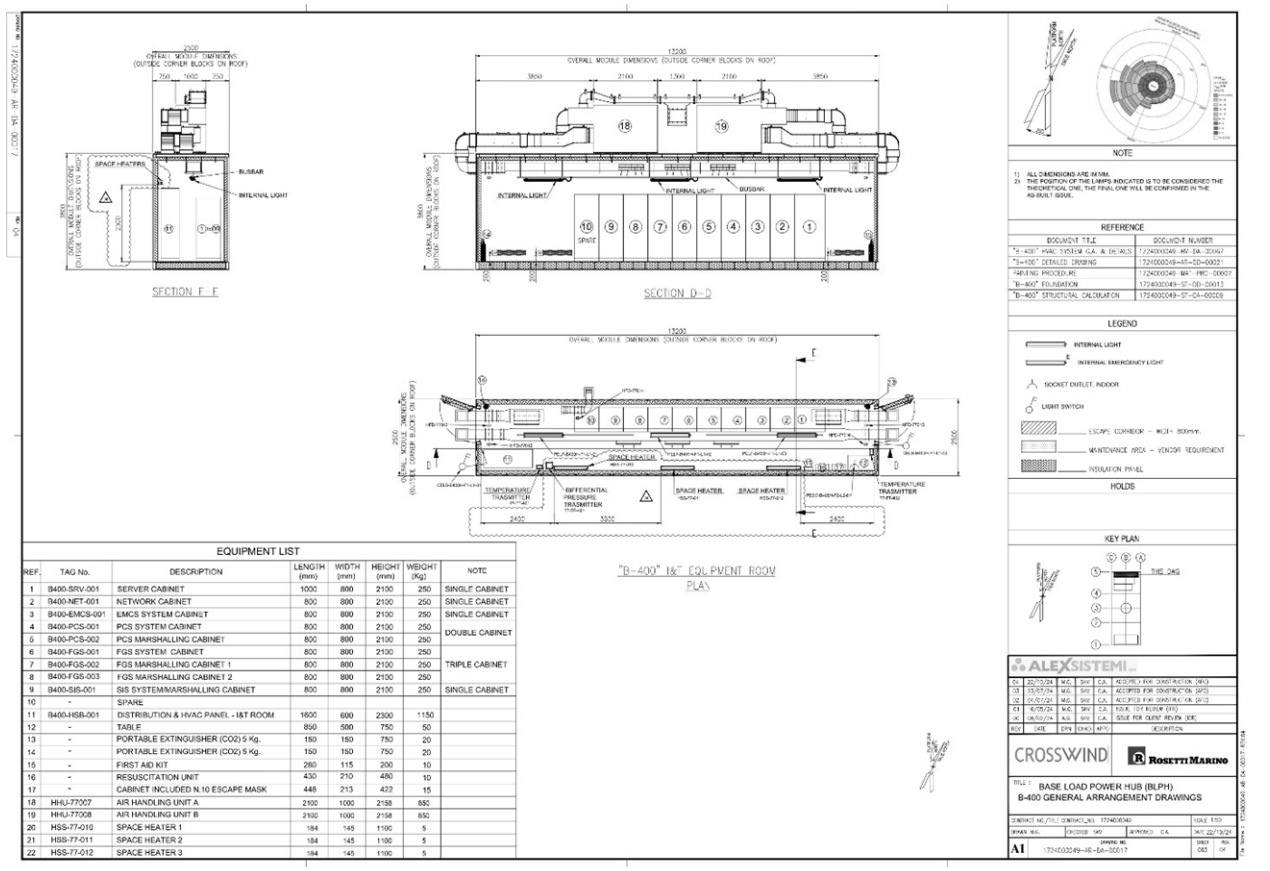


NAVAID PANEL NC-200F2. It has an internal volume of 1.05 m^3, VPCI 137 25x25cm will be applied quantity 3.



DISTRIBUTION & HVAC PANEL-AC/UPS ROOM B300-HSB-001. It has an internal volume of 2.20 m^3, VPCI 137 25x25cm will be applied quantity 1 and VPCI 137 68X46 quantity 2.

9. "B 400" I&T EQUIPMENT ROOM



EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	WEIGHT (Kg)	NOTE
1	B400-SRV-001	SERVER CABINET	1000	800	2100	250	SINGLE CABINET
2	B400-NET-001	NETWORK CABINET	800	800	2100	250	SINGLE CABINET
3	B400-EMCS-001	EMCS SYSTEM CABINET	800	800	2100	250	SINGLE CABINET
4	B400-PCS-001	PCS SYSTEM CABINET	800	800	2100	250	DOUBLE CABINET
5	B400-PCS-002	PCS MARSHALLING CABINET	800	800	2100	250	
6	B400-FGS-001	FGS SYSTEM CABINET	800	800	2100	250	
7	B400-FGS-002	FGS MARSHALLING CABINET 1	800	800	2100	250	TRIPLE CABINET
8	B400-FGS-003	FGS MARSHALLING CABINET 2	800	800	2100	250	
9	B400-SIS-001	SIS SYSTEM/MARSHALLING CABINET	800	800	2100	250	SINGLE CABINET
10	-	SPARE					
11	B400-HSB-001	DISTRIBUTION & HVAC PANEL - I&T ROOM	1600	600	2300	1150	
12	-	TABLE	850	500	750	50	
13	-	PORTABLE EXTINGUISHER (CO2) 5 Kg.	180	150	750	20	
14	-	PORTABLE EXTINGUISHER (CO2) 5 Kg.	150	150	750	20	
15	-	FIRST AID KIT	280	115	200	10	
16	-	RESUSCITATION UNIT	430	210	480	10	
17	-	CABINET INCLUDED N.10 ESCAPE MASK	448	213	422	15	
18	HHU-77007	AIR HANDLING UNIT A	2100	1000	2158	650	
19	HHU-77008	AIR HANDLING UNIT B	2100	1000	2158	650	
20	HSS-77-010	SPACE HEATER 1	184	145	1100	5	
21	HSS-77-011	SPACE HEATER 2	184	145	1100	5	
22	HSS-77-012	SPACE HEATER 3	184	145	1100	5	

Emitting vapors will be applied respecting the table of dimensions and absorption properties

B400 VPCI Application quantity for equipment.



- B400-SRV-001 SERVER CABINET
- B400-NET-001-NETWORK CABINET
- B400-EMCS-001 EMCS SYSTEM CABINET
- B400-PCS-001 PCS SYSTEM CABINET
- B400-PCS-002 PCS MARSHALLING CABINET
- B400-FGS-001 FGS SYSTEM CABINET
- B400-FGS-002 FGS MARSHALLING CABINET 1
- B400-FGS-003 FGS MARSHALLING CABINET 2
- B400-SIS-001 SIS SYSTEM/MARSHALLING CABINET

These are 9 separate volumes, and each of them is 1.34 m^3 , VPCI 137 25x25cm will be applied quantity 1 and VPCI 137 68X46 quantity 1 for cabinet.



DISTRIBUTION&HVAC PANEL_I&T ROOM B400-HSB-001. It has an internal volume of 2.20 m^3, , VPCI 137 25x25cm will be applied quantity 1 and VPCI 137 68X46 quantity 2

Note

For the preservation of Alex Sistemi, approximately 63 pieces of VPCI 137 66x48 and 30 pieces of VPCI 130 25x25 will be applied

10. JUNCTION BOX AND LIGHTING FIXTURE

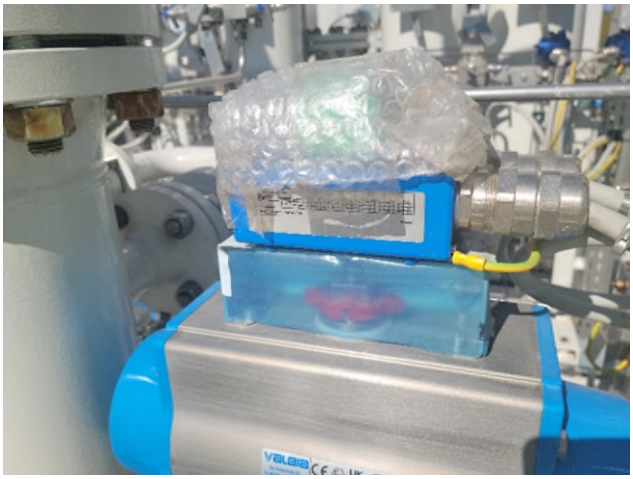




For the junction boxes and lighting fixture, we apply VpCI-130 inside, with the quantity depending on the size of the equipment. After that, we close the cover and seal it is using VpCI-126 blue film. A VpCI identification tape is then used to mark the application date and expiration date.

11. AIR INSTRUMENT PACKAGE





Application of VpCI-369 on the valve stem, followed by protection with VpCI-126, to prevent corrosion and the ingress of external agents throughout the construction, commissioning, and sail-away phases.



VpCI-130 will be placed inside the electrical panel, with the quantity determined based on the internal volume



The carbon steel bolting has been coated with VpCI-368 waxy grease to inhibit corrosion.

12. NITROGEN GENERATOR PACKAGE





Application of VpCI-369 on the valve stem, followed by protection with VpCI-126, to prevent corrosion and the ingress of external agents throughout the construction, commissioning, and sail-away phases



VpCI-130 will be placed inside the electrical panel, with the quantity determined based on the internal volume.



The carbon steel bolting has been coated with VpCI-368 waxy grease to inhibit corrosion.

13. HYDROGEN STORAGE VESSEL





Internal cleaning of the vessel carried out by a confined space certified operator, using rags and nitro thinner







Cleaning of the manway gasket seating surface using rags and thinner, followed by application of VpCI-369 lubricating grease to reduce corrosion.





External cleaning of the bolting and application of VpCI-368 waxy grease to reduce corrosion.

Hydrogen vessels will be delivered under nitrogen blanketing at 3 barg. Manometers are installed on each vessel to monitor internal pressure and ensure preservation integrity. No chemicals or other preservation media are introduced in these vessels or other pressure equipment.

During preparation for sail away, all tanks and vessels supplied by Rosetti Marino will be drained. No liquids will be present inside the vessels at the time of transport.

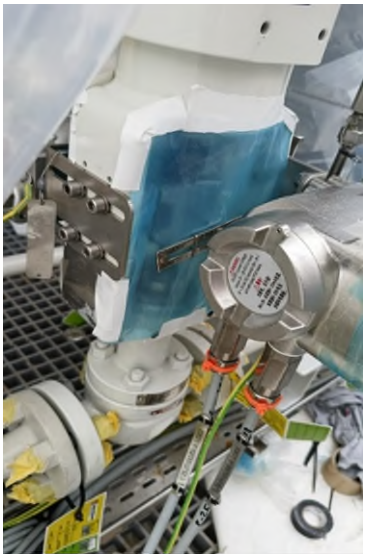
14. VALVES



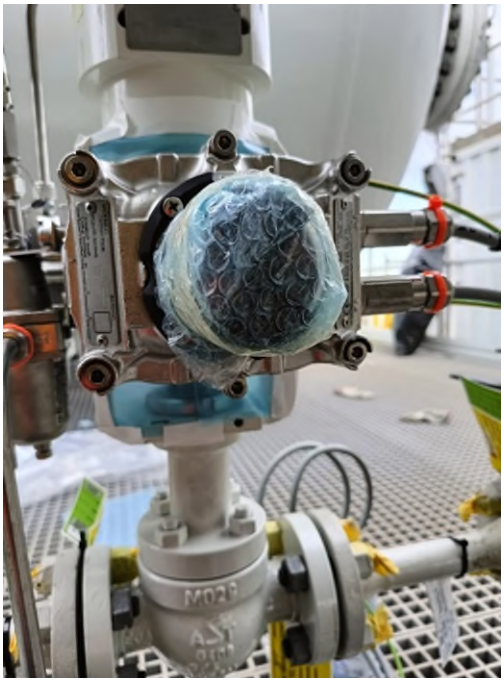


Cleaning of the valve stem and application of VpCI-369 lubricating grease.





Protection of the valve stem with VpCI-126 blue film to prevent the ingress of external agents that could compromise functionality.





Protection of sensitive parts, such as plastic or glass, using VpCI-126 anticorrosion bubble wrap.

15. WATER TREATMENT PACKAGE





VpCI-137 will be applied inside the electrical panel, based on its volume.



In the pumps, VpCI-130 sponges will be applied to the grille, after which an envelope will be formed with VpCI-126 to enhance the action of the vapor emitter.

Prior to transport and sea-fastening operations, the Water Treatment Package shall be completely drained.

The SWRO membranes currently installed are not intended for reuse and will be replaced in the Netherlands before the system is reactivated.

Considering that the topside will remain inactive during the onshore storage period, and provided that the package remains properly closed and protected against environmental exposure, no additional preservation measures are deemed necessary for internal piping and components at this stage.

16. TRANSFORMERS



For the transformers, the sensitive glass parts (electrical panel and pressure gauge) will be protected with VpCI-126 anticorrosion bubble wrap. VpCI-130 sponges will be placed inside the electrical panel (quantity based on the volume).

17. CRANE





Cleaning of the bolting and rack, and application of VpCI-368 on the bolting, while VpCI-369 is applied to the rack.



VpCI-137 sponge will be placed inside the electrical panel, based on its internal volume.

18. PIPING LINE





For all piping lines, a preservation system has been implemented on the bolting, which consists of cleaning and applying VpCI-368 waxy grease.

19. PRESERVATION FOR COMPANY PROVIDED ITEMS (CPI)

Preservation activities for Company-Provided Items (CPI), including Fuel Cells, Electrolysers, Battery Energy Storage Systems (BESS), and associated equipment, shall strictly follow the preservation and operational readiness procedures issued by their respective vendors. These vendor-specific procedures are to be considered as the primary reference for all preservation activities concerning CPI.

The following vendor procedures have been established and must be implemented accordingly:

FREQCON BESS and PCS systems:

"23A2007_241110_FREQCON_BESS_Long_Term_Storage_Strategy_v3.0"

Ballard Fuel Cell Modules:

"BALLARD_R04 Preservation and Ready for Sail Away Rev.002"

Elogen Electrolyser Package:

"C63-TRA-001 Drainage and Sealing of the Process Loops"

"C63-ELO-PRO-CO-0007 Seafastening and Preservation"

In particular, some CPI systems (e.g., FREQCON BESS) may need energisation during the onshore preservation phase to enable internal climate control, battery monitoring, and balancing. This should only be carried out if required by vendor procedures.

Important Note: For Rosetti Marino supplied packages, no energisation is foreseen during the preservation phase in the Netherlands. All systems are to be preserved using passive means only (e.g., nitrogen blanketing, desiccants, VPCI materials).

However, if any CPI requires energization, this implies the need to implement a limited energization of the entire topside to support such equipment. In this case, a dedicated addendum to the present procedure shall be issued. This addendum will detail the operational and safety conditions, access control, and monitoring requirements related to partial energisation.

SUMMARY TABLE

CPI	Vendor	Reference Procedure	Preservation Description	Energization Required	Notes
BESS (Battery System)	Freqcon	23A2007_241110_FREQCON_BESS_Long_Term_Storage_Strategy_v3.0	Initial SoC 50% Charge/discharge every 6 months Storage temp: 0–35°C Humidity <90%	✅ Yes, if >12 months or 400V AC available	With power: climatization, monitoring, battery balancing
Fuel Cell Modules	Ballard	BALLARD_R04 Preservation and Ready for Sail Away Rev.002	Mechanical fixation Sealing and protection No power required	❌ No	Physical/mechanical protection only
Electrolyser Package	Elogen	C63-TRA-001 C63-ELO-PRO-CO-0007	N_2 purging and draining Stacks filled with ultrapure water and sealed Pressurized at 3 barg	❌ No	Includes temporary flanges and air removal precautions
Water Treatment Package	OVIVO	SWL0000767 Preservation Procedure	Drained completely Membranes removed	❌ No	Storable up to 6 months
Rectifier / Transformer	Nidec	C63-NID-ELO-REP00 / REP01 C63-ELO-PRO-CO-0007	Temporary mechanical fixings No draining required	❌ No	Mechanical transport protection only
HVAC System	Paumier	C63-ELO-PRO-CO-0007	Valves closed R513a not drained (prohibited) Desiccants in shelters	❌ No	Inclination limits for compressors during transport

20. PRESERVATION CHECK LIST.

The preservation checklist to be used is the one included in procedure *123A90-PML-QHSE-PRO-00127*, which defines requirements for the sail-away phase. This checklist shall also be used for the Onshore NL phase. The annexe within that procedure identifies all platform tags and specifies whether preservation is required. Therefore, the checklist serves as a reference tool to ensure proper tracking and implementation of preservation activities in line with the tag register.

21. ANNEX 1: VPCI DATA SHEET

CARTE DOZIO
IMBALLAGGI INDUSTRIALI

cartedozioimballaggi.it



VpCI-137 MULTIMETAL VpCI SYSTEM

ANTICORROSIVE SPONGES

Vapor phase Corrosion Inhibitor

SPECIFICATION SHEET

DESCRIPTION

The VpCI-137 Cortec sponges are **polymer-based sponges impregnated to provide effective corrosion protection for packed metals using a single product.** They have antistatic properties, offer impact protection, and provide a mild drying effect.

These sponges are a very effective **dry protection method even in large volumes, such as crates and containers, because the VpCI vaporizes and is attracted to metal surfaces, reaching every exposed area, including deep cavities.**

This product series provides protection against corrosion caused by humidity, condensation, atmospheric agents, residues, and impurities from previous processing, as well as galvanic corrosion.

A key advantage of this dry protection **method** is that the protected parts are immediately ready for use. The VpCI-137 sponges comply with the military specification MIL-PRF-81705D for static dissipative materials and MIL-B-22110 B for vapor phase inhibitors. NSN #3850-01-426-3539.

FEATURES

The VpCI-137 Cortec sponges:

- Are nitrite- and chromate-free and are non-toxic. Thanks to their chemical content, they are considered safe and suitable for industrial use.
- Are more efficient than VCI papers and other VpCI packaging materials, thanks to a higher VpCI concentration (approximately ten times higher).
- Can be used immediately and do not require special surface preparation, aside from basic cleaning.
- Provide continuous protection for up to 2 years. If the packaging is opened and then resealed, the VpCI vapors regenerate the protective layer.
- Do not interfere with the mechanical and chemical properties of electronic components.
- Are often used for dry protection of void spaces that can be closed once the product is applied.

PROTECTED METALS

They are excellent for protecting aluminum, brass, carbon steel, copper, iron, steel, stainless steel, galvanized steel, silver, and zinc.

STORAGE

To maintain the VpCI properties, store unused sponges in tightly sealed plastic bags.

In accordance with REACH regulations (EC 1907/2006, Art 3.3), OSHA (Code of Federal Regulations Section 1910.1200 title 29), and the Canadian and European Hazard Communication Standards, this product is considered an ARTICLE for which there is no legal requirement to provide an SDS/MSDS.

SPECIFICATION	
CORTEC VpCI-137 f.to 1 m2	Protects up to 3 m^3 volume
CORTEC VpCI-137 f.to 25x25 cm	One square of sponge protects up to 220 liters. Pack of 200 pcs
CORTEC VpCI-137 f.to 48x68 cm	One square of sponge protects up to 1000 liters. Pack of 40 pcs

FOR INDUSTRIAL USE ONLY.

KEEP OUT OF REACH OF CHILDREN.

KEEP CONTAINER TIGHTLY CLOSED.

LIMITED WARRANTY

All statements, technical information and recommendations contained herein are based on tests Cortec Corporation believes to be reliable, but the accuracy or completeness thereof is not guaranteed. Cortec Corporation warrants Cortec® products will be free from defects when shipped to customer. Cortec Corporation's obligation under this warranty shall be limited to replacement of product that proves to be defective. To obtain replacement product under this warranty, the customer must notify Cortec Corporation of the claimed defect within six months after shipment of product to customer. All freight charges for replacement products shall be paid by customer. Cortec Corporation shall have no liability for any injury, loss or damage arising out of the use of or the inability to use the products.

BEFORE USING, USER SHALL DETERMINE THE SUITABILITY OF THE PRODUCT FOR ITS INTENDED USE, AND USER ASSUMES ALL RISK AND LIABILITY WHATSOEVER IN CONNECTION THEREWITH. No representation or recommendation not contained herein shall have any force or effect unless in a written document signed by an officer of Cortec Corporation.THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. IN NO CASE SHALL CORTEC CORPORATION BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES

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