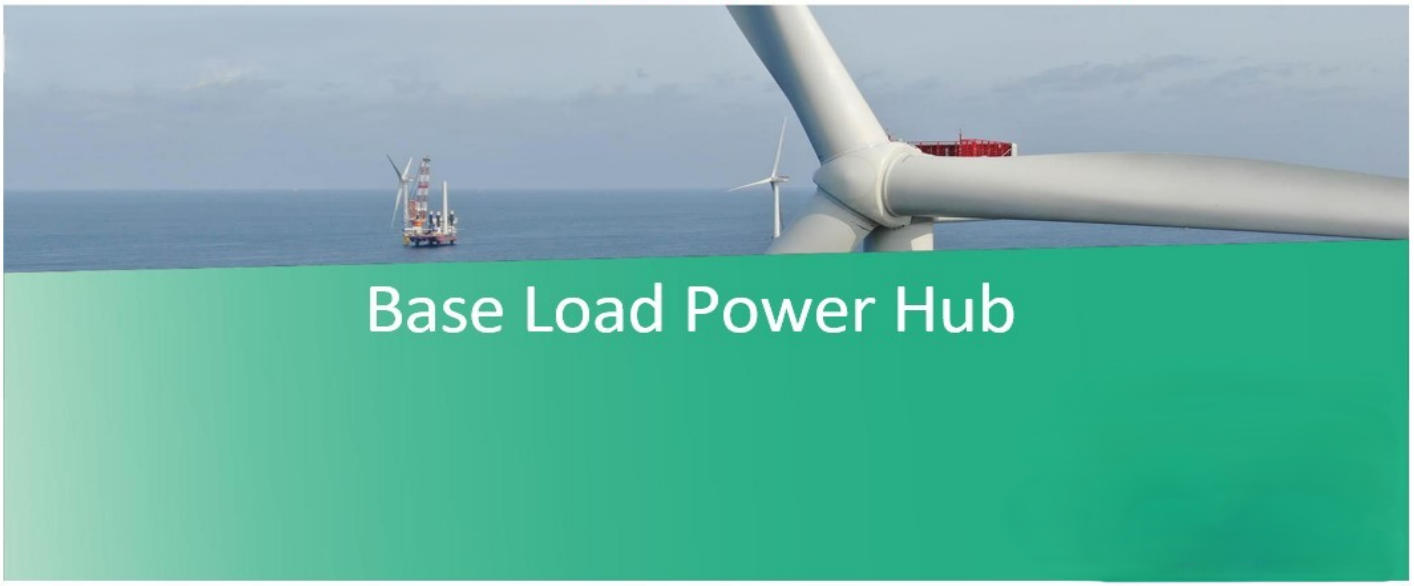
CROSSWIND

ROSETTI MARINO

PROVERUS

PROJECT **123A90 - HOLLANDSE KUST NOORD WIND PARK**
BLPH Project



COMMISSIONING DOSSIER (ONSHORE)

SYSTEM	50 Fresh Water Systems
SUBSYSTEM	50-10 Water Desalination Package & Distribution

CROSSWIND

123A90 - HOLLANDSE KUST NOORD WIND PARK
BLPH Project

COMMISSIONING DOSSIER INDEX

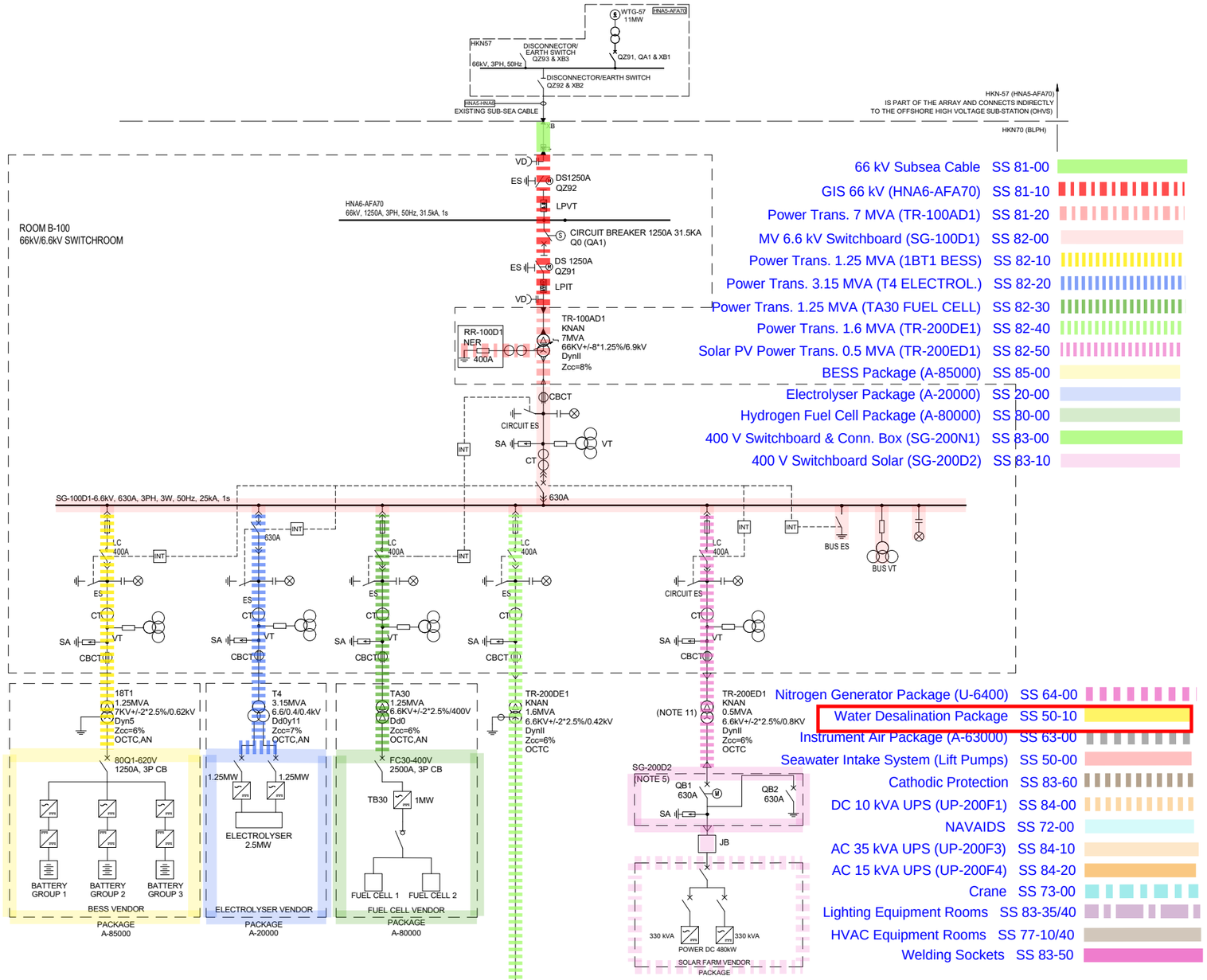
ROSETTI MARINO

Sub System N°:	50-10	**Tick as appropriate**	ONSHORE	OK
Description:	Water Desalination Package & Distribution		OFFSHORE	

1. *SUB-SYSTEM DEFINITION*	OK
1.1 Sub-System Description / Boundary Limit Drawings	
2. *READY FOR OPERATION CERTIFICATE*	OK
2.1 Achievement Of Ready for Operation Certificate (RFO)	
2.2 Exception Punch Lists (per discipline)	
2.3 “As-Commissioned” P&ID’s / SLD’s / D&ID’s / C&E’s	
3. *CONSOLIDATED PUNCH LISTS*	OK
3.1 Cleared and Residual Items (sorted by discipline)	
4. *FUNCTIONAL TESTS SHEETS*	OK
4.1 Electrical functional test sheets index	
4.2 Electrical “As-Commissioned” interconnection diagrams	
4.3 Instrumentation Functional Test Sheets Index	
4.4 Instrumentation “As-Commissioned” interconnection diagrams	
4.5 Telecommunication Functional Test Sheets Index	
4.6 Telecommunication “As-Commissioned” I.C.D. / TSLD’s	
5. *SITE / OPERATIONAL:*	OK
5.1 Operational Test Procedure	
5.2 Operational Test Certificates	
6. *PIPING AND VESSEL PREPARATION*	OK
6.1 Final Mechanical / Vessel Inspection Checks Index	
6.2 Leak Test / Drying / Inerting Test Sheets Index	
6.3 Chemical Loading & First Fill records Index	
6.4 Chemical Cleaning Reports and Records Index	
6.5 Lubrication Schedule	
7. *VENDORS*	OK
7.1 Vendor Package Summary Index	
7.2 SAT Procedure with associated punch list and reference (Front Page)	
7.3 Vendor Spares & Special Tools lists references	
7.4 Vendor Data / Operations / Maintenance Manuals References	
8. *LIST OF MODIFICATIONS*	NA
8.1 List of changes initiated during the WORKSITE Commissioning phase pertaining to the relevant Sub-System will be incorporated in this section with relevant references (with location and position of blinds/spades, isolation LO & LC valves, list of electrical isolation status, and remaining inhibits and overrides)	
9. *SUPPORTING DOCUMENTS*	NA
9.1 Other supporting documents (as applicable)	

	Contractor Commissioning Site Leader	Company Commissioning Site Leader
Name	Anthony Iveson	Martin Taylor
Date	2025-08-07	2025-08-07
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-08-07T10:18:22.565Z	PROVERLIS Digitaly signed by Martin Taylor 2025-08-07T10:56:11.408Z

Section 1 SUB-SYSTEM DEFINITION



66 kV Subsea Cable	SS 81-00	
GIS 66 kV (HNA6-AFA70)	SS 81-10	
Power Trans. 7 MVA (TR-100AD1)	SS 81-20	
MV 6.6 kV Switchboard (SG-100D1)	SS 82-00	
Power Trans. 1.25 MVA (1BT1 BESS)	SS 82-10	
Power Trans. 3.15 MVA (T4 ELECTROL.)	SS 82-20	
Power Trans. 1.25 MVA (TA30 FUEL CELL)	SS 82-30	
Power Trans. 1.6 MVA (TR-200DE1)	SS 82-40	
Solar PV Power Trans. 0.5 MVA (TR-200ED1)	SS 82-50	
BESS Package (A-85000)	SS 85-00	
Electrolyser Package (A-20000)	SS 20-00	
Hydrogen Fuel Cell Package (A-80000)	SS 80-00	
400 V Switchboard & Conn. Box (SG-200N1)	SS 83-00	
400 V Switchboard Solar (SG-200D2)	SS 83-10	
Nitrogen Generator Package (U-6400)	SS 64-00	
Water Desalination Package	SS 50-10	
Instrument Air Package (A-63000)	SS 63-00	
Seawater Intake System (Lift Pumps)	SS 50-00	
Cathodic Protection	SS 83-60	
DC 10 kVA UPS (UP-200F1)	SS 84-00	
NAVAIDS	SS 72-00	
AC 35 kVA UPS (UP-200F3)	SS 84-10	
AC 15 kVA UPS (UP-200F4)	SS 84-20	
Crane	SS 73-00	
Lighting Equipment Rooms	SS 83-35/40	
HVAC Equipment Rooms	SS 77-10/40	
Welding Sockets	SS 83-50	

SYMBOL LEGEND:

- VOLTAGE DETECTOR
- EARTHING SWITCH DISCONNECTOR
- MOTORIZED EARTHING SWITCH
- CIRCUIT BREAKER
- FUSE
- CONTACTOR
- THREE-PHASE TRANSFORMER WITH TAP CHANGER
- THREE-PHASE TRANSFORMER
- CURRENT TRANSFORMER
- THREE-PHASE TRANSFORMER, WITH THREE WINDINGS
- NEUTRAL EARTHING RESISTOR
- SURGE ARRESTER
- CORE BALANCE CURRENT TRANSFORMER
- SURGE ARRESTOR FOR T-CONNECTOR (N.1 FOR EACH PHASE)
- VOLTAGE & CURRENT TRANSFORMER (3Ø X 2) (LPIT TYPE)
- VOLTAGE TRANSFORMER (3Ø X 2) (LPVT TYPE)
- VOLTAGE TRANSFORMER
- CABLE BOX
- T-CONNECTOR CABLE TERMINATION
- CABLE AIR TERMINATION

OLTC	= ON LOAD TAP CHANGER
OCTC	= OPEN CIRCUIT TAP CHANGER
KNAN	= NON-MINERAL OIL NATURAL AIR COOLED
AN	= AIR NATURAL
XB	= CABLE BOX
QZ	= DISCONNECT SWITCH & EARTH SWITCH
QA	= CIRCUIT BREAKER
LC	= LATCHED FUSED CONTACTOR (400A)
INT	= INTERLOCK SYSTEM
SA	= SURGE ARRESTER
CBCT	= CORE BALANCE CURRENT TRANSFORMER
ES	=EARTHING SWITCH
VD	=VOLTAGE DETECTOR
LCP	=LOCAL CONTROL PANEL
LPVT	=LOW POWER VOLTAGE TRANSFORMER
LPCT	=LOW POWER CURRENT TRANSFORMER
LPIT	=LOW POWER INSTRUMENT TRANSFORMER
JB	=JUNCTION BOX

NOTES:

1. TEMPORARY POWER SUPPLY CONNECTION BOX LOCATED ON OUTSIDE WALL OF LV SWITCHROOM / CONTAINER.
2. LOAD DEFINITION 'ESSENTIAL' / 'NON-ESSENTIAL' IS SHOWN IN THE LOAD LIST. THE CCS, EMCS AND 'SMART' SWITCHGEAR WILL OPEN / CLOSE CIRCUIT BREAKERS AS REQUIRED.
3. A COMBINED CCS/EMCS SYSTEM COMPRISES A MICROPROCESSOR BASED SYSTEM, ASSOCIATED SOFTWARE AND REQUIRED PERIPHERALS FOR MONITORING AND CONTROLLING OF ELECTRICAL POWER NETWORK. ALL ELECTRICAL EQUIPMENT AND PACKAGE UNITS SHALL BE CONNECTED TO THE CENTRAL CONTROL SYSTEM .
4. IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM SUPPLIED BY COMPANY.
5. THE SOLAR FARM IN-FEED POWER CIRCUIT BREAKERS PANEL IS LOCATED INSIDE THE LV SWITCHGEAR ROOM B-200.
6. DELETED.
7. DELETED.
8. DELETED.
9. CROSSWIND SHALL BE ABLE TO CONTROL THE BLPH 66KV MOTORISED CIRCUIT BREAKER Q0 (QA1) & MOTORISED ELECTRICAL DISCONNECTOR / EARTH SWITCH (QZ92, TYPE B) USING THEIR 'HV-SCADA' SYSTEM. THIS BACK-UP / REDUNDANT CONTROL SHALL BE ADDITIONAL TO THAT PROVIDED BY THE CCS AND BE OF HIGHER PRIORITY OVER A SEPARATE FIBRE OPTIC CABLE (FOC). THE CCS OPERATOR AND 'HV-SCADA' SHALL BOTH BE KEPT FULLY AWARE OF EQUIPMENT STATUS AT ALL TIMES. INTERTRIPPING, INHIBITS & INTERLOCKING FOR BLPH 66KV EQUIPMENT SHALL BE AS PER THE WIND FARM.
10. THE LOADS IN THE LOW VOLTAGE SWITCHGEAR AND THE CURRENT VALUES OF THE CIRCUIT BREAKERS ARE ONLY INDICATIVE.
11. NEUTRAL POINT OF TR-200ED1 SHALL NOT BE GROUNDED AS REQUIRED BY SOLAR FARM SUPPLIER IN 123A90-PML-PM-TQ-00040.

REFERENCES:

1. 123A90-DDL-EL-DG-20014 ELECTRICAL CONTROL, PROTECTION AND METERING DIAGRAMS
2. 123A90-DDL-EL-DG-20015 ELECTRICAL SINGLE LINE DIAGRAM 6.6kV SYSTEMS
3. 123A90-DDL-EL-DG-20159 ELECTRICAL SINGLE LINE DIAGRAMS LV SYSTEM
4. 123A90-DDL-EL-DG-20160 ELECTRICAL SINGLE LINE DIAGRAMS AC UPS SYSTEMS
5. 123A90-DDL-EL-DG-20161 ELECTRICAL SINGLE LINE DIAGRAMS DC UPS SYSTEMS
6. 123A90-DDL-EL-DG-20185 ELECTRICAL SINGLE LINE DIAGRAM HV SYSTEMS
7. 123A90-DDL-EL-DL-20104 ELECTRICAL EQUIPMENT LAYOUT - HV SWITCHROOM
8. 123A90-DDL-EL-DL-20105 ELECTRICAL EQUIPMENT LAYOUT - LV SWITCHROOM
9. 123A90-DDL-EL-LIS-20016 ELECTRICAL LOAD LIST and BALANCE -CCS MODE CHARGING-
10. 123A90-DDL-EL-RE-20152 ELECTRICAL EQUIPMENT SIZING CCALCULATION REPORT
11. 123A90-DDL-EL-RE-20170 ELECTRICAL SYSTEM STUDY REPORT - LOAD FLOW
12. 123A90-DDL-EL-RE-20171 ELECTRICAL SYSTEM STUDY REPORT - SHORT CIRCUIT
13. 123A90-DDL-EL-RE-20172 ELECTRICAL SYSTEM STUDY REPORT - ARC FLASH ENERGY CALCULATION
14. 123A90-DDL-EL-RE-20173 ELECTRICAL SYSTEM STUDY REPORT - HARMONICS

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	02/11/2023	DSF	CB/AMA	OYFO/MDO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE :

OVERALL/KEY SINGLE LINE DIAGRAM

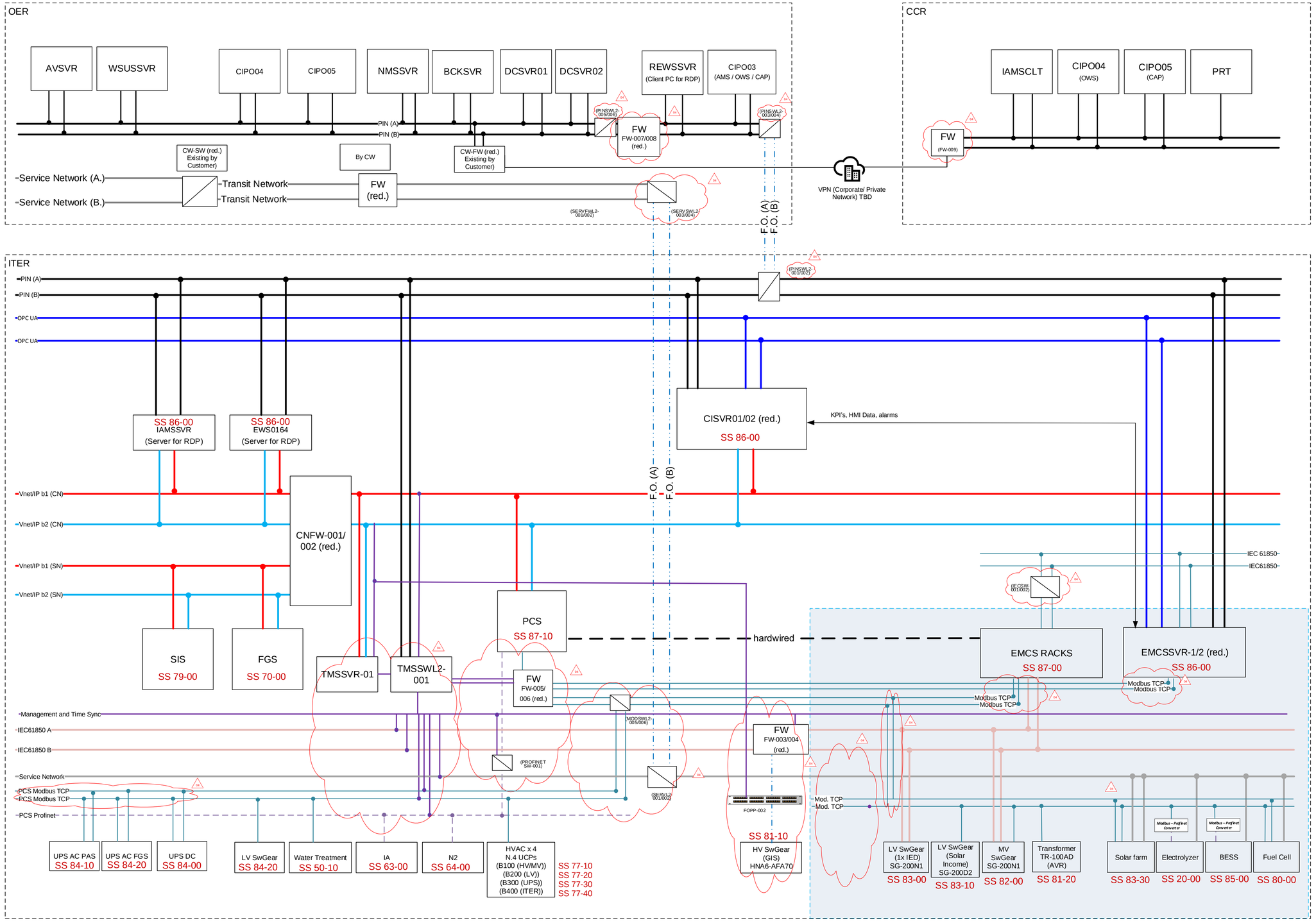
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE N/A
DRAWN GPA	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 26/03/2023
A1	DRAWING NO. 123A90-DDL-EL-DG-20158	SHEET 001	REV. 01

DRAWING NO. 123A90-DDL-EL-DG-20158 REV. 01

File Name : 123A90_DDL_EL_DG_20158_REV01.dwg

01

CROSSWIND BLPH PROJECT - SYSTEM BLOCK DIAGRAM



AMS	: Alarm Management System	FCS	: Field Control Station
AV	: Anti-virus	FGS	: Fire & Gas System
BCK	: Backup Server	FO	: Fiber Optic
BESS	: Battery Energy Storage System	FOPP	: Fiber Optic Patch Panel (by others)
BLPH	: Base Load Power Hub	FTA	: Field Termination Assembly
CAP	: Critical Alarm Panel	HIST	: Historian
CCR	: Central Control Room	HKN	: Hollandse Kust Noord
CI	: Collaborative Infomation	IAMS	: Instrument Asset Management System
CN	: Control Network	ITER	: Instrument & Telecom Equipment Room
DC	: Domain Controller	LHVS	: Land High Voltage Station
DMZ	: De-militarized Zone	MCC	: Motor Control Center
ESB	: IO communication bus	MODB	: Modbus
EWS	: Engineering Work Station	MQTT	: Message Queuing Telemetry Transport
FC	: Field Communication (Vnet/IP)	NMS	: Network Management System
OER	: Onshore Equipment Room		
OHVS	: Offshore High Voltage Station		
OWS	: Operator Work Station		
PIN	: Plant Information Network		
PKG	: Package		
RDP	: Remote Desktop Protocol		
SCS	: Safety Control Station		
SIS	: Safety Instrumented System		
SN	: Safety Network		
SW	: Switch		
UCP	: Unit Control Panel (3rd party systems)		
VM	: Virtual Machine		
Vnet/IP	: Yokogawa's Control network		
WSUS	: Windows Security Update Services		

LEGEND:

- PIN (Plant Information Network)
- Vnet/IP BUS 1 PCS
- Vnet/IP BUS 2 PCS
- Vnet/IP BUS 1 SIS/FGS
- Vnet/IP BUS 2 SIS/FGS
- ESB bus connection
- IEC61850 connection
- OPC UA connection
- Service Network connection
- Modbus TCP connection
- Profinet (non redundant)
- Fiber Optic Patch Cords
- Fiber Optic connection (core by Crosswind)
- Fiber Optic backbone (by Crosswind)
- System Cable connection
- Management and Time sync.

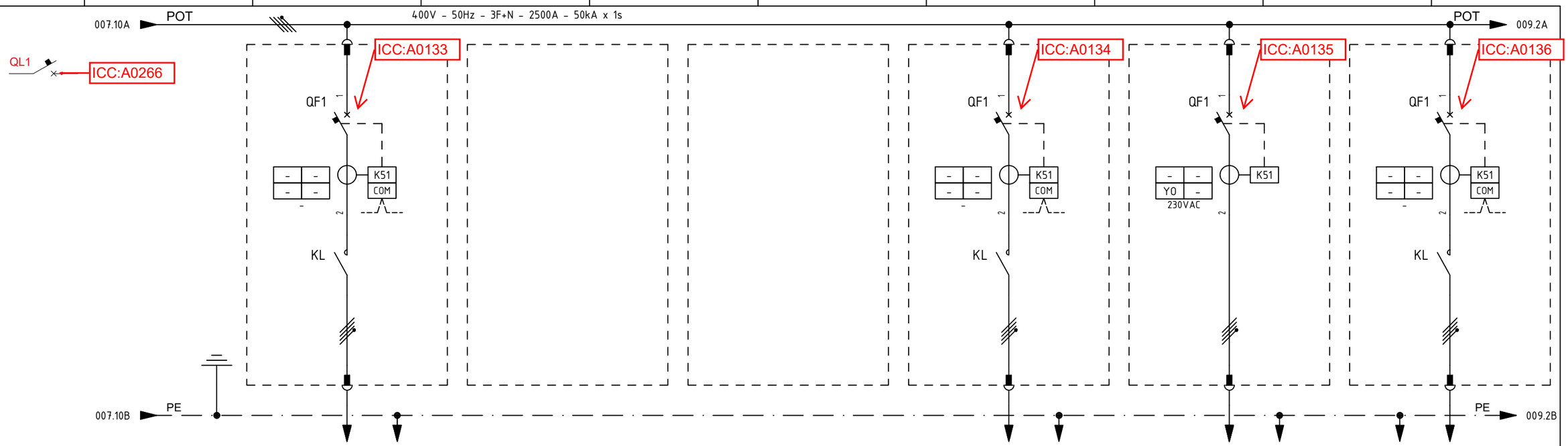
Note 1 : Exact assignment of Servers per cabinet to be defined in cabinet General Arrangement Drawing.
Note 2 : For IP Addresses refer to 1724000594-IN-RE-00043 Cyber Security Settings
Note 3 : All Network Components will be installed in Network Cabinet.
Note 4 : Supply of Console Desk in CCR is in Customer Scope.
Note 5 : All Network Switches and Firewall is configured in VLAN.
Note 6 : Intermediate FO Connection between HNA5 and OER Intentionally not shown.

Zone-1	: PCS Control Zone	Zone-2	: Safety Control Zone
Zone-3	: PCS Zone	Zone-4	: Application Server Facility Zone
Zone-5	: Security Management Zone-1	Zone-6	: Security Management Zone-2
Zone-7	: Demilitirized Zone	Zone-8	: Croswind Zone
Zone-9	: Service Network Zone	Zone-10	: Application Server Facility Zone-OD
Zone-11	: Third Party System Zone		: Out of Scope

REV	DWG BY	CHK BY	APP BY	DATE
04	SKR	MP/AB	SC	12-Feb-25
03	SKR	MP/AB	SC	26-Aug-24
02	SKR	MP/AB	SC	28-Jun-24
01	SKR	MP/AB	SC	24-May-24
00	SKR	AB	SC	23-Apr-24

Doc No : 1724000594-IN-DD-00015
Doc Name : System Architecture

ROSETTI MARINO
HOLLANDSE KUST NOORD WIND PART Project
CROSSWIND
YOKOGAWA



ITEM			1	SPARE		-			JB-500E8		UP-200F3		B100-HSB-001	
UTILITY			2	SPARE		FUTURE			WATER PACKAGE		AC UPS PAS - 30 MIN UP-200F3 - LINE B		HVAC PANELS HV ROOM	
COLUMN/CUBICLE			3	A3 / +05		A3 / +06			A3 / +08		A4 / +01		A4 / +02	
RATED POWER | RATED CURRENT			4/5	5.5 kW	9.93 A	-	-		67 kW	107.00 A	36.0 kW	57.8 A	18 kW	34.1 A
TYPICAL FUNCTIONAL			6	LK1-40					LK2-160		L1-100		LK1-40	
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160					XT4S - 250		XT2S - 160		XT2S - 160	
	VERSION		8	4P - FIXED					4P - FIXED		4P - FIXED		4P - FIXED	
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 40A)					EKIP HI TOUCH LSIG (In = 160A)		EKIP DIP LSIG (In = 100A)		EKIP HI TOUCH LSIG (In = 40A)	
	Icu	KA	10	50 kA					50 kA		50 kA		50 kA	
OVERLOAD	L	Range A	11	(0.4 - 1) x In					(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In	
		Range t	12	k/I^2					k/I^2		k/I^2		k/I^2	
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In					(0.6 - 10) x In		(1 - 10) x In		(0.6 - 10) x In	
		Range t	14	0.05 - 0,4 sec / k/I^2					0.05 - 0.4 sec / k/I^2		0.05 - 0.4 sec / k/I^2		0.05 - 0,4 sec / k/I^2	
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In					(1.5 - 15) x In		(1 - 10) x In		(1.5 - 15) x In	
		Range t	16	instantaneous					instantaneous		<= 0.02 sec		instantaneous	
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In					(0.1 - 1) x In		(0.2 - 1) x In		(0.1 - 1) x In	
		Range t	18	t=k / t=k/I^2					t=k / t=k/I^2		0.1 - 0.8 sec		t=k / t=k/I^2	
CONTACTOR (ABB)			19	AF40-40-00-13 (70A-AC1); 100-250VAC/DC					AF190-40-11-13 (275A-AC1); 100-250 VAC/DC		-		AF40-40-00-13 (70A-AC1); 100-250VAC/DC	
THERMAL OVERLOAD RELAY (ABB)			20	-					-		-		-	
SURGE ARRESTER (DEHN)			21	-					-		-		-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-					-		-		-	
FUSE HOLDER (ITALWEBER)			23	SUBSISTEM 83.00					SUBSISTEM 50.10		SUBSISTEM 84.10		SUBSISTEM 77.10	
INDIRECT PROTECTION (ABB)			24											
VOLTMETER			25											
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-					-		-		-	
	PERFORMANCE/CLASS		27	-					-		-		-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-					-		-		-	
	PERFORMANCE/CLASS		29	-					-		-		-	
LOCK-OUT RELAY (-)			30	-					-		-		-	
POWER CONDUCTOR		mmq	31	-					5G70		4G35		5G16	

=
+

DWG n° : 231298/SD/11
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
2	03/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
1	28/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	15/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00011

SHEET 008

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00011 Rev. 03

DRAWING_NO.

REV.

Sea Water Intake System	SS 50-00	
Electrochlorinated Water	SS 50-11	
Waste Water Disposal System	SS 55-00	
Waste Water Brine Disharge System	SS 55-01	
Water Desalination & Distribution System	SS 50-10	

A-50000
WATER TREATMENT PACKAGE
CAPACITY : 2.5 m³/hr
02

02

GAS CONFIRMED 50 XA 001 — F&G
SMOKE CONFIRMED 50 XA 002 — F&G
FAULT PACKAGE 50 XA 003 — ESD
50-XS-001 SHUT-DOWN — ESD
NOTE 6

CONTRACTOR | SUPPLIER

FOR CONTINUATION SEE DOC N. 123A90-DDL-PR-PID-80023

123A90-DDL-PR-PID-80025
TO 50-TDI-002
50 TI 001
BLOCKED OUTLET SET @ 6 barg
50 PSV 011 1D2
2"-SWR-291-01SD-N
02
BLPH-MV-471
SB
1"-SWS-290-01SD-E
50 TT 001
50 TE 001
1.1/2"
4"x1.1/2"
ECC. RED.
TP 017
E
123A90-DDL-PR-PID-80021
FROM SEA WATER LIFT PUMP
1-1/2"-SWS-035-01SD-E
BLPH-MV-241 3/4"

A-50000
WATER TREATMENT PACKAGE
SEE VENDOR DRAWING
DOC. N. 1724000448-PR-PID-00013

02
FOR CONTINUATION SEE DOC N. 123A90-DDL-PR-PID-80023

E
TP 005
123A90-DDL-PR-PID-80021
TO SEA WATER LIFT PUMP AND LIFT PUMP CAISSONS
1"-CI-029-01CP-E

1"-CI-043-01CP-E
TP 006
123A90-DDL-PR-PID-80026
TO WASTE WATER TANK
DECK HOOK-UP 003
02

SUPPLIER | CONTRACTOR

TP 003
1.1/2"x1"
3"x1.1/2"
1"-SWR-045-01CS-H
123A90-DDL-PR-PID-80025
TO BRINE DISCHARGE CAISSON

TP 007
1.1/2"x1"
1"-WW-038-01CS-H
123A90-DDL-PR-PID-80026
TO WASTE WATER TANK

NOTES

1. DELETED. 02
2. DELETED.
3. DELETED.
4. DELETED.
5. DELETED. 02
6. SERIAL COMMUNICATION WITH CONTROL SYSTEM.

HOLDS

1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED. 02
5. DELETED.
6. DELETED.

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	12/06/2024	CIM	RZI	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	15/02/2024	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)
00	20/10/2023	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)

CROSSWIND

ROSETTI MARINO

TITLE :
BLPH PIPING AND INSTRUMENTATION DIAGRAM
SEA-WATER INTAKE SYSTEM SHEET 2

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK		SCALE NTS	
DRAWN	CHECKED	APPROVED	DATE
A1	DRAWING NO. 123A90-DDL-PR-PID-80022	SHEET 001	REV. 02

File Name : FILE_NAME

DRAWING NO. DRAWING_NO.

REV. REV

Water Desalination & Distribution System SS 50-10

A-50000
WATER TREATMENT PACKAGE
CAPACITY : 2.5 m³/hr
02

02

CONTRACTOR SUPPLIER

FOR CONTINUATION SEE DOC N.
123A90-DDL-PR-PID-80022

FOR CONTINUATION SEE DOC N.
123A90-DDL-PR-PID-80024

A-50000
SEE VENDOR DRAWING
DOC. N. 1724000448-PR-PID-00013

FOR CONTINUATION SEE DOC N.
123A90-DDL-PR-PID-80022

FOR CONTINUATION SEE DOC N.
123A90-DDL-PR-PID-80024

SUPPLIER CONTRACTOR

NOTES

1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED.
5. DELETED.

02

HOLDS

1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED.

02

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	12/06/2024	CIM	RZI	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	15/02/2024	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)
00	20/10/2023	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)

CROSSWIND

ROSETTI MARINO

TITLE :
BLPH PIPING AND INSTRUMENTATION DIAGRAM
WATER TREATMENT PLANT SHEET 1

CONTRACT NO./TITLE	CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK	SCALE	NTS
DRAWN	CHECKED	APPROVED	DATE

A1	DRAWING NO. 123A90-DDL-PR-PID-80023	SHEET 001	REV. 02

File Name : FILE_NAME

DRAWING NO. DRAWING_NO.

REV. REV

Water Desalination & Distribution System SS 50-10

A-50000

WATER TREATMENT PACKAGE

CAPACITY : 2.5 m³/hr

02

02

FOR CONTINUATION SEE DOC N. 123A90-DDL-PR-PID-80023

SUPPLIER | CONTRACTOR

A-50000

WATER TREATMENT PACKAGE

SEE VENDOR DRAWING

DOC. N. 1724000448-PR-PID-00013

1"-DM-001-01SS-E-1

123A90-DDL-PR-PID-80011

TO ELECTROLYSER PACKAGE

TP 002

PH
TEMPERATURE
HARDNESS
CONDUCIVITY

NOTE 8

FOR CONTINUATION SEE DOC N. 123A90-DDL-PR-PID-80023

NOTES

1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED.
5. DELETED.
6. DELETED.
7. DELETED.

02

8. PH, TEMPERATURE, HARDNESS AND CONDUCTIVITY SHALL BE SENT FROM WATER TREATMENT UCP TO CONTROL SYSTEM IN ADDITION TO THE OTHER SOFTWARE SIGNALS.

HOLDS

1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED.
5. DELETED.

02

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	12/06/2024	CIM	RZI	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	15/02/2024	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)
00	20/10/2023	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)

CROSSWIND

ROSETTI MARINO

TITLE :

BLPH PIPING AND INSTRUMENTATION DIAGRAM
WATER TREATMENT PLANT SHEET 2

CONTRACT NO./TITLE	CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK	SCALE	NTS
DRAWN	CHECKED	APPROVED	DATE

	DRAWING NO.	SHEET	REV.
A1	123A90-DDL-PR-PID-80024	001	02

File Name : FILE_NAME

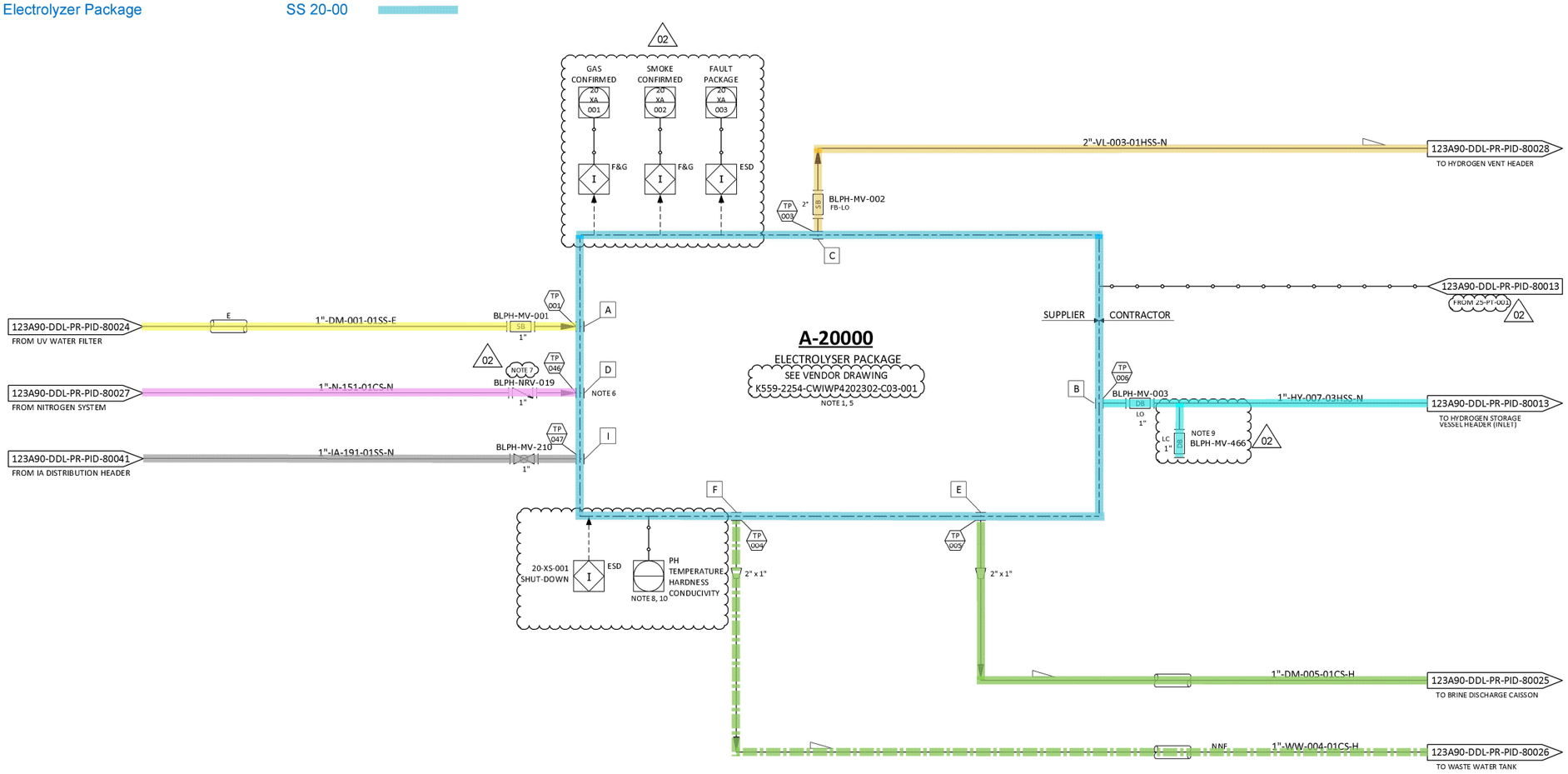
DRAWING NO. DRAWING_NO.

REV. REV

Instrumen Air Distribution Network	SS 63-30
Water Desalination & Distribution System	SS 50-10
Hydrogen Storage Vessel Header (Intel)	SS 43-00
Nitrigen Distribution Network	SS 64-11
Waste Water Brine Discharge System	SS 55-01
Waste Water Disposal System	SS 55-00
Hydrigen Storage Vessel Header (Intel)	SS 25-07
Electrolyzer Package	SS 20-00

A-20000
ELECTROLYSER PACKAGE

DUTY: 2.5MW
DESIGN PRESSURE: 40 barg
DESIGN TEMPERATURE: 80 °C
H2 GENERATING CAPACITY: 500 Nm³/h



NOTES

1. PACKAGE SUPPLIED WITH POWER FROM THE BLPH ELECTRICAL SYSTEM.
2. DELETED.
3. DELETED.
4. DELETED.
5. ELECTROLYSER PACKAGE INCLUDES AN OXYGEN VENT LINE WHICH IS IN THE SCOPE OF SUPPLY OF THE ELECTROLYSER PACKAGE UP TO THE ATMOSPHERE. NO PHYSICAL INTERFACE IS PRESENT BETWEEN ELECTROLYSER PACKAGE AND CONTRACTOR ON THIS LINE.
6. AN ISOLATION VALVE DOWNSTREAM THE CHECK VALVE NRV-019 IS PROVIDED WITHIN THE PACKAGE A-20000.
7. CHECK VALVE NRV-019 TO BE INSTALLED AS CLOSE AS POSSIBLE TO THE ELECTROLYSER PACKAGE A-20000.
8. SERIAL COMMUNICATION WITH CONTROL SYSTEM.
9. NITROGEN PURGING CONNECTION TO BE LOCATED AS CLOSE AS POSSIBLE TO MANUAL VALVE BLPH-MV-003.
10. PH, TEMPERATURE, HARDNESS AND CONDUCTIVITY SHALL BE SENT FROM CONTROL SYSTEM TO ELECTROLISER UCP IN ADDITION TO THE OTHER SOFTWARE SIGNALS.

02

HOLDS

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	12/06/2024	CIM	RZI	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	15/02/2024	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)
00	20/10/2023	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)

CROSSWIND

ROSETTI MARINO

TITLE :
BLPH PIPING AND INSTRUMENTATION DIAGRAM
ELECTROLYSER PACKAGE

CONTRACT NO./TITLE	CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK	SCALE	NTS
DRAWN	CHECKED	APPROVED	DATE
A1	DRAWING NO. 123A90-DDL-PR-PID-80011	SHEET 001	REV. 02

File Name : FILE_NAME

Section 2 READY FOR OPERATION

Section 2.1 Achievement Of Ready for Operation Certificate (RFO)

ROSETTI MARINO

123A90 - HOLLANDSE KUST NOORD WIND PARK
BLPH Project

CROSSWIND

Ready For Operation (RFO) Certificate

COMPLETE		PARTIAL	●

Revision:	2		Issued on:	2025-07-29	

System:	50	/	Fresh Water Systems
SubSystem:	50-10	/	Water Desalination Package & Distribution

We hereby confirm that all Mechanical Completion (MC) and Pre-Commissioning/Commissioning (Pre-Comm./Comm.) activities for the above-mentioned System/Sub-System have been successfully completed in accordance with project specifications, relevant standards and contractual requirements. The System/Sub-System has been tested and verified to ensure readiness for operation. Issuance of this Certificate shall not release CONTRACTOR from any of his obligations, responsibilities or liabilities under the CONTRACT.

	Mechanical Completion: All required MC activities have been completed and approved
	Pre-Commissioning & Commissioning: All required Pre-Comm. and Comm. activities and OTPs have been completed and approved (Status Index attached)
	Punch List: All Punch items categorized as A and B have been cleared (PL report attached)
	Documentation: As-built documentation and Commissioning dossier has been completed, reviewed and approved

PUNCH LIST	PENDING POINTS	
Note: All Category "A" and "B" Items must be cleared prior to issuance of the Ready For Operation (RFO) Certificate	B: 4	

REMARKS:

	CONTRACTOR Commissioning Manager	**COMPANY** Commissioning Lead
Name	Anthony Iveson	Martin Taylor
Date	2025-07-29	2025-08-01
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-07-29T07:41:50.697Z	PROVERLIS Digitaly signed by Martin Taylor 2025-08-01T05:39:11.959Z

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM

Electrical	50-10 Water Desalination Package & Distribution						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A3/+08-QF1	WATER DESALINATION PACKAGE - UCP - A3/+08-QF1	ONSHORE	C10002938	FP00	100	2024-12-07	RFO 2
		ONSHORE	C10002939	FTR-2	100	2024-10-02	RFO 2
		ONSHORE	C10002940	FTR-6	100	2024-10-03	RFO 2
		ONSHORE	C10003021	FTR-5	100	2025-04-29	RFO 2
UP-200F3-QF36	WATER DESALINATION PACKAGE - UCP	ONSHORE	C10004575	FTR-2	100	2024-12-07	RFO 2

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM

Instrumental	50-10 Water Desalination Package & Distribution

ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
50-XA-003	A-500003 (A-50000) Sea water treatment PKG F&G LCP fault	ONSHORE	C10003759	FJ01D	100	2025-02-11	RFO 2
50-XS-001	SHUT-DOWN A-500003 (A50000) Sea water treatment PKG	ONSHORE	C10003760	FJ01D	100	2025-02-11	RFO 2
A-50000	Water Treatment Package	ONSHORE	C10004885	FJ05	100	2025-02-14	RFO 2

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM

Piping	50-10 Water Desalination Package & Distribution						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
50-10	Service Test Water Desalination & Distribution System	ONSHORE	C10004908	4245	100	2025-03-28	RFO 2

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM

Miscellaneous	50-10 Water Desalination Package & Distribution						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03042	OTP - Sea Water Intake and Fresh Water Treatment Systems	ONSHORE	C10004614	5300	100	2025-07-28	RFO 2
		OFFSHORE	C10004938	5300	0	-	-

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	50	Fresh Water Systems
SUBSYSTEM	50-10	Water Desalination Package & Distribution

Telecom

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000923	A	50-LP-001/B400 -NET-001 C10004348	The copper conductor of the cable armor must be individually connected to the earthing bar. See 123A90-DDL-EL-DD-20090.	.		APolo 2024-11-26	2025-01-09	Gtangianu 2025-01-09	2025-01-09
C30000958	A	50-LP-001/B400 -NET-001 C10004348	The cable termination is not installed in accordance with Electrical Typical Installation Details. see 123A90-DDL-EL-DD-20090 sh.8 / 29.	.		APolo 2024-11-27	2025-01-09	Ecarotenuto 2025-01-09	2025-01-09
C30000924	B	50-LP-001/B400 -NET-001 C10004348	The copper conductor of the cable armor must be individually connected to the earthing bar. See 123A90-DDL-EL-DD-20090.	.		APolo 2024-11-26	2025-02-04	APolo 2025-02-04	2025-02-04
C30000925	B	50-LP-001/B400 -NET-001 C10004348	Missing cable tag , cabinet input A-50000.	.		APolo 2024-11-26	2025-03-10	JKrizanic 2025-03-10	2025-03-10
C30000926	B	50-LP-001/B400 -NET-001 C10004348	Missing SS cable tag on MCT.	.		APolo 2024-11-26	2025-01-31	APolo 2025-01-31	2025-01-31

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001223	A	A-50000	Instrument damaged (50-HS-02)		FIXED AND TESTED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001225	A	A-50000	PSV-039, PSV-036 to be reversed		ACTIVITY DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001241	A	A-50000	Instrument non accessible, to be moved (50-PT-050, 50-PT-051)		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001248	A	A-50000	PT/TT : Model / Manufacturer Fischer doesn't work, wiring to be modified inside control panel		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30000930	B	C-50-XS-001/B400-SIS-001 C10001450	Missing cable tags all along the route.	.		Gtangianu 2024-11-26	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000931	B	C-50-XS-001/B400-SIS-001 C10001450	Missing all core identification tags both side	.		Gtangianu 2024-11-26	2025-04-08	Gtangianu 2025-04-08	2025-04-08
C30000932	B	C-50-XA-003/B400-SIS-001 C10004541	Missing all core identification tags both side.	.		Gtangianu 2024-11-26	2025-04-08	Gtangianu 2025-04-08	2025-04-08
C30000933	B	C-50-XA-003/B400-SIS-001 C10004541	Shield not connected side B400-SIS-001	.		Gtangianu 2024-11-26	2025-01-31	APolo 2025-01-31	2025-01-31
C30000934	B	C-50-XA-003/B400-SIS-001 C10004541	Missing cable tag all along the route.	.		Gtangianu 2024-11-26	2025-02-26	Pschintu 2025-02-26	2025-02-26

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000935	B	C-50-XA-003/B400-SIS-001 C10004541	Cable needs to be better dressed inside the Package (A-50000 Water treatment) See attached photo.	.		Gtangianu 2024-11-26	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000944	B	50-LP-002/B400-FGS-003 C10001467	Missing cable tag all along the route.	.		Gtangianu 2024-11-26	2025-03-03	Gtangianu 2025-03-03	2025-03-03
C30000945	B	50-LP-002/B400-FGS-003 C10001467	Missing all core identification tags both side.	.		Gtangianu 2024-11-26	2025-04-08	Gtangianu 2025-04-08	2025-04-08
C30000947	B	A-50000 C10002350	secondary earthing system of cable trays, instrument, ligthing to be complete prior energization.	.		Gtangianu 2024-11-26	2024-12-17	Ecarotenuto 2024-12-17	2024-12-17
C30000949	B	A-50000 C10002350	Various tag plates are missing inside the Water Treatment Package (A-50000).	.		Gtangianu 2024-11-26	2024-12-17	Ecarotenuto 2024-12-17	2024-12-17
C30001226	B	A-50000	Missing main description labels. To be installed (Fire alarm push button)		INSTALLED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001236	B	A-50000	PI-031, PI-033 to be tightened		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001240	B	A-50000	Label to be installed (AT-026)		IINSTALLED	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001251	B	A-50000	Test report for F&G system to be provided (by SIA)		done - see attached	SLinari 2024-11-29	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001243	A	A-50000	To be installed panel with dedicated holes (All terminal points)		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001244	A	A-50000	Correct measure with panel installed to be verified (All terminal points)		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001247	A	A-50000	Container and control panel to be cleaned inside (50-LP-001)		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001249	A	A-50000	Wrong connection panel side, to be verified (P-50003A/B)		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30000938	B	83016-CEL C10000536	Missing cable tags all along the route	.		Gtangianu 2024-11-26	2025-02-25	APolo 2025-02-25	2025-02-25
C30000939	B	83016-CEL C10000536	Missing all core identification tags both side	.		Gtangianu 2024-11-26	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30000942	B	84313-CEL C10000589	Missing all core identification tags both side.	.		Gtangianu 2024-11-26	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30000943	B	84313-CEL C10000589	Missing cable tag all along the route. See attached photo.	.		Gtangianu 2024-11-26	2025-02-25	APolo 2025-02-25	2025-02-25
C30000946	B	A-50000 C10002349	Various tag plates are missing inside the Water Treatment Package (A-50000).	.		Gtangianu 2024-11-26	2024-12-17	Ecarotenuto 2024-12-17	2024-12-17

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000948	B	A-50000 C10002349	secondary earthing system of cable trays, instrument, ligthing to be complete prior energization.	.		Gtangianu 2024-11-26	2024-12-17	Ecarotenuto 2024-12-17	2024-12-17
C30001219	B	A-50000	Missing label (HHS-50003A/B_container electric heater)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30001220	B	A-50000	Earthing to be fixed (AT-020C)		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001221	B	A-50000	Missing labels (MFA, sounder, lights)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30001227	B	A-50000	Inside panel to be installed ferrules on power cable side (50-LP-001)		installed	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001228	B	A-50000	All MCT's to be fixed and closed (50-LP-001)		DONE	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001229	B	A-50000	Earthing cable to be fixed properly inside panel (50-LP-001)		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001230	B	A-50000	Cables to be fixed properly inside the cable tray of the panel (50-LP-001)		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001232	B	A-50000	Plastic strips to be cut		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001233	B	A-50000	Cables to be properly fixed in some points of the container		DONE	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001234	B	A-50000	Additional light to be added inside the container tank side, due to low visibility		Light has been moved in order to light better the area	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001235	B	A-50000	Missing traffolyte tag for all lamps		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001242	B	A-50000	Missing identification label (All terminal points)		Installed (see picture)	SLinari 2024-11-29	Vendor 2025-02-20	SLinari 2025-02-20	2025-02-20
C30001245	B	A-50000	Correct tag to be installed (now is installed MV-626 instead of SP-626)		DONE	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001246	B	A-50000	Missing cable tags RM side (50-LP-001 and A-50000)		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Mechanical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000480	B	A-50000	Surface preparation activities complied with ISO 12944. Inspection records were satisfactorily completed, but physical inspection of the			SLinari 2024-10-28			
C30000481	B	A-50000	Cable trays support fixed with pins inserted externally; PSC will put an epoxy fille (e.g. Sikaflex 291i) and painting (see Advisor Note n.		Activity done – see pictures	SLinari 2024-10-28	Vendor 2025-04-23	SLinari 2025-04-23	2025-04-23
C30001216	B	A-50000	Missing data nameplate (T-50006, T-50008)		INSTALLED	SLinari 2024-11-29	SLinari 2024-12-18	SLinari 2024-12-18	2024-12-18
C30001217	B	A-50000	Traffolyte tag missing (P-50002A/B_back wash pump)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30001218	B	A-50000	Missing label (HFA-50001A/B_container air fan)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30001222	B	A-50000	Flexible to be connected and missing tag (P-50004A/B_HP Pump)		installed	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001224	B	A-50000	Missing adhesive labels (A-50007A/B_water reverse osmosis units)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001231	B	A-50000	Missing TAG outside container		installed	SLinari 2024-11-29	SLinari 2025-01-28	SLinari 2025-01-28	2025-01-28
C30001237	B	A-50000	Labels to be installed (P-50009A/B_fresh water pump)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Mechanical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001238	B	A-50000	Labels to be installed (S-50004_softening filter)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001239	B	A-50000	Position to be clarified (NRV-653)		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001250	B	A-50000	Wrong rotation, to be fixed (P-50009A/B)		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30004095	B	A-50000 C10002351	In the nameplate dimensions are 12192x2538x3140 mm; in document 1724000448-MAC-DAA-00005, these dimensions	.	Done	LNovaga 2025-02-24	Vendor 2025-04-23	SLinari 2025-04-23	2025-04-23
C30004096	B	A-50000 C10002351	The structure is welded, not bolted. update drawings.	.	In the drawing we have indicated the following because the structure of the	LNovaga 2025-02-24	Vendor 2025-04-23	SLinari 2025-04-23	2025-04-23
C30004097	B	A-50000 C10002351	Piping interface not completly reinstaded	.		LNovaga 2025-02-24			
C30004098	B	A-50000 C10002351	The grounding system is not as specified. In the field there are two grounding lugs on the north side. Produce a mark up on drawing	.		LNovaga 2025-02-24			
C30004099	B	A-50000 C10002351	There is a little damage on north side door. See attached photo.	.		LNovaga 2025-02-24	2025-03-20	LNovaga 2025-03-20	2025-03-20
C30004100	B	A-50000 C10002351	There are mechanical damage. Restore the paint with a touch up	.		LNovaga 2025-02-24	2025-05-06	LNovaga 2025-05-06	2025-05-06

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Mechanical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30004101	B	A-50000 C10002351	Some items are not in the correct position (see attached) relative to the document 1724000448-MAC-DA-00005. Align the drawing if	.	The drawing nr: 1724000448-MAC-DA-0005 has been revised and re	LNovaga 2025-02-24	Vendor 2025-04-23	SLinari 2025-04-23	2025-04-23
C30004102	B	A-50000 C10002351	Tag S-50002B is not installed.	.		LNovaga 2025-02-24	2025-03-01	LNovaga 2025-03-01	2025-03-01
C30004103	B	A-50000 C10002351	Tag T-50003 is not installed.	.		LNovaga 2025-02-24	2025-03-01	LNovaga 2025-03-01	2025-03-01
C30004104	B	A-50000 C10002351	The top terminal point cover on the west side has not been fixed.	.		LNovaga 2025-02-24	2025-03-27	LNovaga 2025-03-27	2025-03-27
C30004105	B	A-50000 C10002351	the covers of the terminal points at the bottom on the west side are not installed.	.		LNovaga 2025-02-24	2025-04-23	LNovaga 2025-04-23	2025-04-23
C30004106	B	A-50000 C10002351	General cleaning of package, especially on roof.	.		LNovaga 2025-02-24	2025-04-15	LNovaga 2025-04-15	2025-04-15
C30004121	B	A-50000 C10002351	TP-008 is missing, to be installed.			SLinari 2025-02-25	2025-04-15	SLinari 2025-04-15	2025-04-15

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Piping

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001590	B	50-10-TP-006 C10003270	Bolts of supports S64 have not been tightened yet. Isolator C-9 missing from all clamps C-1. Correct gap of support C-33 not yet achieved.	.		KAlbonetti 2024-12-09	2025-02-19	KAlbonetti 2025-02-19	2025-02-19
C30001591	B	50-10-TP-006 C10003270	Vertical misalignment between line and package interconnecting flange of around 40 mm.	.		KAlbonetti 2024-12-09	2024-02-17	KAlbonetti 2024-02-17	2024-02-17
C30003519	B	50-10-TP-006 C10003270	Spool E is lenght 117 mm instead of 147 mm as marked in the isometric. See attached photo.	.		KAlbonetti 2025-02-04	2025-04-02	LNovaga 2025-04-02	2025-04-02
C30004012	B	50-10-TP-006 C10003271	The support PS-02122.1is not aligned and does not fully touch the structural support. See attached photo.	.		LNovaga 2025-02-19	2025-02-21	LNovaga 2025-02-21	2025-02-21
C30004015	B	50-10-TP-006 C10003271	The support PS-02124.4 is not aligned and does not fully touch the structural support that has a misalignment as in photo.	.		LNovaga 2025-02-19	2025-02-21	LNovaga 2025-02-21	2025-02-21
C30004016	B	50-10-TP-006 C10003271	The support PS-02048.2 is not aligned and does not fully touch the structural support. See attached photo.	.		LNovaga 2025-02-19	2025-02-21	LNovaga 2025-02-21	2025-02-21
C30004295	B	50-10-TP-006 C10003272	Missing insulation from penetration T.O.S. EL. +30130 to joint 001-1-J4 for ongoing commissioning activities. See attached photo and	.	Insulation installed	LNovaga 2025-03-28	RDegliEsposti 2025-07-28	RDegliEsposti 2025-07-28	2025-07-28
C30004296	B	50-10-TP-006 C10003272	Missing the insulation pillow around the joint 001-1-J1 and portion of pipe not insulated (refer to punch C30004295)	.	Insulation installed	LNovaga 2025-03-28	RDegliEsposti 2025-07-25	RDegliEsposti 2025-07-25	2025-07-25
C30004297	B	50-10-TP-006 C10003272	Missing insulation sheet on water treatment side (see attached photo) and sealant between W2 and W3 on isometric 001	.		LNovaga 2025-03-28	2025-03-28	LNovaga 2025-03-28	2025-03-28

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Miscellaneous

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30004394	B	123A90-PML-COM-PRO-03042 C10004614	Following negative test results, an investigation has revealed that the water treatment package Tag A-50000 and the internal water treatment	An immediate solution to enable feeding of the electrolyser has been implemented: on-spec. Water produced by the water treatment		RDegliEsposti 2025-06-06			

Section 2.2 Exception Punch Lists (per discipline)

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems

SUBSYSTEM 50-10 Water Desalination Package & Distribution

Mechanical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000480	B	A-50000	Surface preparation activities complied with ISO 12944. Inspection records were satisfactorily completed, but physical inspection of the			SLinari 2024-10-28			
C30004097	B	A-50000 C10002351	Piping interface not completly reinstaded	.		LNovaga 2025-02-24			
C30004098	B	A-50000 C10002351	The grounding system is not as specified. In the field there are two grounding lugs on the north side. Produce a mark up on drawing	.		LNovaga 2025-02-24			

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems

SUBSYSTEM 50-10 Water Desalination Package & Distribution

Miscellaneous

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30004394	B	123A90-PML-COM-PRO-03042 C10004614	Following negative test results, an investigation has revealed that the water treatment package Tag A-50000 and the internal water treatment	An immediate solution to enable feeding of the electrolyser has been implemented: on-spec. Water produced by the water treatment		RDegliEsposti 2025-06-06			

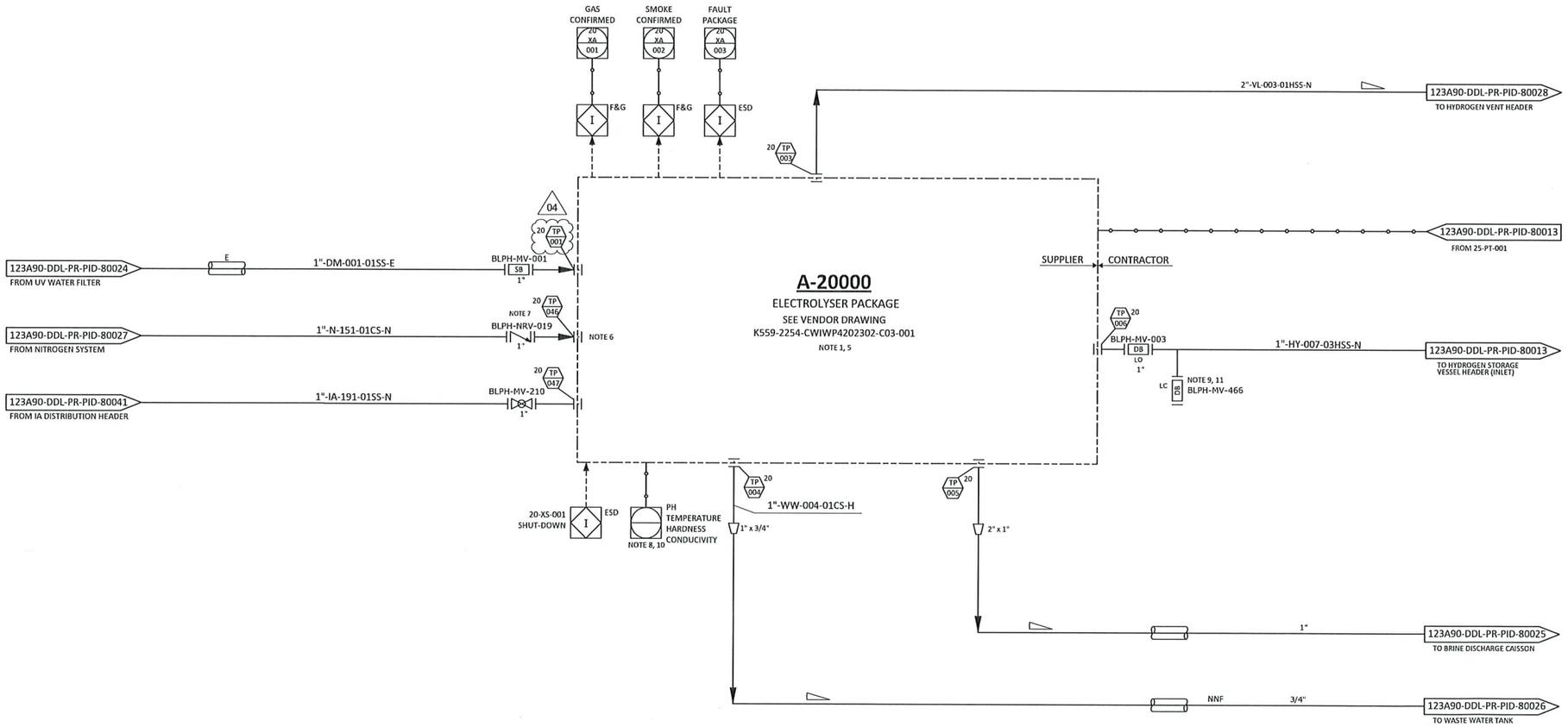
Section 2.3 “As-Commissioned” P&ID's / SLD's / D&ID's / C&E's

DRAWING NO. DRAWING_NO.

REV. REV

A-20000
ELECTROLYSER PACKAGE

DUTY: 2.5MW
DESIGN PRESSURE: 40 barg
DESIGN TEMPERATURE: 80 °C
H2 GENERATING CAPACITY: 500 Nm^3/h



NOTES

1. PACKAGE SUPPLIED WITH POWER FROM THE BLPH ELECTRICAL SYSTEM.
2. DELETED.
3. DELETED.
4. DELETED.
5. ELECTROLYSER PACKAGE INCLUDES AN OXYGEN VENT LINE WHICH IS IN THE SCOPE OF SUPPLY OF THE ELECTROLYSER PACKAGE UP TO THE ATMOSPHERE. NO PHYSICAL INTERFACE IS PRESENT BETWEEN ELECTROLYSER PACKAGE AND CONTRACTOR ON THIS LINE.
6. AN ISOLATION VALVE DOWNSTREAM THE CHECK VALVE NRV-019 IS PROVIDED WITHIN THE PACKAGE A-20000.
7. CHECK VALVE NRV-019 TO BE INSTALLED AS CLOSE AS POSSIBLE TO THE ELECTROLYSER PACKAGE A-20000.
8. SERIAL COMMUNICATION WITH CONTROL SYSTEM.
9. NITROGEN PURGING CONNECTION TO BE LOCATED AS CLOSE AS POSSIBLE TO MANUAL VALVE BLPH-MV-003.
10. PH, TEMPERATURE, HARDNESS AND CONDUCTIVITY SHALL BE SENT FROM CONTROL SYSTEM TO ELECTROLISER UCP IN ADDITION TO THE OTHER SOFTWARE SIGNALS.
11. MANUAL VALVE BLPH-MV-466 TO BE CONNECTED WITH MANUAL VALVE BLPH-MV-275 (INSTALLED ON NITROGEN GENERATION PACKAGE EXIT LINE) BY MEAN ON A FLEXIBLE HOSE DURING COMMISSIONING PHASE FOR PURGING OPERATION.

HOLDS

As Commissioned
02-04-2025
Giandonato De Missier

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
04	16/04/2025	CIM	RZI	CGI	ACCEPTED FOR CONSTRUCTION (AFC)
03	09/09/2024	CIM	RZI	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
02	12/06/2024	CIM	RZI	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	15/02/2024	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)
00	20/10/2023	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)

CROSSWIND

ROSETTI MARINO

TITLE :
BLPH PIPING AND INSTRUMENTATION DIAGRAM
ELECTROLYSER PACKAGE

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE NTS

DRAWN | CHECKED | APPROVED | DATE

A1 | DRAWING NO. 123A90-DDL-PR-PID-80011 | SHEET 001 | REV. 04

File Name : FILE_NAME

DRAWING NO. DRAWING_NO.

REV. REV

A-50000
WATER TREATMENT PACKAGE
CAPACITY : 2.5 m³/hr

GAS CONFIRMED 50 XA 001 — F&G
SMOKE CONFIRMED 50 XA 002 — F&G
FAULT PACKAGE 50 XA 003 — ESD
50-XS-001 SHUT-DOWN — ESD
NOTE 6

CONTRACTOR | SUPPLIER

123A90-DDL-PR-PID-80025
TO 50-TDI-002
50 TI 001
BLOCKED OUTLET SET @ 6 barg
50 PSV 011 1D2
2"-SWR-291-01SD-N
BLPH-MV-471 SI LO 03
NOTE 7
1"-SWS-290-01SD-E
50 TT 001
50 TE 001 03
1.1/2"
TP 50 017
123A90-DDL-PR-PID-80021
FROM SEA WATER LIFT PUMP
1-1/2"-SWS-035-01SD-E
E
4"x1.1/2" ECC. RED.
4"x1.1/2" ECC. RED.
BLPH-MV-241 3/4"

FOR CONTINUATION SEE DOC N. 123A90-DDL-PR-PID-80023

A-50000
WATER TREATMENT PACKAGE
SEE VENDOR DRAWING
DOC. N. 1724000448-PR-PID-00013

FOR CONTINUATION SEE DOC N. 123A90-DDL-PR-PID-80023

E
TP 50 005 03
123A90-DDL-PR-PID-80021
TO SEA WATER LIFT PUMP AND LIFT PUMP CAISSONS
1"-CI-029-01CP-E

1"-CI-043-01CP-E
TP 50 006 03
DECK
HOOK-UP 003
123A90-DDL-PR-PID-80026
TO WASTE WATER TANK

SUPPLIER | CONTRACTOR

TP 50 003 03
1.1/2"x1"
3"x1.1/2"
1"-SWR-045-01CS-H
123A90-DDL-PR-PID-80025
TO BRINE DISCHARGE CAISSON

TP 50 007 03
1.1/2"x1"
1"-WW-038-01CS-H
123A90-DDL-PR-PID-80026
TO WASTE WATER TANK

AS COMMISSIONED
16-04-2025
GIANDONATO DA MISSIER

NOTES
1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED.
5. DELETED.
6. SERIAL COMMUNICATION WITH CONTROL SYSTEM.
7. ROUTED TO THE SEA. 03

HOLDS
1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED.
5. DELETED.
6. DELETED.

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	09/09/2024	CIM	RZI	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
02	12/06/2024	CIM	RZI	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	15/02/2024	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)
00	20/10/2023	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)

CROSSWIND

ROSETTI MARINO

TITLE :
BLPH PIPING AND INSTRUMENTATION DIAGRAM
SEA-WATER INTAKE SYSTEM SHEET 2

CONTRACT NO./TITLE	CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK		SCALE	NTS
DRAWN	CHECKED	APPROVED	DATE	
A1	DRAWING NO. 123A90-DDL-PR-PID-80022		SHEET 001	REV. 03

File Name : FILE_NAME

DRAWING NO. DRAWING_NO.

REV. REV

A-50000

WATER TREATMENT PACKAGE

CAPACITY : 2.5 m³/hr 02

02

CONTRACTOR SUPPLIER

FOR CONTINUATION SEE DOC N. 123A90-DDL-PR-PID-80022

FOR CONTINUATION SEE DOC N. 123A90-DDL-PR-PID-80024

A-50000

SEE VENDOR DRAWING
DOC. N. 1724000448-PR-PID-00013

FOR CONTINUATION SEE DOC N. 123A90-DDL-PR-PID-80022

FOR CONTINUATION SEE DOC N. 123A90-DDL-PR-PID-80024

SUPPLIER CONTRACTOR

AS COMMISSIONED
GIANDOMENICO DE MISSIER
02-04-2025

NOTES

1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED.
5. DELETED.

02

HOLDS

1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED.

02

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	12/06/2024	CIM	RZI	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	15/02/2024	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)
00	20/10/2023	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)

CROSSWIND

ROSETTI MARINO

TITLE :
BLPH PIPING AND INSTRUMENTATION DIAGRAM
WATER TREATMENT PLANT SHEET 1

CONTRACT NO./TITLE	CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK		SCALE	NTS
DRAWN	CHECKED	APPROVED	DATE	
A1	DRAWING NO. 123A90-DDL-PR-PID-80023		SHEET 001	REV. 02

File Name : FILE_NAME

DRAWING NO. DRAWING_NO.

REV. REV

A-50000
WATER TREATMENT PACKAGE
CAPACITY : 2.5 m³/hr

FOR CONTINUATION SEE DOC N. 123A90-DDL-PR-PID-80023

SUPPLIER — CONTRACTOR

A-50000
WATER TREATMENT PACKAGE
SEE VENDOR DRAWING
DOC. N. 1724000448-PR-PID-00013

1"-DM-001-01SS-E-1 → 123A90-DDL-PR-PID-80011 TO ELECTROLYSER PACKAGE

TP 002 / 50 / 03

PH
TEMPERATURE
HARDNESS
CONDUCIVITY
NOTE 8

FOR CONTINUATION SEE DOC N. 123A90-DDL-PR-PID-80023

AS COMMISSIONED
02-09-2025
GIANDONATO DE MISSIER

NOTES

1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED.
5. DELETED.
6. DELETED.
7. DELETED.
8. PH, TEMPERATURE, HARDNESS AND CONDUCTIVITY SHALL BE SENT FROM WATER TREATMENT UCP TO CONTROL SYSTEM IN ADDITION TO THE OTHER SOFTWARE SIGNALS.

HOLDS

1. DELETED.
2. DELETED.
3. DELETED.
4. DELETED.
5. DELETED.

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	09/09/2024	CIM	RZI	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
02	12/06/2024	CIM	RZI	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	15/02/2024	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)
00	20/10/2023	CIM	RZI	DLO	ISSUE FOR ACCEPTANCE (IFA)

CROSSWIND

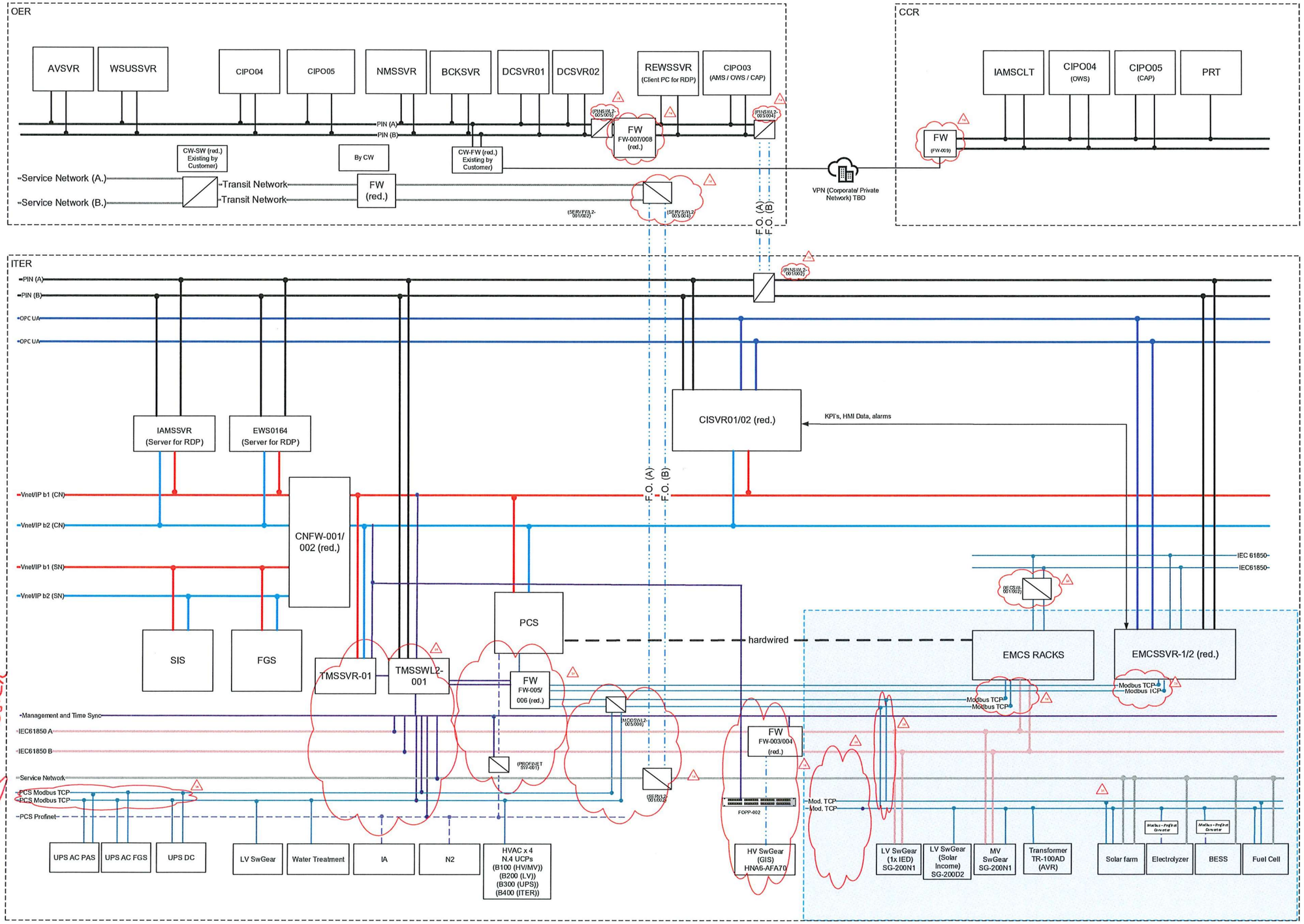
ROSETTI MARINO

TITLE :
BLPH PIPING AND INSTRUMENTATION DIAGRAM
WATER TREATMENT PLANT SHEET 2

CONTRACT NO./TITLE	CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK		SCALE	NTS
DRAWN	CHECKED	APPROVED	DATE	
A1	DRAWING NO. 123A90-DDL-PR-PID-80024		SHEET 001	REV. 03

File Name : FILE_NAME

CROSSWIND BLPH PROJECT - SYSTEM BLOCK DIAGRAM



As Commissioning
08-05-2025
Gianluca De Nisco

AMS	: Alarm Management System	FCS	: Field Control Station
AV	: Anti-virus	FGS	: Fire & Gas System
BCK	: Backup Server	FO	: Fiber Optic
BESS	: Battery Energy Storage System	FOPP	: Fiber Optic Patch Panel (by others)
BLPH	: Base Load Power Hub	FTA	: Field Termination Assembly
CAP	: Critical Alarm Panel	HIST	: Historian
CCR	: Central Control Room	HKN	: Hollandse Kust Noord
CI	: Collaborative Information	IAMS	: Instrument Asset Management System
CN	: Control Network	ITER	: Instrument & Telecom Equipment Room
DC	: Domain Controller	LHVS	: Land High Voltage Station
DMZ	: De-militarized Zone	MCC	: Motor Control Center
ESB	: IO communication bus	MODB	: Modbus
EWS	: Engineering Work Station	MQTT	: Message Queuing Telemetry Transport
FC	: Field Communication (Vnet/IP)	NMS	: Network Management System
OER	: Onshore Equipment Room		
OHVS	: Offshore High Voltage Station		
OWS	: Operator Work Station		
PIN	: Plant Information Network		
PKG	: Package		
RDP	: Remote Desktop Protocol		
SCS	: Safety Control Station		
SIS	: Safety Instrumented System		
SN	: Safety Network		
SW	: Switch		
UCP	: Unit Control Panel (3rd party systems)		
VM	: Virtual Machine		
Vnet/IP	: Yokogawa's Control network		
WSUS	: Windows Security Update Services		

LEGEND:

- PIN (Plant Information Network)
- Vnet/IP BUS 1 PCS
- Vnet/IP BUS 2 PCS
- Vnet/IP BUS 1 SIS/FGS
- Vnet/IP BUS 2 SIS/FGS
- ESB bus connection
- IEC61850 connection
- OPC UA connection
- Service Network connection
- Modbus TCP connection
- Profinet (non redundant)
- Fiber Optic Patch Cords
- Fiber Optic connection (core by Crosswind)
- Fiber Optic backbone (by Crosswind)
- System Cable connection
- Management and Time sync.

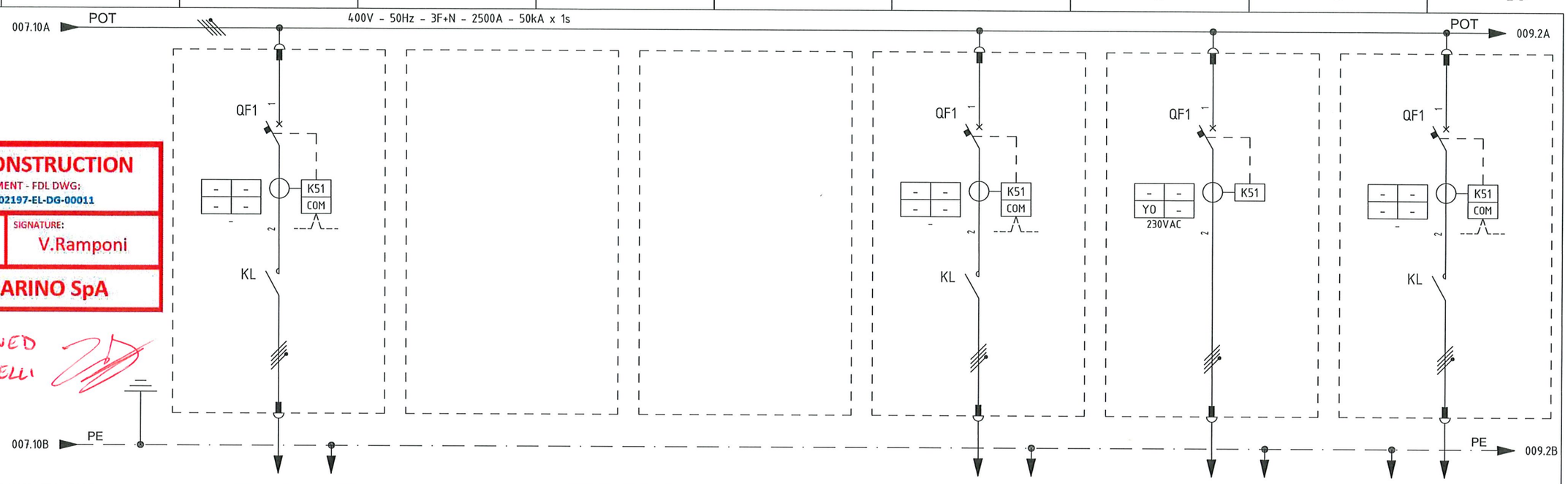
Note 1 : Exact assignment of Servers per cabinet to be defined in cabinet General Arrangement Drawing.
Note 2 : For IP Addresses refer to 1724000594-IN-RE-00043 Cyber Security Settings
Note 3 : All Network Components will be installed in Network Cabinet.
Note 4 : Supply of Console Desk in CCR is in Customer Scope.
Note 5 : All Network Switches and Firewall is configured in VLAN.
Note 6 : Intermediate FO Connection between HNA5 and OER Intentionally not shown.

Zone-1 : PCS Control Zone
Zone-2 : Safety Control Zone
Zone-3 : PCS Zone
Zone-4 : Application Server Facility Zone
Zone-5 : Security Management Zone-1
Zone-6 : Security Management Zone-2
Zone-7 : Demilitirized Zone
Zone-8 : Croswind Zone
Zone-9 : Service Network Zone
Zone-10: Application Server Facility Zone-OD
Zone-11: Third Party System Zone
: Out of Scope

REV	DWG BY	CHK BY	APP BY	DATE
04	SKR	MP/AB	SC	12-Feb-25
03	SKR	MP/AB	SC	26-Aug-24
02	SKR	MP/AB	SC	28-Jun-24
01	SKR	MP/AB	SC	24-May-24
00	SKR	AB	SC	23-Apr-24

Doc No : 1724000594-IN-DD-00015
Doc Name : System Architecture

ROSETTI MARINO
HOLLANDSE KUST NOORD WIND PART Project
CROSSWIND
YOKOGAWA



VALID FOR CONSTRUCTION

VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1723002197-EL-DG-00011

REV.:	DATE:	SIGNATURE:
4_A	18/12/24	V.Ramponi

ROSETTI MARINO SpA

AS-COMMISSIONED
DAVIDE ZUCCONELLI
20/03/2025
NO MARK UP

ITEM						JB-500E8	UP-200F3	B100-HSB-001
UTILITY			2	SPARE	FUTURE	WATER PACKAGE	AC UPS PAS - 30 MIN UP-200F3 - LINE B	HVAC PANELS HV ROOM
COLUMN/CUBICLE			3	A3 / +05	A3 / +06	A3 / +08	A4 / +01	A4 / +02
RATED POWER | RATED CURRENT			4/5	- kW | - A	- | -	67 kW | 107.00 A	36.0 kW | 57.8 A	18 kW | 34.1 A
TYPICAL FUNCTIONAL			6	LK1-40		LK2-160	L1-100	LK1-40
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160		XT4S - 250	XT2S - 160	XT2S - 160
	VERSION		8	4P - FIXED		4P - FIXED	4P - FIXED	4P - FIXED
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 40A)		EKIP HI TOUCH LSIG (In = 160A)	EKIP DIP LSIG (In = 100A)	EKIP HI TOUCH LSIG (In = 40A)
	Icu	KA	10	50 kA		50 kA	50 kA	50 kA
OVERLOAD	L	Range A	11	(0.4 - 1) x In		(0.4 - 1) x In	(0.4 - 1) x In	(0.4 - 1) x In
		Range t	12	k/I^2		k/I^2	k/I^2	k/I^2
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In		(0.6 - 10) x In	(1 - 10) x In	(0.6 - 10) x In
		Range t	14	0.05 - 0,4 sec / k/I^2		0.05 - 0.4 sec / k/I^2	0.05 - 0.4 sec / k/I^2	0.05 - 0,4 sec / k/I^2
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In		(1.5 - 15) x In	(1 - 10) x In	(1.5 - 15) x In
		Range t	16	instantaneous		instantaneous	<= 0.02 sec	instantaneous
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In		(0.1 - 1) x In	(0.2 - 1) x In	(0.1 - 1) x In
		Range t	18	t=k / t=k/I^2		t=k / t=k/I^2	0.1 - 0.8 sec	t=k / t=k/I^2
CONTACTOR (ABB)			19	AF40-40-00-13 (70A-AC1); 100-250VAC/DC		AF190-40-11-13 (275A-AC1); 100-250 VAC/DC	-	AF40-40-00-13 (70A-AC1); 100-250VAC/DC
THERMAL OVERLOAD RELAY (ABB)			20	-		-	-	-
SURGE ARRESTER (DEHN)			21	-		-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-		-	-	-
FUSE HOLDER (ITALWEBER)			23	-		-	-	-
INDIRECT PROTECTION (ABB)			24	-		-	-	-
VOLTMETER			25	-		-	-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-		-	-	-
	PERFORMANCE/CLASS		27	-		-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-		-	-	-
	PERFORMANCE/CLASS		29	-		-	-	-
LOCK-OUT RELAY (-)			30	-		-	-	-
POWER CONDUCTOR		mmq	31	-		5G70	4G35	5G16

=
+

DWG n° : 231298/SD/11
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
4	28/08/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
3	08/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
2	03/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
1	28/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	15/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00011

SHEET 008

REV. 04

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00011 Rev. 04

CAE EPLAN Electric P8

This document is property of AEG Power Solutions and must not be displayed or duplicated to any third party without the consent of the company

AUXILIARY
From Lighting & Small Power DB BOP DP 200N1
(Cubicle 33 Q41)
100-240V/N/PE~50/60Hz
back-up fuse gG10A 3G2.5mm2

LINE A
From LV Switchgear SG-200N1
(Cubicle A3/Q1)
Mains 400V;3/PE~50Hz
gG63A 4G35mm2

From LV Switchgear SG 200N1
(Cubicle A7/Q2)
Bypass mains 400V;3/PE~50Hz
gG63A 4G35mm2

LINE B
From LV Switchgear SG 200N1
(Cubicle A4/Q1)
Mains 400V;3/PE~50Hz
gG63A 4G35mm2

Not included in the AEG shipment

Code	Description
Q1	Rectifier input mains breaker
T40	Rectifier input isolation transformer
A1	Rectifier
A2	Inverter
T1	Inverter output isolation transformer
A3-A4	Static by-pass switch
A18	Display control module
A85	Heater
H1	Light

+MBC1
BY-200F3
Bypass transformer cabinet 40 kVA
1000007883.020
10039757

-Q10 L=63/65A I=0,8kA Icu=50kA
-T8 400V/400V 40kVA
-X1 1U,1V,1W,PE
-X10 U,V,W,PE
-X13 U,N,PE
-X14 U,N
-A85
-H1

-Q28.1 NC
-Q28.2 NC

+UPS1
BC-200F3A
Protect 8.33 40-400-210-400
1000007883.010
10039756

+UPS2
BC-200F3B
Protect 8.33 40-400-210-400
1000007883.310
10039755

-Q1 L=100/85A I=1,0kA Icu=50kA
-T40
-A1 REC
-A2 INV
-T1
-F1,-F2,-F3
-A3 SBS
-A4
-A18 Display
-A20 Parallel Adapter
-X3 INV CAN
-X5 INV Sync
-L11,-L12,-L13 Parallel preventive choke coil
-A12,-A13 Remote signaling
-A24.1 BLU PRO
-F91

-X1 2U,2V,2W,PE
-X4 1U,1V,1W,1N,PE
-X4 2U,2V,2W,2N,PE
-X1 4U,4V,4W,PE
-X1 3U,3V,3W,PE
-E1-X1 U,V,W,PE
-E4-X4 U,V,W,N,PE
-E2-X2 L-,L+,PE
-E3-X3 U,V,W,N,PE
-X15 2,3
-X130 1,2
-X5 1U,1V,1W,1N,PE
-X5 2U,2V,2W,2N,PE
-X2 3L+,3L-,PE
-X15 5,7
-X91 3M

-Q71 NC
-Q72 NC
-Q29 INV operation / Manual bypass
-F25

DP-200F3
-QF31 B32A 300mA
-QF32 B32A 300mA
-QF33 B32A 300mA
-QF34 B16A 300mA (5pc)
-QF38 B16A 300mA
-QF39 B10A 300mA (4pc)
-QF42 B13A 300mA (8pc)
-QF43 B13A
-QF50 B10A
-QF51 B6A
-QF52 B6A
-X2 2L+,2L-,PE
-X15 4,5
-X91 2M
-X130 1,2,1PE
-X31 U,N,PE
-X32 U,N,PE
-X33 U,N,PE
-X34 U,N,PE
-X38 V,N,PE
-X39 V,N,PE
-X42 W,N,PE
-X43 W,N,PE
-X50 U,N,PE
-X51 V,N,PE
-X52 V,N,PE
-X2 4L+,4L-,PE
-X15 8,9
-X91 4M
-X130 3,4,2PE

Not included in the AEG shipment
max. gG16A
max. gG16A
Load
400/230V;3/N/PE~50Hz

+BFB1
CB-200F3A
Battery fuse box 200 A
-Q2 L=200A
DC 24V max. 300W
2(1x70 mm2)

+BFB2
CB-200F3B
Battery fuse box 200 A
-Q2 L=200A
DC 24V max. 300W
2(1x70 mm2)

+BAT1
BA-200F3A
Batteries installed on rack
18 x FLG 12-150
Battery voltage 216V
Battery capacity 150Ah
string 1
-RBTMN

+BAT2
BA-200F3B
Batteries installed on rack
18 x FLG 12-150
Battery voltage 216V
Battery capacity 150Ah
string 1
-RBTMN

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724000372-EL-DG-00009

REV.:	DATE:	SIGNATURE:
3_A	15/11/24	G.Randi

ROSETTI MARINO SpA

AS-COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

*1 Attention! In the event of battery undervoltage < 130 V, the UPS automatically switches off battery isolator Q2.
If this happens, switch X15:3 must be switched into the open position (undervoltage trip blocked).
For restart, please refer to the chapter in the UPS operating instructions (charging the DC link capacitors) attached.
Unlock the tripped switch Q2 by switching to open position.
After charging the DC link capacitors, switch on Q2.
Attention! When the battery voltage reaches > 200 V, switch X15:3 must be switched back to the closed position.

*2 Connection cables are not included.

1000007888_010

ROSETTI MARINO
Mohammed Bin Rashid Al Maktoum Port Farm
AEG
System 40 kVA
Single-line diagram
1000007888_310 en
A0

Section 3 CONSOLIDATED PUNCH LISTS

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems

SUBSYSTEM 50-10 Water Desalination Package & Distribution

Telecom

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000923	A	50-LP-001/B400 -NET-001 C10004348	The copper conductor of the cable armor must be individually connected to the earthing bar. See 123A90-DDL-EL-DD-20090.	.		APolo 2024-11-26	2025-01-09	Gtangianu 2025-01-09	2025-01-09
C30000958	A	50-LP-001/B400 -NET-001 C10004348	The cable termination is not installed in accordance with Electrical Typical Installation Details. see 123A90-DDL-EL-DD-20090 sh.8 / 29.	.		APolo 2024-11-27	2025-01-09	Ecarotenuto 2025-01-09	2025-01-09
C30000924	B	50-LP-001/B400 -NET-001 C10004348	The copper conductor of the cable armor must be individually connected to the earthing bar. See 123A90-DDL-EL-DD-20090.	.		APolo 2024-11-26	2025-02-04	APolo 2025-02-04	2025-02-04
C30000925	B	50-LP-001/B400 -NET-001 C10004348	Missing cable tag , cabinet input A-50000.	.		APolo 2024-11-26	2025-03-10	JKrizanic 2025-03-10	2025-03-10
C30000926	B	50-LP-001/B400 -NET-001 C10004348	Missing SS cable tag on MCT.	.		APolo 2024-11-26	2025-01-31	APolo 2025-01-31	2025-01-31

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001223	A	A-50000	Instrument damaged (50-HS-02)		FIXED AND TESTED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001225	A	A-50000	PSV-039, PSV-036 to be reversed		ACTIVITY DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001241	A	A-50000	Instrument non accessible, to be moved (50-PT-050, 50-PT-051)		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001248	A	A-50000	PT/TT : Model / Manufacturer Fischer doesn't work, wiring to be modified inside control panel		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30000930	B	C-50-XS-001/B400-SIS-001 C10001450	Missing cable tags all along the route.	.		Gtangianu 2024-11-26	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000931	B	C-50-XS-001/B400-SIS-001 C10001450	Missing all core identification tags both side	.		Gtangianu 2024-11-26	2025-04-08	Gtangianu 2025-04-08	2025-04-08
C30000932	B	C-50-XA-003/B400-SIS-001 C10004541	Missing all core identification tags both side.	.		Gtangianu 2024-11-26	2025-04-08	Gtangianu 2025-04-08	2025-04-08
C30000933	B	C-50-XA-003/B400-SIS-001 C10004541	Shield not connected side B400-SIS-001	.		Gtangianu 2024-11-26	2025-01-31	APolo 2025-01-31	2025-01-31
C30000934	B	C-50-XA-003/B400-SIS-001 C10004541	Missing cable tag all along the route.	.		Gtangianu 2024-11-26	2025-02-26	Pschintu 2025-02-26	2025-02-26

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000935	B	C-50-XA-003/B400-SIS-001 C10004541	Cable needs to be better dressed inside the Package (A-50000 Water treatment) See attached photo.	.		Gtangianu 2024-11-26	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30000944	B	50-LP-002/B400-FGS-003 C10001467	Missing cable tag all along the route.	.		Gtangianu 2024-11-26	2025-03-03	Gtangianu 2025-03-03	2025-03-03
C30000945	B	50-LP-002/B400-FGS-003 C10001467	Missing all core identification tags both side.	.		Gtangianu 2024-11-26	2025-04-08	Gtangianu 2025-04-08	2025-04-08
C30000947	B	A-50000 C10002350	secondary earthing system of cable trays, instrument, ligthing to be complete prior energization.	.		Gtangianu 2024-11-26	2024-12-17	Ecarotenuto 2024-12-17	2024-12-17
C30000949	B	A-50000 C10002350	Various tag plates are missing inside the Water Treatment Package (A-50000).	.		Gtangianu 2024-11-26	2024-12-17	Ecarotenuto 2024-12-17	2024-12-17
C30001226	B	A-50000	Missing main description labels. To be installed (Fire alarm push button)		INSTALLED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001236	B	A-50000	PI-031, PI-033 to be tightened		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001240	B	A-50000	Label to be installed (AT-026)		IINSTALLED	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001251	B	A-50000	Test report for F&G system to be provided (by SIA)		done - see attached	SLinari 2024-11-29	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001243	A	A-50000	To be installed panel with dedicated holes (All terminal points)		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001244	A	A-50000	Correct measure with panel installed to be verified (All terminal points)		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001247	A	A-50000	Container and control panel to be cleaned inside (50-LP-001)		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001249	A	A-50000	Wrong connection panel side, to be verified (P-50003A/B)		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30000938	B	83016-CEL C10000536	Missing cable tags all along the route	.		Gtangianu 2024-11-26	2025-02-25	APolo 2025-02-25	2025-02-25
C30000939	B	83016-CEL C10000536	Missing all core identification tags both side	.		Gtangianu 2024-11-26	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30000942	B	84313-CEL C10000589	Missing all core identification tags both side.	.		Gtangianu 2024-11-26	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30000943	B	84313-CEL C10000589	Missing cable tag all along the route. See attached photo.	.		Gtangianu 2024-11-26	2025-02-25	APolo 2025-02-25	2025-02-25
C30000946	B	A-50000 C10002349	Various tag plates are missing inside the Water Treatment Package (A-50000).	.		Gtangianu 2024-11-26	2024-12-17	Ecarotenuto 2024-12-17	2024-12-17

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000948	B	A-50000 C10002349	secondary earthing system of cable trays, instrument, ligthing to be complete prior energization.	.		Gtangianu 2024-11-26	2024-12-17	Ecarotenuto 2024-12-17	2024-12-17
C30001219	B	A-50000	Missing label (HHS-50003A/B_container electric heater)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30001220	B	A-50000	Earthing to be fixed (AT-020C)		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001221	B	A-50000	Missing labels (MFA, sounder, lights)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30001227	B	A-50000	Inside panel to be installed ferrules on power cable side (50-LP-001)		installed	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001228	B	A-50000	All MCT's to be fixed and closed (50-LP-001)		DONE	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001229	B	A-50000	Earthing cable to be fixed properly inside panel (50-LP-001)		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001230	B	A-50000	Cables to be fixed properly inside the cable tray of the panel (50-LP-001)		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001232	B	A-50000	Plastic strips to be cut		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001233	B	A-50000	Cables to be properly fixed in some points of the container		DONE	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001234	B	A-50000	Additional light to be added inside the container tank side, due to low visibility		Light has been moved in order to light better the area	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001235	B	A-50000	Missing traffolyte tag for all lamps		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001242	B	A-50000	Missing identification label (All terminal points)		Installed (see picture)	SLinari 2024-11-29	Vendor 2025-02-20	SLinari 2025-02-20	2025-02-20
C30001245	B	A-50000	Correct tag to be installed (now is installed MV-626 instead of SP-626)		DONE	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001246	B	A-50000	Missing cable tags RM side (50-LP-001 and A-50000)		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Mechanical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000480	B	A-50000	Surface preparation activities complied with ISO 12944. Inspection records were satisfactorily completed, but physical inspection of the		Completed	SLinari 2024-10-28	RDegliEsposti 2025-07-30	RDegliEsposti 2025-07-30	2025-07-30
C30000481	B	A-50000	Cable trays support fixed with pins inserted externally; PSC will put an epoxy fille (e.g. Sikaflex 291i) and painting (see Advisor Note n.		Activity done – see pictures	SLinari 2024-10-28	Vendor 2025-04-23	SLinari 2025-04-23	2025-04-23
C30001216	B	A-50000	Missing data nameplate (T-50006, T-50008)		INSTALLED	SLinari 2024-11-29	SLinari 2024-12-18	SLinari 2024-12-18	2024-12-18
C30001217	B	A-50000	Traffolyte tag missing (P-50002A/B_back wash pump)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30001218	B	A-50000	Missing label (HFA-50001A/B_container air fan)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30001222	B	A-50000	Flexible to be connected and missing tag (P-50004A/B_HP Pump)		installed	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001224	B	A-50000	Missing adhesive labels (A-50007A/B_water reverse osmosis units)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001231	B	A-50000	Missing TAG outside container		installed	SLinari 2024-11-29	SLinari 2025-01-28	SLinari 2025-01-28	2025-01-28
C30001237	B	A-50000	Labels to be installed (P-50009A/B_fresh water pump)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems

SUBSYSTEM 50-10 Water Desalination Package & Distribution

Mechanical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001238	B	A-50000	Labels to be installed (S-50004_softening filter)		INSTALLED	SLinari 2024-11-29	SLinari 2025-02-07	SLinari 2025-02-07	2025-02-07
C30001239	B	A-50000	Position to be clarified (NRV-653)		DONE	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30001250	B	A-50000	Wrong rotation, to be fixed (P-50009A/B)		FIXED	SLinari 2024-11-29	SLinari 2024-12-19	SLinari 2024-12-19	2024-12-19
C30004095	B	A-50000 C10002351	In the nameplate dimensions are 12192x2538x3140 mm; in document 1724000448-MAC-DAA-00005, these dimensions	.	Done	LNovaga 2025-02-24	Vendor 2025-04-23	SLinari 2025-04-23	2025-04-23
C30004096	B	A-50000 C10002351	The structure is welded, not bolted. update drawings.	.	In the drawing we have indicated the following because the structure of the	LNovaga 2025-02-24	Vendor 2025-04-23	SLinari 2025-04-23	2025-04-23
C30004097	B	A-50000 C10002351	Piping interface not completly reinstaded	.	Reinstatement completed	LNovaga 2025-02-24	RDegliEsposti 2025-07-30	RDegliEsposti 2025-07-30	2025-07-30
C30004098	B	A-50000 C10002351	The grounding system is not as specified. In the field there are two grounding lugs on the north side. Produce a mark up on drawing	.	RLMU has been issued and reviewed by CPY. Pls, refer to the attached transmittal	LNovaga 2025-02-24	RDegliEsposti 2025-08-13	RDegliEsposti 2025-08-13	2025-08-13
C30004099	B	A-50000 C10002351	There is a little damage on north side door. See attached photo.	.		LNovaga 2025-02-24	2025-03-20	LNovaga 2025-03-20	2025-03-20
C30004100	B	A-50000 C10002351	There are mechanical damage. Restore the paint with a touch up	.		LNovaga 2025-02-24	2025-05-06	LNovaga 2025-05-06	2025-05-06

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Mechanical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30004101	B	A-50000 C10002351	Some items are not in the correct position (see attached) relative to the document 1724000448-MAC-DA-00005. Align the drawing if	.	The drawing nr: 1724000448-MAC-DA-0005 has been revised and re	LNovaga 2025-02-24	Vendor 2025-04-23	SLinari 2025-04-23	2025-04-23
C30004102	B	A-50000 C10002351	Tag S-50002B is not installed.	.		LNovaga 2025-02-24	2025-03-01	LNovaga 2025-03-01	2025-03-01
C30004103	B	A-50000 C10002351	Tag T-50003 is not installed.	.		LNovaga 2025-02-24	2025-03-01	LNovaga 2025-03-01	2025-03-01
C30004104	B	A-50000 C10002351	The top terminal point cover on the west side has not been fixed.	.		LNovaga 2025-02-24	2025-03-27	LNovaga 2025-03-27	2025-03-27
C30004105	B	A-50000 C10002351	the covers of the terminal points at the bottom on the west side are not installed.	.		LNovaga 2025-02-24	2025-04-23	LNovaga 2025-04-23	2025-04-23
C30004106	B	A-50000 C10002351	General cleaning of package, especially on roof.	.		LNovaga 2025-02-24	2025-04-15	LNovaga 2025-04-15	2025-04-15
C30004121	B	A-50000 C10002351	TP-008 is missing, to be installed.			SLinari 2025-02-25	2025-04-15	SLinari 2025-04-15	2025-04-15

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems

SUBSYSTEM 50-10 Water Desalination Package & Distribution

Piping

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001590	B	50-10-TP-006 C10003270	Bolts of supports S64 have not been tightened yet. Isolator C-9 missing from all clamps C-1. Correct gap of support C-33 not yet achieved.	.		KAlbonetti 2024-12-09	2025-02-19	KAlbonetti 2025-02-19	2025-02-19
C30001591	B	50-10-TP-006 C10003270	Vertical misalignment between line and package interconnecting flange of around 40 mm.	.		KAlbonetti 2024-12-09	2024-02-17	KAlbonetti 2024-02-17	2024-02-17
C30003519	B	50-10-TP-006 C10003270	Spool E is lenght 117 mm instead of 147 mm as marked in the isometric. See attached photo.	.		KAlbonetti 2025-02-04	2025-04-02	LNovaga 2025-04-02	2025-04-02
C30004012	B	50-10-TP-006 C10003271	The support PS-02122.1is not aligned and does not fully touch the structural support. See attached photo.	.		LNovaga 2025-02-19	2025-02-21	LNovaga 2025-02-21	2025-02-21
C30004015	B	50-10-TP-006 C10003271	The support PS-02124.4 is not aligned and does not fully touch the structural support that has a misalignment as in photo.	.		LNovaga 2025-02-19	2025-02-21	LNovaga 2025-02-21	2025-02-21
C30004016	B	50-10-TP-006 C10003271	The support PS-02048.2 is not aligned and does not fully touch the structural support. See attached photo.	.		LNovaga 2025-02-19	2025-02-21	LNovaga 2025-02-21	2025-02-21
C30004295	B	50-10-TP-006 C10003272	Missing insulation from penetration T.O.S. EL. +30130 to joint 001-1-J4 for ongoing commissioning activities. See attached photo and	.	Insulation installed	LNovaga 2025-03-28	RDegliEsposti 2025-07-28	RDegliEsposti 2025-07-28	2025-07-28
C30004296	B	50-10-TP-006 C10003272	Missing the insulation pillow around the joint 001-1-J1 and portion of pipe not insulated (refer to punch C30004295)	.	Insulation installed	LNovaga 2025-03-28	RDegliEsposti 2025-07-25	RDegliEsposti 2025-07-25	2025-07-25
C30004297	B	50-10-TP-006 C10003272	Missing insulation sheet on water treatment side (see attached photo) and sealant between W2 and W3 on isometric 001	.		LNovaga 2025-03-28	2025-03-28	LNovaga 2025-03-28	2025-03-28

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 50 Fresh Water Systems
SUBSYSTEM 50-10 Water Desalination Package & Distribution

Miscellaneous

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30004394	B	123A90-PML-COM-PRO-03042 C10004614	Following negative test results, an investigation has revealed that the water treatment package Tag A-50000 and the internal water treatment	An immediate solution to enable feeding of the electrolyser has been implemented: on-spec. Water produced by the water treatment	Closed with approval of CQ018	RDegliEsposti 2025-06-06	RDegliEsposti 2025-07-30	RDegliEsposti 2025-07-30	2025-07-30

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004104

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	1.4 Discipline	Mechanical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

The top terminal point cover on the west side has not been fixed.

Name: Lorenzo Novaga

Date: 2025-02-24

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date: 2025-03-27

Signature:

5 - CLEARANCE CHECK

Activity done.

Name: Lorenzo Novaga

Date: 2025-03-27

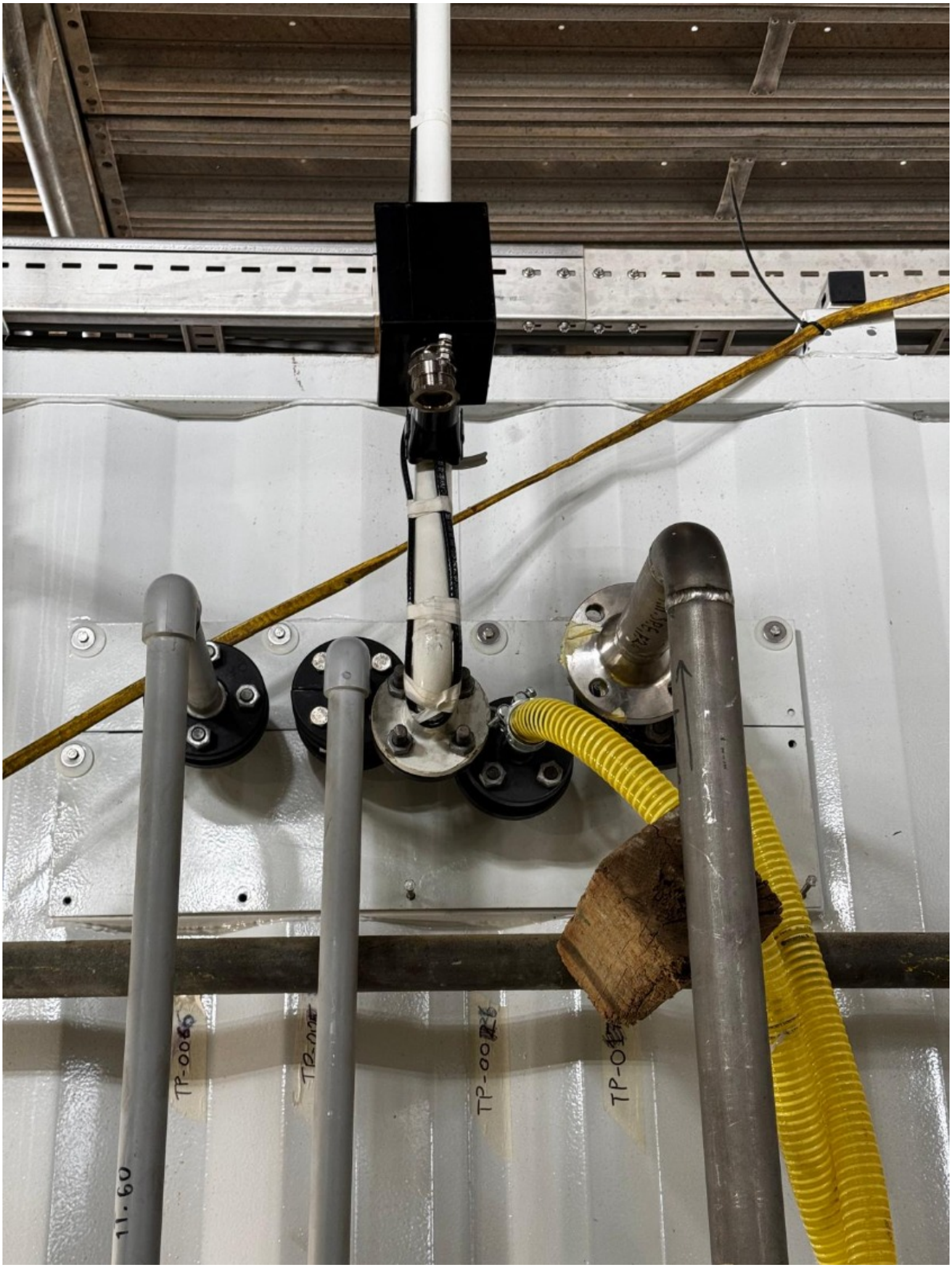
Signature:

6- CLEARANCE APPROVAL

Name:

Date: 2025-03-27

Signature:


11.60
TP-0066
TP-0026

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004105

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	1.4 Discipline	Mechanical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

the covers of the terminal points at the bottom on the west side are not installed.

Name: Lorenzo Novaga
Date: 2025-02-24
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

Installed.

Name: Lorenzo Novaga
Date: 2025-04-23
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:




50-TT-001
TT-001
A4
50-TT-002
TT-002



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004106

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	1.4 Discipline	Mechanical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

General cleaning of package, especially on roof.

Name: Lorenzo Novaga
Date: 2025-02-24
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date: 2025-04-15
Signature:

5 - CLEARANCE CHECK

Done.

Name: Lorenzo Novaga
Date: 2025-04-15
Signature:

6- CLEARANCE APPROVAL

Name:
Date: 2025-04-15
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004121

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	CZX01M	1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package	
1.3 Subsystem	50-10		Water Desalination Package & Distribution	

2 - OBSERVATION

TP-008 is missing, to be installed.

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2025-02-25
3.5 Action by	RM_CONSTR RM	Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Name

Date 2025-04-15

Signature

5 - CLEARANCE CHECK

Done

Name Stefano Linari

Date 2025-04-15

Signature

6- CLEARANCE APPROVAL

Name

Date 2025-04-15

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004295

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10003272	1.4 Discipline	Piping
1.2 Item	50-10-TP-006	Test Pack 50-10-TP-006	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing insulation from penetration T.O.S. EL. +30130 to joint 001-1-J4 for ongoing commissioning activities. See attached photo and isometric.

Name: Lorenzo Novaga
Date: 2025-03-28
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-03-28
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Insulation installed

Name: Raffaele Degli Esposti
Date: 2025-07-28
Signature:

5 - CLEARANCE CHECK

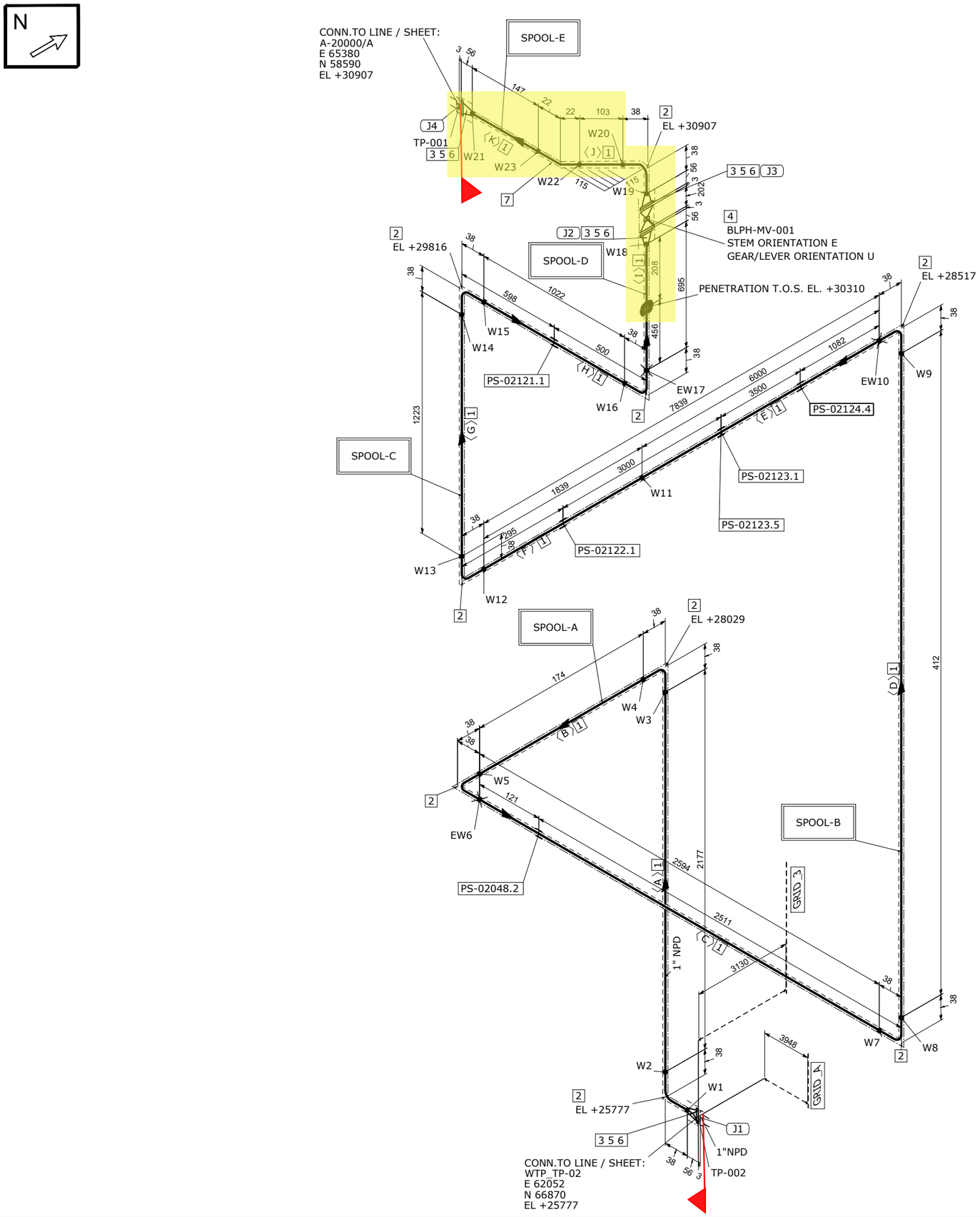
Cable is properly dressed.

Name: Raffaele Degli Esposti
Date: 2025-07-28
Signature:

6- CLEARANCE APPROVAL

Name:
Date: 2025-07-29
Signature:


FORDS ENGINEERING
FLANGE TAG
FLANGE TESTED
SYSTEM
LINE N°
JOINT N°
DATE
TORQUED
TENSIONED
ID STAMP
SIGNED
DATE
RETURN TO SUPERVISOR



MATERIAL LIST

FABRICATION

POS.	SIZE	SAP CODE	DESCRIPTION	Q.TY	WEIGHT [kg]
1	1	PIPESS00480100	Pipe ASME B36.19M PE 3,38 SML ASTM A312 Gr.TP316/316L	16.4M	41.5
2	1	E90RSS00670100	90 Deg Elbow Long Radius ASME B16.9 BW 3,38 WRS ASTM A403 Gr.WP316/316L	9	1.3
3	1	FLW0SS00930100	Flange WN ASME B16.5 150LB RF 3,38 FRG ASTM A182 Gr.F316/316L	4	5.7
7	1	E45RSS00860100	45 Deg Elbow Long Radius ASME B16.9 BW 3,38 WRS ASTM A403 Gr.WP316/316L	1	0.1

ERECTION

POS.	SIZE	SAP CODE	DESCRIPTION	Q.TY	WEIGHT [kg]
4	1	VLBLNN01410100	Block & Bleed Valve API 6D FLG 150LB RF BS01C01RFS	1	12.5
5	1	GSW0GK11100100	Gasket Spiral Wound Thk. 3.2 mm ASME B16.20 150LB RF GSK AISI 316 + GRAPHITE c/w INNER RING	4	0.2
6	1/2	SB20BO01080200	65 Stud Bolt + 2 Heavy Nuts ASME B1.1 ASTM A193 Gr.B7 - A194 Gr.2H Hot dip galvanized	16	1.9

FABRICATION WEIGHT [kg]	48.6
ERECTION WEIGHT [kg]	14.6
OVERALL WEIGHT [kg]	63.2

WELD SUMMARY

WELD No.	SIZE [inches]	TYPE
W1	1	BW
W2	1	BW
W3	1	BW
W4	1	BW
W5	1	BW
EW6	1	BW
W7	1	BW
W8	1	BW
W9	1	BW
EW10	1	BW
W11	1	BW
W12	1	BW
W13	1	BW
W14	1	BW
W15	1	BW
W16	1	BW
EW17	1	BW
W18	1	BW
W19	1	BW
W20	1	BW
W21	1	BW
W22	1	BW
W23	1	BW

CUTTING LIST

PIECE No.	SIZE [inches]	LENGTH [mm]	END PREP.1	END PREP.2
A	1	2177	BEVEL	BEVEL
B	1	174	BEVEL	BEVEL
C	1	2594	BEVEL	BEVEL
D	1	412	BEVEL	BEVEL
E	1	6000	BEVEL	BEVEL
F	1	1839	BEVEL	BEVEL
G	1	1223	BEVEL	BEVEL
H	1	1022	BEVEL	BEVEL
I	1	695	BEVEL	BEVEL
J	1	103	BEVEL	BEVEL
K	1	147	BEVEL	BEVEL

SUPPORT LIST

PS-02048.2
PS-02124.4
PS-02123.5
PS-02123.1
PS-02122.1
PS-02121.1

SPOOL	WELD [inches]	WEIGHT [kg]
A	5	7.8
B	3	7.9
C	5	26.0
D	1	3.1
E	5	3.7
MONT	3	14.6

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	27-08-2024	STAFF SRL	RT	LM	ISSUED FOR CONSTRUCTION

CROSSWIND

ROSETTI MARINO

TITLE: SHOP DRAWING ISOMETRIC
LINE NR. 1"-DM-001-01SS-E

SK.001

50-10-TP-006

MASTER

CONTRACT NO./ TITLE: CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE: N/A

DRAWN: STAFF SRL | CHECKED: RT | APPROVED: LM | DATE: 27-08-2024

FORMAT: A3 | DRAWING NO.: 123A90-FDL-PP-DI-00001 | SHEET / OF: 1/1 | REV.: 00

LINE DATA

NDT INSPECTION CATEGORY	2			PED CATEGORY	Art. 4, par. 3				
PAINTING	SYSTEM N/A		BASE RAL N/A	FLUID PHASE	Liquid				
INSULATION	TYPE H		THICKNESS 20 [mm]	DESIGN	PRESS. 6	[barg]	TEMP. -29 / 100	[°C]	
HEAT TRACING	Yes			TEST	PRESS. 9	[barg]	TEMP. AMB	MEDIUM	Water

REFERENCE DOCUMENTS

P&ID	123A90-DDL-PR-PID-80011
ISOMETRIC SHOP DWG LIST	123A90-FDL-PP-LIS-00001
PIPING SUPPORT BOOK	123A90-DDL-PP-DD-72000
PIPING MATERIAL CLASS	123A90-DDL-PP-SP-70029

NOTES

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004296

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10003272	1.4 Discipline	Piping
1.2 Item	50-10-TP-006	Test Pack 50-10-TP-006	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing the insulation pillow around the joint 001-1-J1 and portion of pipe not insulated (refer to punch C30004295)

Name: Lorenzo Novaga
Date: 2025-03-28
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-03-28
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Insulation installed

Name: Raffaele Degli Esposti
Date: 2025-07-25
Signature:

5 - CLEARANCE CHECK

Cable is properly dressed.

Name: Raffaele Degli Esposti
Date: 2025-07-25
Signature:

6- CLEARANCE APPROVAL

Name:
Date: 2025-07-25
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004297

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10003272	1.4 Discipline	Piping
1.2 Item	50-10-TP-006	Test Pack 50-10-TP-006	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing insulation sheet on water treatment side (see attached photo) and sealant between W2 and W3 on isometric 001

Name: Lorenzo Novaga

Date: 2025-03-28

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-03-28
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done

Name: Lorenzo Novaga

Date: 2025-03-28

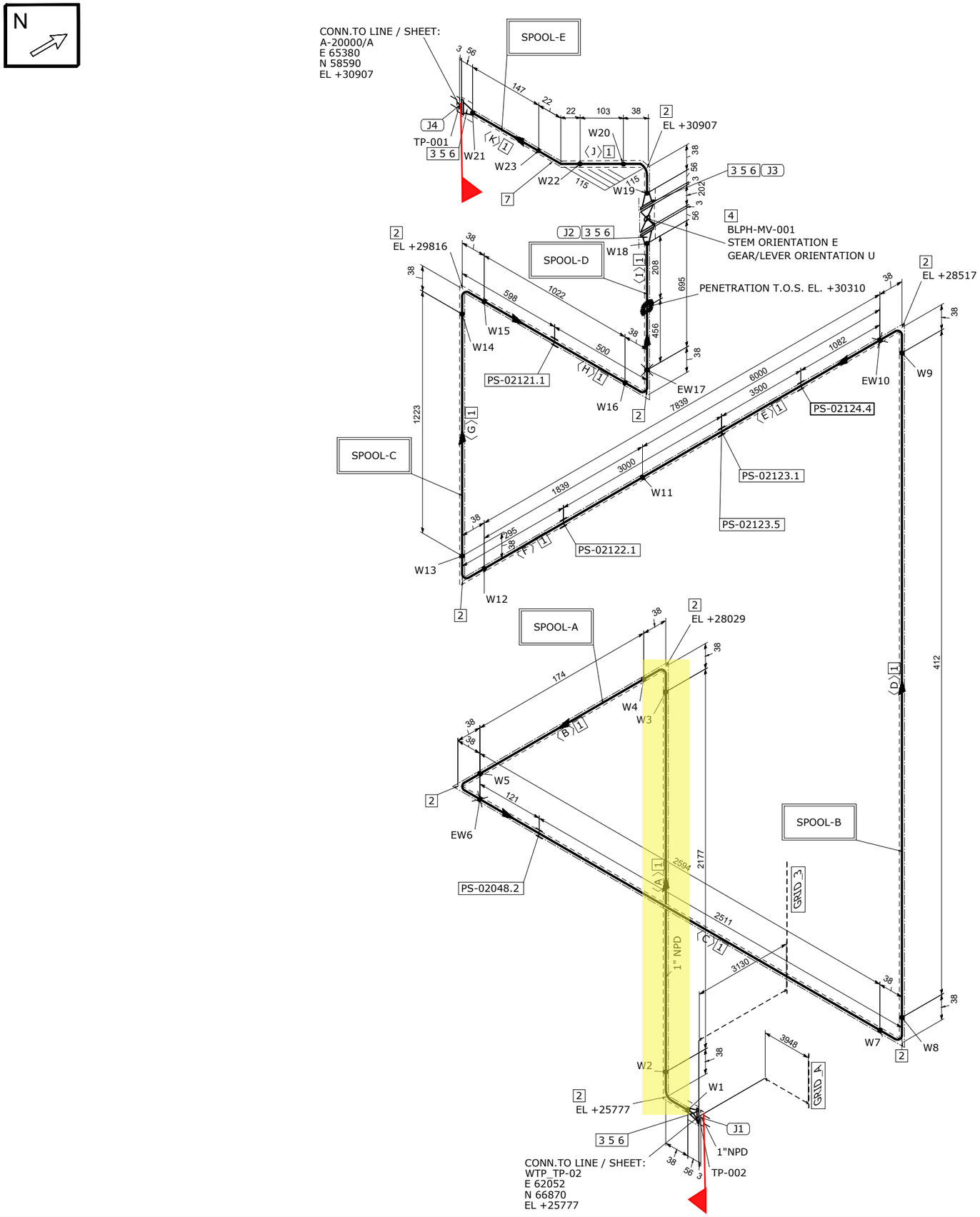
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



MATERIAL LIST

FABRICATION

POS.	SIZE	SAP CODE	DESCRIPTION	Q.TY	WEIGHT [kg]
1	1	PIPESS00480100	Pipe ASME B36.19M PE 3,38 SML ASTM A312 Gr.TP316/316L	16.4M	41.5
2	1	E90RSS00670100	90 Deg Elbow Long Radius ASME B16.9 BW 3,38 WRS ASTM A403 Gr.WP316/316L	9	1.3
3	1	FLW0SS00930100	Flange WN ASME B16.5 150LB RF 3,38 FRG ASTM A182 Gr.F316/316L	4	5.7
7	1	E45RSS00860100	45 Deg Elbow Long Radius ASME B16.9 BW 3,38 WRS ASTM A403 Gr.WP316/316L	1	0.1

ERECTION

POS.	SIZE	SAP CODE	DESCRIPTION	Q.TY	WEIGHT [kg]
4	1	VLBLNN01410100	Block & Bleed Valve API 6D FLG 150LB RF BS01C01RFS	1	12.5
5	1	GSW0GK11100100	Gasket Spiral Wound Thk. 3.2 mm ASME B16.20 150LB RF GSK AISI 316 + GRAPHITE c/w INNER RING	4	0.2
6	1/2	SB20BO01080200	65 Stud Bolt + 2 Heavy Nuts ASME B1.1 ASTM A193 Gr.B7 - A194 Gr.2H Hot dip galvanized	16	1.9

FABRICATION WEIGHT [kg]	48.6
ERECTION WEIGHT [kg]	14.6
OVERALL WEIGHT [kg]	63.2

WELD SUMMARY

WELD No.	SIZE [inches]	TYPE
W1	1	BW
W2	1	BW
W3	1	BW
W4	1	BW
W5	1	BW
EW6	1	BW
W7	1	BW
W8	1	BW
W9	1	BW
EW10	1	BW
W11	1	BW
W12	1	BW
W13	1	BW
W14	1	BW
W15	1	BW
W16	1	BW
EW17	1	BW
W18	1	BW
W19	1	BW
W20	1	BW
W21	1	BW
W22	1	BW
W23	1	BW

CUTTING LIST

PIECE No.	SIZE [inches]	LENGTH [mm]	END PREP.1	END PREP.2
A	1	2177	BEVEL	BEVEL
B	1	174	BEVEL	BEVEL
C	1	2594	BEVEL	BEVEL
D	1	412	BEVEL	BEVEL
E	1	6000	BEVEL	BEVEL
F	1	1839	BEVEL	BEVEL
G	1	1223	BEVEL	BEVEL
H	1	1022	BEVEL	BEVEL
I	1	695	BEVEL	BEVEL
J	1	103	BEVEL	BEVEL
K	1	147	BEVEL	BEVEL

SUPPORT LIST

PS-02048.2
PS-02124.4
PS-02123.5
PS-02123.1
PS-02122.1
PS-02121.1

SPOOL	WELD [inches]	WEIGHT [kg]
A	5	7.8
B	3	7.9
C	5	26.0
D	1	3.1
E	5	3.7
MONT	3	14.6

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
00	27-08-2024	STAFF SRL	RT	LM	ISSUED FOR CONSTRUCTION

CROSSWIND

ROSETTI MARINO

TITLE: SHOP DRAWING ISOMETRIC
LINE NR. 1"-DM-001-01SS-E

SK.001

50-10-TP-006

MASTER

CONTRACT NO./ TITLE: CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE: N/A

DRAWN: STAFF SRL | CHECKED: RT | APPROVED: LM | DATE: 27-08-2024

FORMAT: A3 | DRAWING NO.: 123A90-FDL-PP-DI-00001 | SHEET / OF: 1/1 | REV.: 00

LINE DATA

NDT INSPECTION CATEGORY	2			PED CATEGORY	Art. 4, par. 3				
PAINTING	SYSTEM N/A		BASE RAL N/A	FLUID PHASE	Liquid				
INSULATION	TYPE H		THICKNESS 20 [mm]	DESIGN	PRESS. 6	[barg]	TEMP. -29 / 100	[°C]	
HEAT TRACING	Yes			TEST	PRESS. 9	[barg]	TEMP. AMB	MEDIUM	Water

REFERENCE DOCUMENTS

P&ID	123A90-DDL-PR-PID-80011
ISOMETRIC SHOP DWG LIST	123A90-FDL-PP-LIS-00001
PIPING SUPPORT BOOK	123A90-DDL-PP-DD-72000
PIPING MATERIAL CLASS	123A90-DDL-PP-SP-70029

NOTES



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004394

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004614	1.4 Discipline	Miscellaneous
1.2 Item	123A90-PML-COM-PRO-03042	OTP - Sea Water Intake and Fresh Water Treatment Systems	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Following negative test results, an investigation has revealed that the water treatment package Tag A-50000 and the internal water treatment system of the ELOGEN electrolyser (CPI) are not properly interfacing with each other.

Name: RAFFAELE DEGLI ESPOSTI
Date: 06/06/2025
Signature:

3 - DEFECT ASSESSMENT

3.1 Corrective action proposal: An immediate solution to enable feeding of the electrolyser has been implemented: on-spec. Water produced by the water treatment package A-50000 is being supplied to the electroliser via an external storage tank.
However, a permanent and coordinated solution must be identified to resolve the integration issue between the water treatment package and the electrolyser's internal system. A CW / ROS joint process design study shall be carried out to ensure proper system interfacing.

3.2 Material required:

3.3 Priority	B PL B	Name	Raffaele Degli Esposti
3.4 Activity code	COMM Commissioning	Date	2025-06-06
3.5 Action by	ENG Engineering	Signature	

4 - PERFORMED ACTION

Closed with approval of CQ018

Name: Raffaele Degli Esposti
Date: 2025-07-30
Signature:

5 - CLEARANCE CHECK

Cable is properly dressed.

Name: Raffaele Degli Esposti
Date: 2025-07-30
Signature:

6- CLEARANCE APPROVAL

Name:
Date: 2025-07-30
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001237

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Labels to be installed (P-50009A/B_fresh water pump)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED

Name VENDOR PSC

Date 2025-02-07

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2025-02-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature


GRUNDFOS
P-50009B
P-50009A

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001238

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Labels to be installed (S-50004_softening filter)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED

Name VENDOR PSC

Date 2025-02-07

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2025-02-07

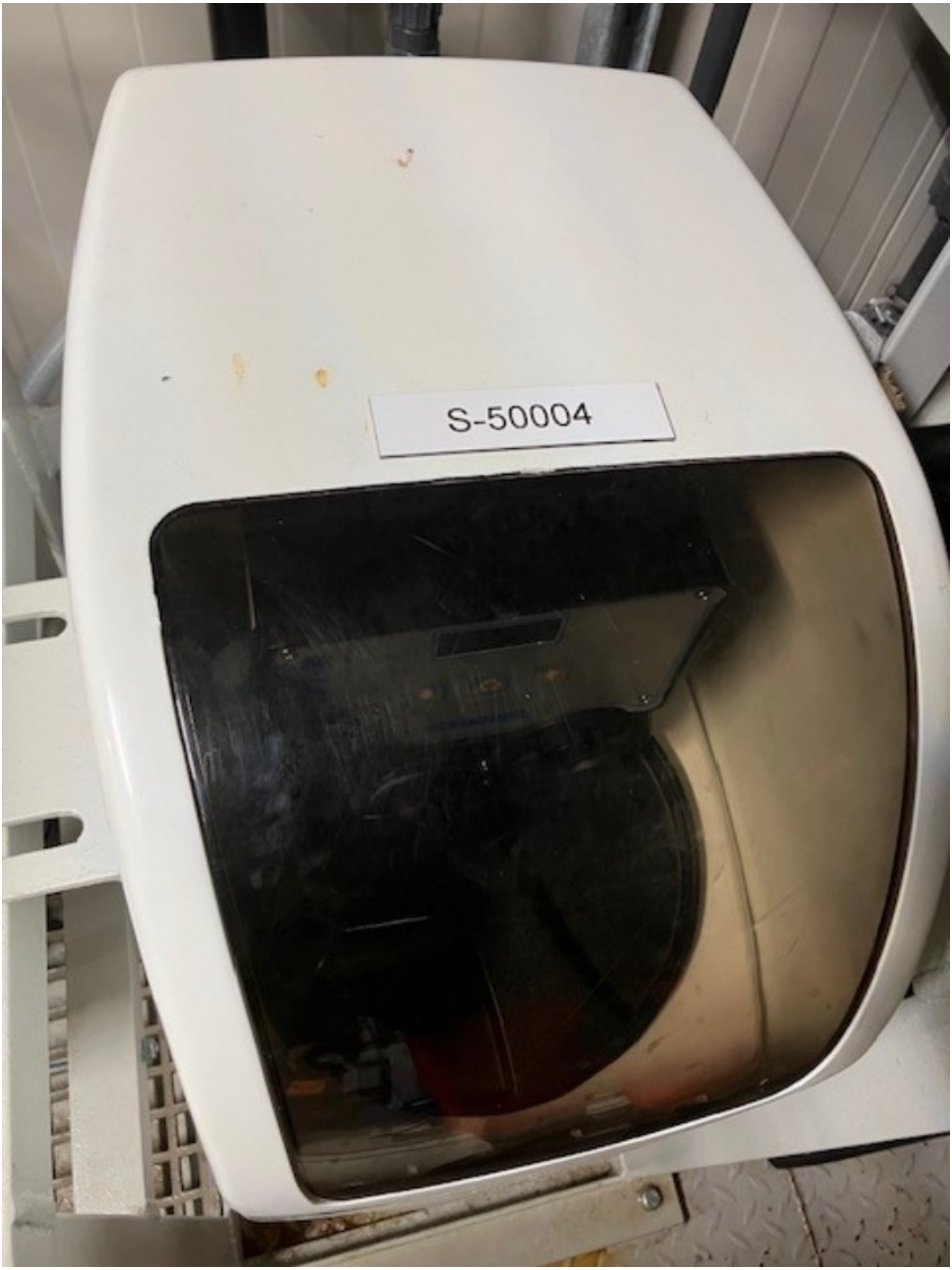
Signature

6- CLEARANCE APPROVAL

Name

Date

Signature


S-50004

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001239

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Position to be clarified (NRV-653)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

DONE

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

DONE

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001240

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Label to be installed (AT-026)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

IINSTALLED

Name VENDOR PSC

Date 2025-02-07

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2025-02-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature


50-AT-026

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001241

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Instrument non accessible, to be moved (50-PT-050, 50-PT-051)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

FIXED

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

FIXED

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature




-.00
PRESSURE

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001242

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Missing identification label (All terminal points)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by	VND Vendor	Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Installed (see picture)

Name Vendor Crosswind

Date 2025-02-20

Signature

5 - CLEARANCE CHECK

Cable is properly dressed.

Name Stefano Linari

Date 2025-02-20

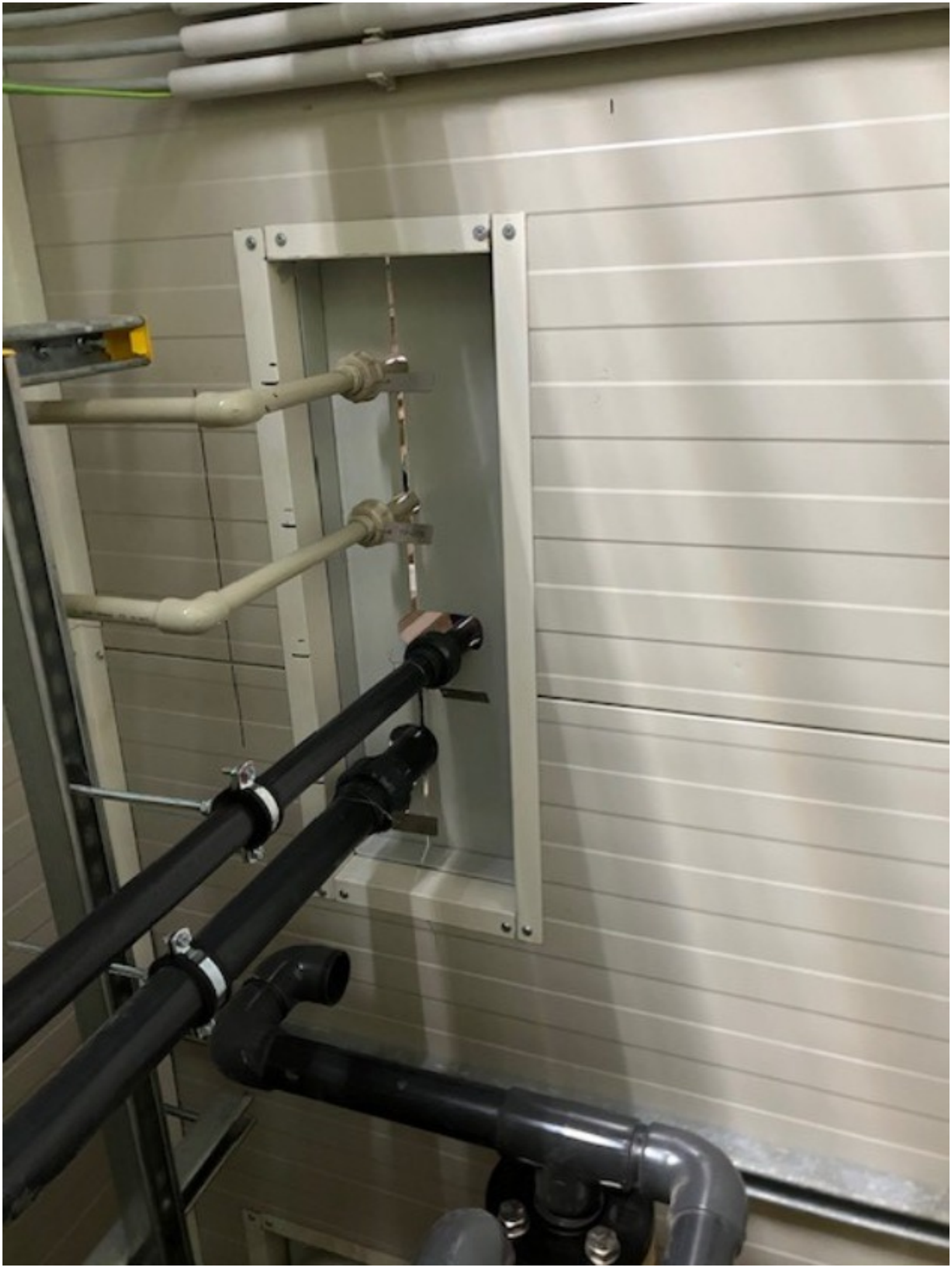
Signature

6- CLEARANCE APPROVAL

Name

Date 2025-02-20

Signature



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001243

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

To be installed panel with dedicated holes (All terminal points)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

DONE

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

DONE

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001244

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Correct measure with panel installed to be verified (All terminal points)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

DONE

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

DONE

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001245

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Correct tag to be installed (now is installed MV-626 instead of SP-626)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

DONE

Name VENDOR PSC

Date 2025-02-07

Signature

5 - CLEARANCE CHECK

DONE

Name Stefano Linari

Date 2025-02-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature


SP-626

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001246

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Missing cable tags RM side (50-LP-001 and A-50000)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

DONE

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

DONE

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature





ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001247

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Container and control panel to be cleaned inside (50-LP-001)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

DONE

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

DONE

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001248

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

PT/TT : Model / Manufacturer Fischer doesn't work, wiring to be modified inside control panel

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

FIXED

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

FIXED

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature




-.00
PRESSURE

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001249

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Wrong connection panel side, to be verified (P-50003A/B)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

FIXED

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

FIXED

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001250

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Wrong rotation, to be fixed (P-50009A/B)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

FIXED

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

FIXED

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001251

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Test report for F&G system to be provided (by SIA)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

done - see attached

Name VENDOR PSC

Date 2025-02-06

Signature

5 - CLEARANCE CHECK

done - see attached

Name Stefano Linari

Date 2025-02-06

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

SIA® FIRE FIGHTING SYSTEMS

Uffici e Stabilimento:
Via Aldo Moro 6 - 2010 Pogliano M.se (MI) - Italy
Tel: +39 02 93548780 / + 39 02 93541837
Fax: +39 02 93549537 P.IVA: 06529110964
E-mail: info@sia-italia.com Web site: www.sia-italia.com

GIORNO N. / WEEK	15/11/2024 DI / No. Of	CLIENTE / CUSTOMER	PSC	ORDINE / PUCH.ORDER	2885/19/24/0	COMMESSA / JOB	C24032

RAPPORTO DI LAVORO GIORNALIERO

WORK REPORT

LOCALITA' / *SITE*: *Cantiere Rosetti Marino (RA) - Italy*

LAORO RICHESTO DAL SIG. / *SERVICE REQUESTED BY*: *Giovanni Benzi* TEL. / *PHONE*:

LAVORO SVOLTO DAL SIG. / *SERVICE EFFECTED BY*: *Pagani / Serra / Cepollaro* QUALIFICA / *QUALIFICATION*:

ORE DI LAVORO - WORKING HOURS

VIAGGIO ANDATA / *OUTWARD JOURNEY*					PRESENZA LAVORO / *IN SERVICE*				VIAGGIO RITORNO / *RETURN JOURNEY*			FIRMA / *SIGNATURE*

RAPPORTO SUL LAVORO SVOLTO

WORK REPORT

Installation of the SIA 5319 Hydrogen and Smoke Detection System:

- *Installation of the control unit and connection;*
- *Installation 3 smoke detectors and connection;*
- *Installation of 3 hydrogen detectors and connection;*
- *Installation of 1 button, mounted inside at customer's request, and connection;*
- *installation of sirens and flashing totems.*

Functional check with the customer and acceptance.

Successful result, the system is left operating.

CUSTOMER'S SIGNATURE:

SIA'S SIGNATURE:

S.I.A. Safety Industrial Applications S.r.l.
Via A. Moro, 6 - 20005 Pogliano Milanese (MI)
Tel. +39 02 35909911 - Fax +39 02 93541837
C.F./P.IVA 06529110964

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001590

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10003270	1.4 Discipline	Piping
1.2 Item	50-10-TP-006	Test Pack 50-10-TP-006	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Bolts of supports S64 have not been tightened yet. Isolator C-9 missing from all clamps C-1. Correct gap of support C-33 not yet achieved.

Name: Kangi Albonetti
Date: 2024-12-09
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Kangi Albonetti
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

Corrected

Name: Kangi Albonetti
Date: 2025-02-19
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001591

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10003270	1.4 Discipline	Piping
1.2 Item	50-10-TP-006	Test Pack 50-10-TP-006	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Vertical misalignment between line and package interconnecting flange of around 40 mm.

Name: Kangi Albonetti
Date: 2024-12-09
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Kangi Albonetti
3.4 Activity code	MC Mechanical Completion	Date	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

Water treatment termination point has been modified by the Vendor.

Name: Kangi Albonetti
Date: 2025-02-17
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


TP-006
TP-005
TP-002
TP-017

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30003519

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10003270	1.4 Discipline	Piping
1.2 Item	50-10-TP-006	Test Pack 50-10-TP-006	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Spool E is lenght 117 mm instead of 147 mm as marked in the isometric.
See attached photo.

Name: Kangi Albonetti
Date: 2025-02-04
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Kangi Albonetti
3.4 Activity code	MC Mechanical Completion	Date	2025-02-04
3.5 Action by	ENG Engineering	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

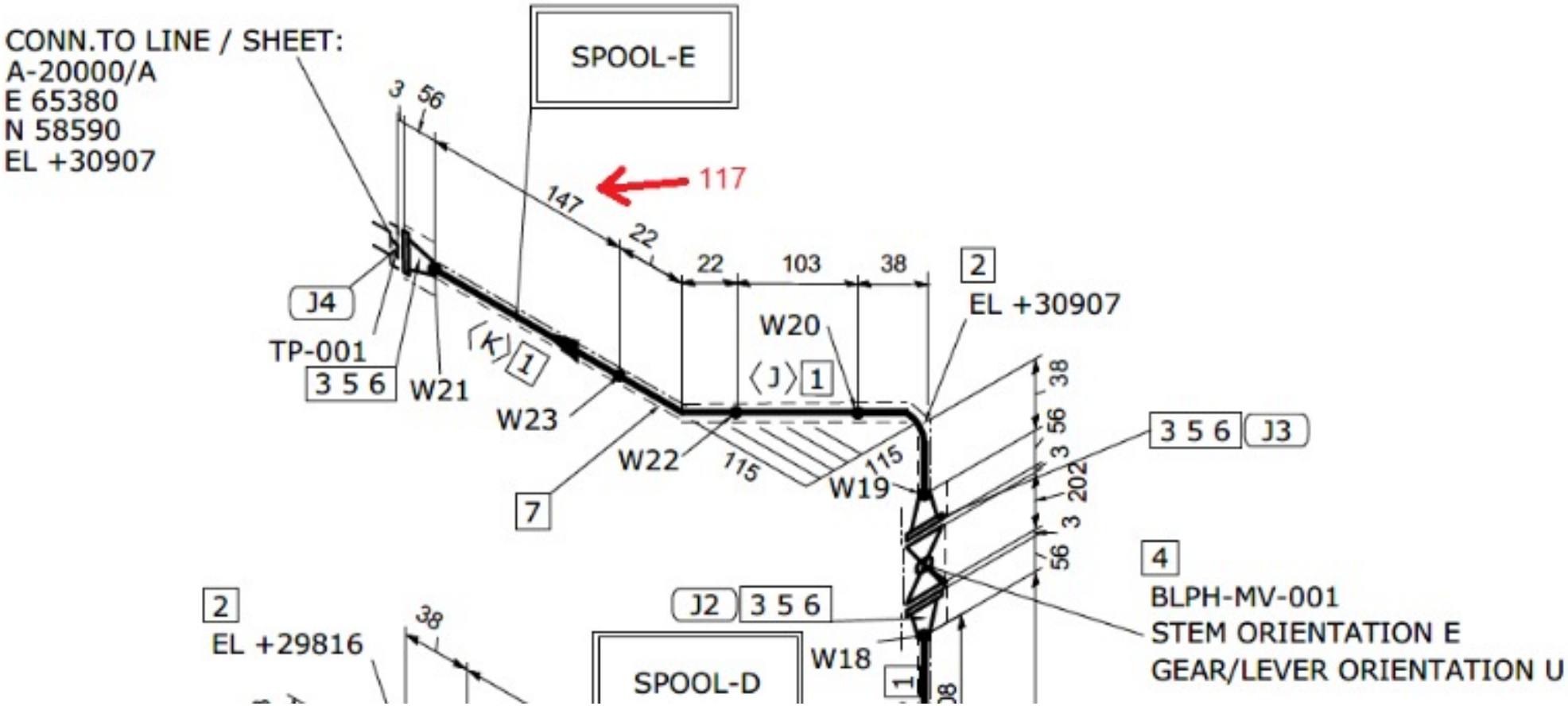
5 - CLEARANCE CHECK

Document marked-up.

Name: Lorenzo Novaga
Date: 2025-04-02
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


CONN.TO LINE / SHEET:
A-20000/A
E 65380
N 58590
EL +30907
SPOOL-E
117
3
56
147
22
22
103
38
2
EL +30907
J4
TP-001
3 5 6
W21
(K) 1
W23
W20
(J) 1
W22
115
115
W19
7
38
56
3
202
3
56
3 5 6 J3
4
BLPH-MV-001
STEM ORIENTATION E
GEAR/LEVER ORIENTATION U
J2 3 5 6
W18
SPOOL-D
2
EL +29816
38

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004012

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10003271	1.4 Discipline	Piping
1.2 Item	50-10-TP-006	Test Pack 50-10-TP-006	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

The support PS-02122.1is not aligned and does not fully touch the structural support. See attached photo.

Name: Lorenzo Novaga

Date: 2025-02-19

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-19
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done.

Name: Lorenzo Novaga

Date: 2025-02-21

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004015

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10003271	1.4 Discipline	Piping
1.2 Item	50-10-TP-006	Test Pack 50-10-TP-006	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

The support PS-02124.4 is not aligned and does not fully touch the structural support that has a misalignment as in photo.

Name: Lorenzo Novaga

Date: 2025-02-19

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-19
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done.

Name: Lorenzo Novaga

Date: 2025-02-21

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:




STANLEY
0-42-130

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004016

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10003271	1.4 Discipline	Piping
1.2 Item	50-10-TP-006	Test Pack 50-10-TP-006	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

The support PS-02048.2 is not aligned and does not fully touch the structural support. See attached photo.

Name: Lorenzo Novaga

Date: 2025-02-19

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-19
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done

Name: Lorenzo Novaga

Date: 2025-02-21

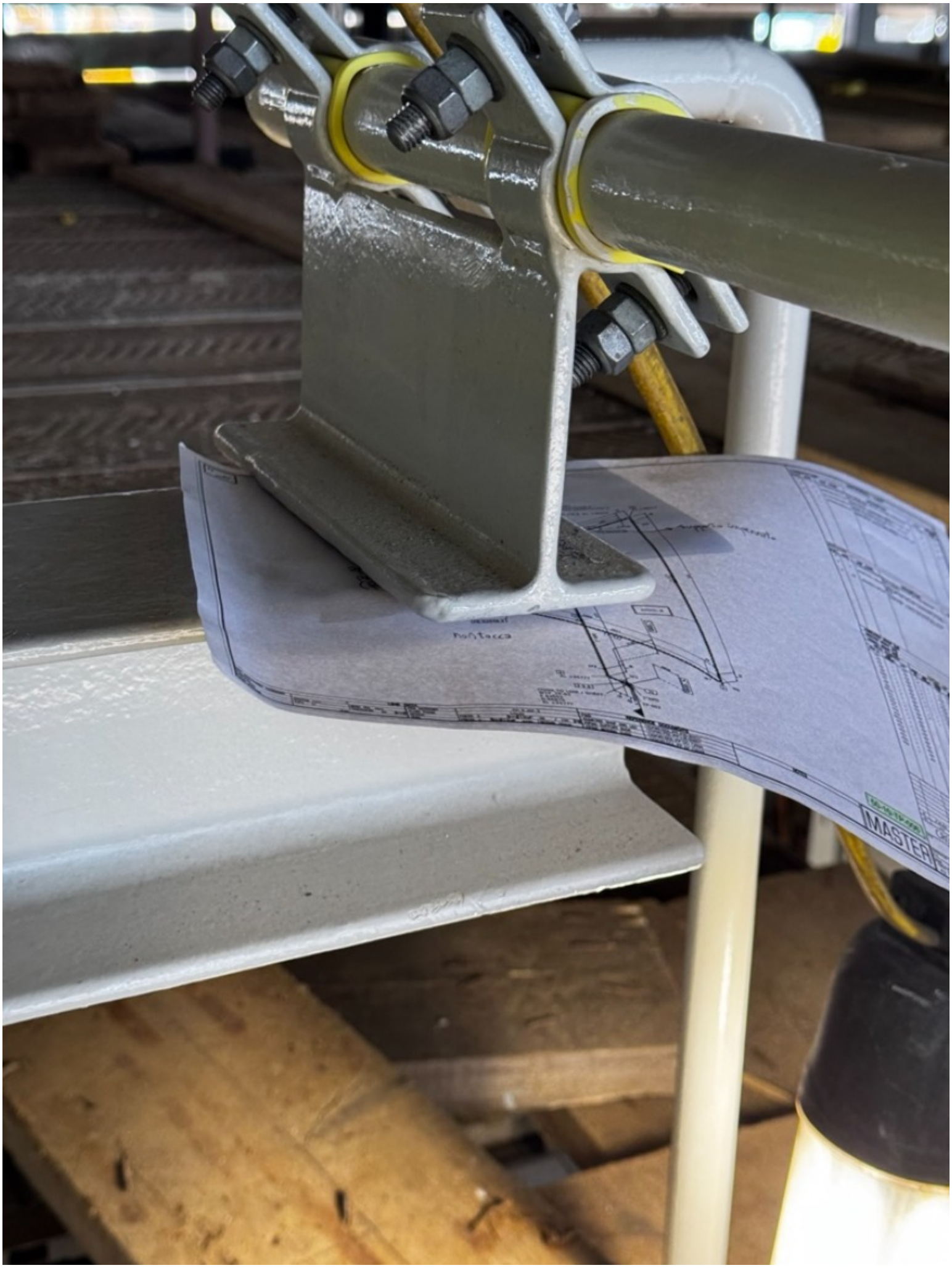
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:


MASTER

ROSETTI MARINO CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004095

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	1.4 Discipline	Mechanical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

In the nameplate dimensions are 12192x2538x3140 mm; in document 1724000448-MAC-DAA-00005, these dimensions are shown as 12192x2438x2896 mm (excluding height jb).

Name: Lorenzo Novaga

Date: 2025-02-24

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Done

Name: Vendor Crosswind

Date: 2025-04-23

Signature:

5 - CLEARANCE CHECK

Vendor has confirmed that label installed is accepted with value indicated

Name: Stefano Linari

Date: 2025-04-23

Signature:

6- CLEARANCE APPROVAL

Name:

Date: 2025-04-23

Signature:


PSC S.p.A. Engineering & Contracting
Bovisio Masciago (MB) - Italy
PSC
www.pscengineering.com
EQUIPMENT
WATER TREATMENT PACKAGE
ITEM
A-50000
PROJECT
HOLLANDSE KUSTNOORD
WIND PARK PROJECT
YEAR OF CONSTR.
2024
OUTLET FLUID
FRESH WATER
WEIGHT
10500 kg
DIMENSIONS (LxWxH)
12192x2538x3140 mm
CE

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004096

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	1.4 Discipline	Mechanical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

The structure is welded, not bolted. update drawings.

Name: Lorenzo Novaga

Date: 2025-02-24

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

In the drawing we have indicated the following because the structure of the container is hooked by twist lock provided by Rosetti Marino whose base is welded to the surface of the deck. Punch list can be considered closed

Name: Vendor Crosswind

Date: 2025-04-23

Signature:

5 - CLEARANCE CHECK

Done

Name: Stefano Linari

Date: 2025-04-23

Signature:

6- CLEARANCE APPROVAL

Name:

Date: 2025-04-23

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004097

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	1.4 Discipline	Mechanical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Piping interface not completly reinstaded

Name: Lorenzo Novaga

Date: 2025-02-24

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Reinstatement completed

Name: Raffaele Degli Esposti

Date: 2025-07-30

Signature:

5 - CLEARANCE CHECK

Cable is properly dressed.

Name: Raffaele Degli Esposti

Date: 2025-07-30

Signature:

6- CLEARANCE APPROVAL

Name:

Date: 2025-07-30

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004098

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	1.4 Discipline	Mechanical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

The grounding system is not as specified. In the field there are two grounding lugs on the north side.
Produce a mark up on drawing 123A90-FDL-EL-DL-20133.

Name: Lorenzo Novaga
Date: 2025-02-24
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	ENG Engineering	Signature	

4 - PERFORMED ACTION

RLMU has been issued and reviewed by CPY. Pls, refer to the attached transmittal

Name: Raffaele Degli Esposti
Date: 2025-08-13
Signature:

5 - CLEARANCE CHECK

Completed.

Name: Raffaele Degli Esposti
Date: 2025-08-13
Signature:

6- CLEARANCE APPROVAL

Name:
Date: 2025-08-13
Signature:

CrossWind HKN
TBA
TBA
United Kingdom

Crosswind C.V.
Hofplein 20
Rotterdam
Zuid holland 3032 AC Netherlands

MAIL TYPE	MAIL NUMBER	REFERENCE NUMBER
Transmittal	CWHKN-TRANSMIT-028975	ROSMA-TRANSMIT-004931

Re: ELECTRICAL RED LINE MARK-UP

From	Mrs Documentcontrol CrossWind - Crosswind C.V.
To (2)	Mrs Brunella Negrini - ROSETTI (+1 more...)
Cc	Mr Massimiliano Brunelli - ROSETTI
Sent	Friday, 1 August 2025 11:54:17 AM BST (GMT +01:00)
Reason	Issued for Information
Status	N/A

DETAILS

WBS scope 1	Baseload power hub
Discipline	Innovations package mgt

DOCUMENT ATTACHMENTS (2)

(**0** selected)

File	Document No	Revision	Title	Status	Due Date
	CWHKN-INN-BPH-CRS-01584	00	ELECTRICAL RED LINE MARK-UP CRS	Close-Out	
	ROSMA-INN-BPH-OTH-00215	00	ELECTRICAL RED LINE MARK-UP	Code 1 - no comments	

MESSAGE

Dear Rosetti,

Please find attached for information.

Regards,
CRW DC

From: L Alberici
Sent: 03/07/2025 8:18:05 AM BST (GMT +01:00)
To: Documentcontrol CrossWind
Cc: Massimiliano Brunelli
Mail Number: ROSMA-TRANSMIT-004931
Subject: ELECTRICAL RED LINE MARK-UP

WBS scope 1:	Baseload power hub
Discipline:	Innovations package mgt

Dear Team,
please find attached the Electrical Red Line Mark-up for company acceptance in order to proceed with AS BUILT documentation.

Kind Regards
Laura

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004099

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	1.4 Discipline	Mechanical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

There is a little damage on north side door. See attached photo.

Name: Lorenzo Novaga

Date: 2025-02-24

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Accepted as it is by Rosetti Marino.

Name: Lorenzo Novaga

Date: 2025-03-20

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004100

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	1.4 Discipline	Mechanical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

There are mechanical damage. Restore the paint with a touch up

Name: Lorenzo Novaga

Date: 2025-02-24

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done.

Name: Lorenzo Novaga

Date: 2025-05-06

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:







ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004101

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	1.4 Discipline	Mechanical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Some items are not in the correct position (see attached) relative to the document 1724000448-MAC-DA-00005. Align the drawing if marked PID is correct.

Name: Lorenzo Novaga
Date: 2025-02-24
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

The drawing nr: 1724000448-MAC-DA-0005 has been revised and re issued in as built revision

Name: PSC
Date: 2025-04-23
Signature:

5 - CLEARANCE CHECK

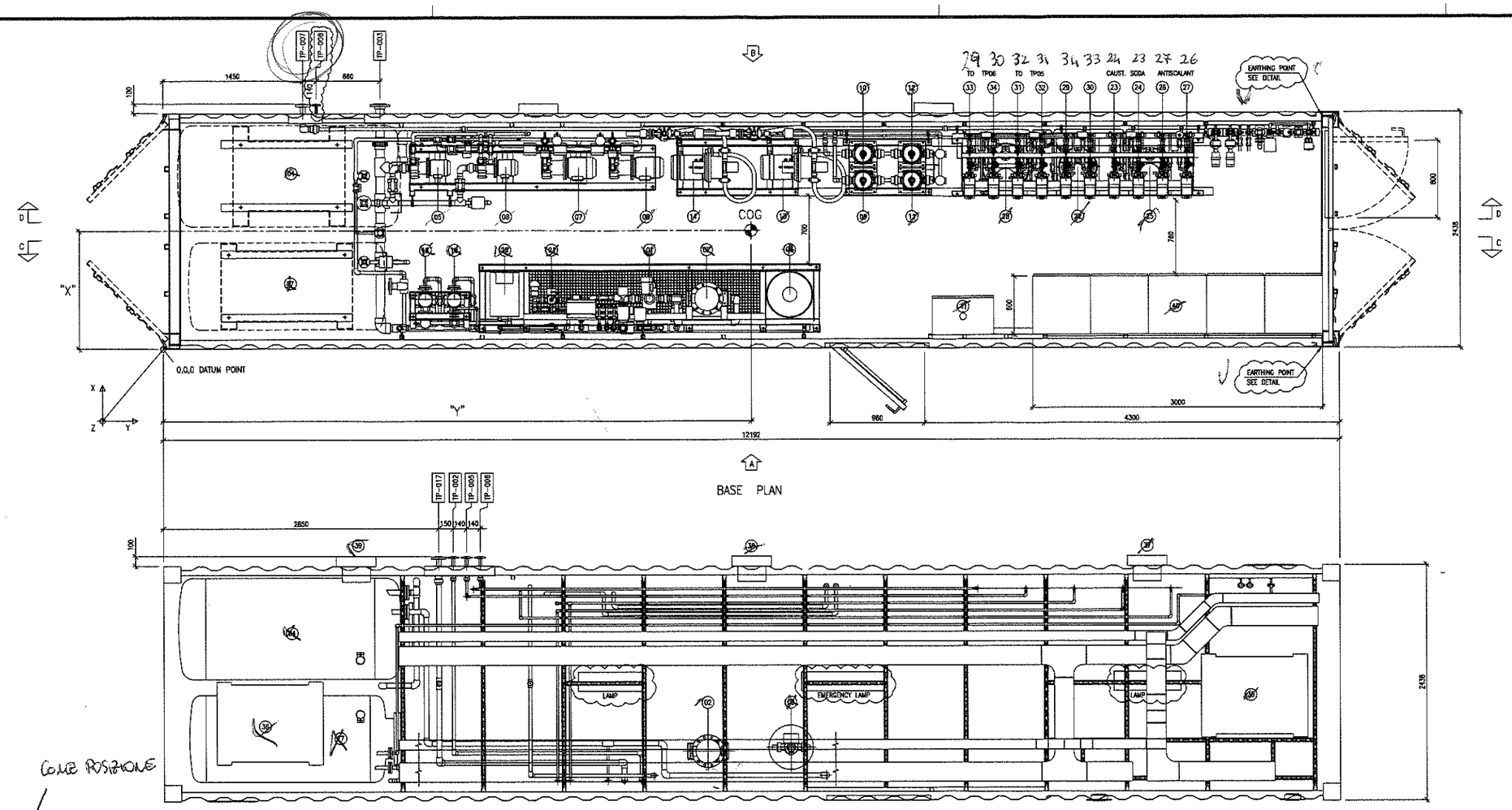
done

Name: Stefano Linari
Date: 2025-04-23
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

DRAWING NO. 1724000448-MAC-DA-00005 REV. 04



TOP PLAN (OUTSIDE PARTIAL PLAN)

EARTHING POINT DETAIL

COME POSIZIONE

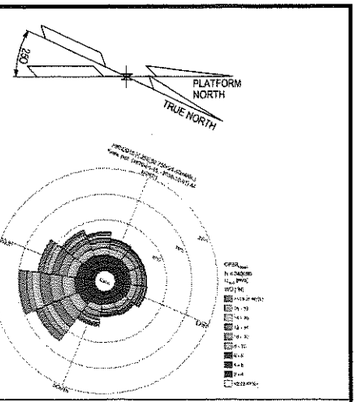
EQUIPMENT LIST				
REF.	ITEM	DESCRIPTION	WEIGHT (empty) kg	WEIGHT (full) kg
~~01~~	A50003	SEA WATER COARSE FILTER	7	20
~~02~~	H50001	ELECTRIC HEATER	155	180
03	S50001	SEA WATER SAND FILTER	250	300
~~04~~	T50006	FILTERED WATER TANK	300	3300
05	P50002A	BACKWASH PUMP	20	25
06	P50002B	BACKWASH PUMP	20	25
~~07~~	P50003A	SW BOOSTER PUMP	20	25
~~08~~	P50003B	SW BOOSTER PUMP	20	25
09	S50002A	SW 1ST. CARTRIDGE FILTER	18	35
10	S50002B	SW 1ST. CARTRIDGE FILTER	18	35
11	S50003A	SW 2ND. CARTRIDGE FILTER	18	35
12	S50003B	SW 2ND. CARTRIDGE FILTER	18	35
13	P50004A	HIGHT PRESSURE PUMP	50	55
14	P50004B	HIGHT PRESSURE PUMP	50	55
15	A50007A	SEA WATER REVERSE OSMOSIS UNIT	60	120
16	A50007B	SEA WATER REVERSE OSMOSIS UNIT	60	120
~~17~~	T50008	FRESH WATER TANK	200	2200
~~18~~	P50009A	FRESH WATER PUMP	20	25
~~19~~	P50009B	FRESH WATER PUMP	20	25
~~20~~	S50004	SOFTENING FILTER	35	125
21	S50010	UV STERILIZER	15	50
~~22~~	T50002	CAUSTIC SODA DOSING TANK	20	80
23	P50005A	CAUSTIC SODA DOSING PUMP	2	3
24	P50005B	CAUSTIC SODA DOSING PUMP	2	3
~~25~~	T50003	ANTISCALANT DOSING TANK	20	80
26	P50006A	ANTISCALANT DOSING PUMP	2	3
27	P50006B	ANTISCALANT DOSING PUMP	2	3
~~28~~	T50004	NON-OXIDANT BIOCIDE DOSING TANK	30	130
29	P50007A	NON-OXIDANT BIOCIDE DOSING PUMP-CONTAINER INLET	2	3
30	P50007B	NON-OXIDANT BIOCIDE DOSING PUMP-CONTAINER INLET	2	3
31	P50008A	NON-OXIDANT BIOCIDE DOSING PUMP-B.L. TP005	2	3
32	P50008B	NON-OXIDANT BIOCIDE DOSING PUMP-B.L. TP005	2	3
33	P50010A	NON-OXIDANT BIOCIDE DOSING PUMP-B.L. TP006	2	3
34	P50010B	NON-OXIDANT BIOCIDE DOSING PUMP-B.L. TP006	2	3
~~35~~	HHS-50003A	CONTAINER ELECTRICAL HEATER	90	90
~~36~~	HHS-50003B	CONTAINER ELECTRICAL HEATER	90	90
~~37~~	HFA-50001A	CONTAINER AIR FAN	–	–
~~38~~	HFA-50001B	CONTAINER AIR FAN	–	–
~~39~~	HFA-50001C	CONTAINER AIR FAN	–	–
~~40~~	50-LP-001	MCC & PLC PANEL	1800	1800
~~41~~	50-LP-002	FIRE & GAS PANEL	50	50
42	JB-500E8	JUNCTION BOX FOR POWER SUPPLY	10	10
~~43~~	JB-500F8	JUNCTION BOX FOR POWER SUPPLY FROM UPS	5	5

→ TAG STACCATO

→ P&C STACCATO

CONTAINER TOTAL WEIGHT	
DESCRIPTION	
LIFTING CONDITION	10500 kg
OPERATING CONDITION	15675 kg

C.O.G.			
DESCRIPTION	"X" mm	"Y" mm	"Z" mm
LIFTING CONDITION	1034	7076	1293
OPERATING CONDITION	1185	4540	1322



NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE SPECIFIED.

TERMINAL POINT

TP No.	NPS	RATING	FACE	MAT.	DESCRIPTION
TP-017	1.1/2"	L.J. FLG. ASME B16.5 150#	RF	PVC	SEA WATER FROM INTAKE PUMPS
TP-002	1"	L.J. FLG. ASME B16.5 150#	RF	PVC	PRODUCT WATER
TP-003	3"	L.J. FLG. ASME B16.5 150#	RF	PVC	SEA WATER DRAIN
TP-005	1"	L.J. FLG. ASME B16.5 150#	RF	PP	BIOCIDE TO SEA WATER INTAKE
TP-006	1"	L.J. FLG. ASME B16.5 150#	RF	PP	BIOCIDE TO WASTE WATER TANK
TP-007	1.1/2"	L.J. FLG. ASME B16.5 150#	RF	PVC	CHEMICAL DRAIN
TP-008	1/2"	L.J. FLG. ASME B16.5 150#	RF	PVC	CONTAINER OPEN DRAIN

REF. DOCUMENTS

DOC. No.	DESCRIPTION
1724000448-PR-PID-00013	P&I DIAGRAM
1724000448-MAC-DS-00016	PACKAGE WEIGHT DATA SHEET
1724000448-N-DC-00014	WIRING DIAGRAM

PSC DOC. REF: PK2885-P-002

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
04	26-NOV-24	PSC	UR	RM	ACCEPTED FOR CONSTRUCTION
03	31-OCT-24	PSC	UR	RM	ACCEPTED FOR CONSTRUCTION
02	23-JUL-24	PSC	UR	RM	ACCEPTED FOR CONSTRUCTION
01	07-MAY-24	PSC	UR	RM	ISSUE FOR REVIEW
00	10-APR-24	PSC	UR	RM	ISSUE FOR REVIEW

CROSSWIND — ROSETTI MARINO

TITLE : WATER TREATMENT PACKAGE
GENERAL ARRANGEMENT DRAWINGS AND
FOUNDATIONS LOADING CALCULATIONS—PLANS

CONTRACT NO./TITLE			SCALE 1:25
DRAWN PSC	CHECKED UR	APPROVED RM	DATE 26/
A1	DRAWING NO. 1724000448-MAC-DA-00005		SHEET 0(

1724000448-MAC-DA-00005_sh.1 rev04

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004102

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	1.4 Discipline	Mechanical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Tag S-50002B is not installed.

Name: Lorenzo Novaga

Date: 2025-02-24

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

To be installed after SAT.

Name: Lorenzo Novaga

Date: 2025-02-28

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:


IN
S-50002B

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004103

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002351	1.4 Discipline	Mechanical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Tag T-50003 is not installed.

Name: Lorenzo Novaga

Date: 2025-02-24

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Lorenzo Novaga
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

To be installed after SAT.

Name: Lorenzo Novaga

Date: 2025-02-28

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000938

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000536	1.4 Discipline	Electrical
1.2 Item	83016-CEL	LV Switchgear / Water Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing cable tags all along the route

Name: Giovanni Tangianu

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-02-25

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000939

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000536	1.4 Discipline	Electrical
1.2 Item	83016-CEL	LV Switchgear / Water Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing all core identification tags both side

Name: Giovanni Tangianu
Date: 2024-11-26
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani
Date: 2025-02-15
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000942

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000589	1.4 Discipline	Electrical
1.2 Item	84313-CEL		AC UPS - PAS DB / UCP - Water Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Missing all core identification tags both side.

Name: Giovanni Tangianu

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000943

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000589	1.4 Discipline	Electrical
1.2 Item	84313-CEL	AC UPS - PAS DB / UCP - Water Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing cable tag all along the route.

See attached photo.

Name: Giovanni Tangianu

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-02-25

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

84313-CEL
84315-CEL
84304-CEL
84301-CEL

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000944

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001467	1.4 Discipline	Instrumental
1.2 Item	50-LP-002/B400-FGS-003	CONFIRMED GAS ALARM / MARSHALLING PCS	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing cable tag all along the route.

Name: Giovanni Tangianu

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-03-03

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000945

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001467	1.4 Discipline	Instrumental
1.2 Item	50-LP-002/B400-FGS-003	CONFIRMED GAS ALARM / MARSHALLING PCS	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing all core identification tags both side.

Name: Giovanni Tangianu

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-04-08

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000946

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002349	1.4 Discipline	Electrical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Various tag plates are missing inside the Water Treatment Package (A-50000).

Name: Giovanni Tangianu

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Duplicate point. Refer to PL:
C30001218
C30001219
C30001221
C30001224
C30001226
C30001237
C30001238
C30001240
C30001242

Name: Eleonora Carotenuto

Date: 2024-12-17

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000947

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002350	1.4 Discipline	Instrumental
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

secondary earthing system of cable trays, instrument, ligthing to be complete prior energization.

Name: Giovanni Tangianu
Date: 2024-11-26
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

done

Name: Eleonora Carotenuto
Date: 2024-12-17
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000948

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002349	1.4 Discipline	Electrical
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

secondary earthing system of cable trays, instrument, ligthing to be complete prior energization.

Name: Giovanni Tangianu
Date: 2024-11-26
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

done

Name: Eleonora Carotenuto
Date: 2024-12-17
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000949

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002350	1.4 Discipline	Instrumental
1.2 Item	A-50000	Water Treatment Package	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Various tag plates are missing inside the Water Treatment Package (A-50000).

Name: Giovanni Tangianu

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

duplicate point- Refer to C30000946

Name: Eleonora Carotenuto

Date: 2024-12-17

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000958

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004348	1.4 Discipline	Telecom
1.2 Item	50-LP-001/B400-NET-001	COMMUNICATION / NETWORK CABINET	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

The cable termination is not installed in accordance with Electrical Typical Installation Details. see 123A90-DDL-EL-DD-20090 sh.8 / 29.

Name: Alessio Polo
Date: 2024-11-27
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-27
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

Name: Eleonora Carotenuto
Date: 2025-01-09
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001216

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Missing data nameplate (T-50006, T-50008)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED

Name VENDOR PSC

Date 2024-12-18

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2024-12-18

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature





ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001217

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Traffolyte tag missing (P-50002A/B_back wash pump)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED

Name VENDOR PSC

Date 2025-02-06

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2025-02-06

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature


P-50002A
P-50002A


P-50002B
P-50002B

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001218

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Missing label (HFA-50001A/B_container air fan)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED

Name VENDOR PSC

Date 2025-02-06

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2025-02-06

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature




HFA-50001B

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001219

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Missing label (HHS-50003A/B_container electric heater)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED

Name VENDOR PSC

Date 2025-02-06

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2025-02-06

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature




HHS-50003A

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001220

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Earthing to be fixed (AT-020C)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

FIXED

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

FIXED

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001221

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Missing labels (MFA, sounder, lights)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED

Name VENDOR PSC

Date 2025-02-06

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2025-02-06

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature


950-XL-05201

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001222

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Flexible to be connected and missing tag (P-50004A/B_HP Pump)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

installed

Name VENDOR PSC

Date 2025-02-07

Signature

5 - CLEARANCE CHECK

installed

Name Stefano Linari

Date 2025-02-07

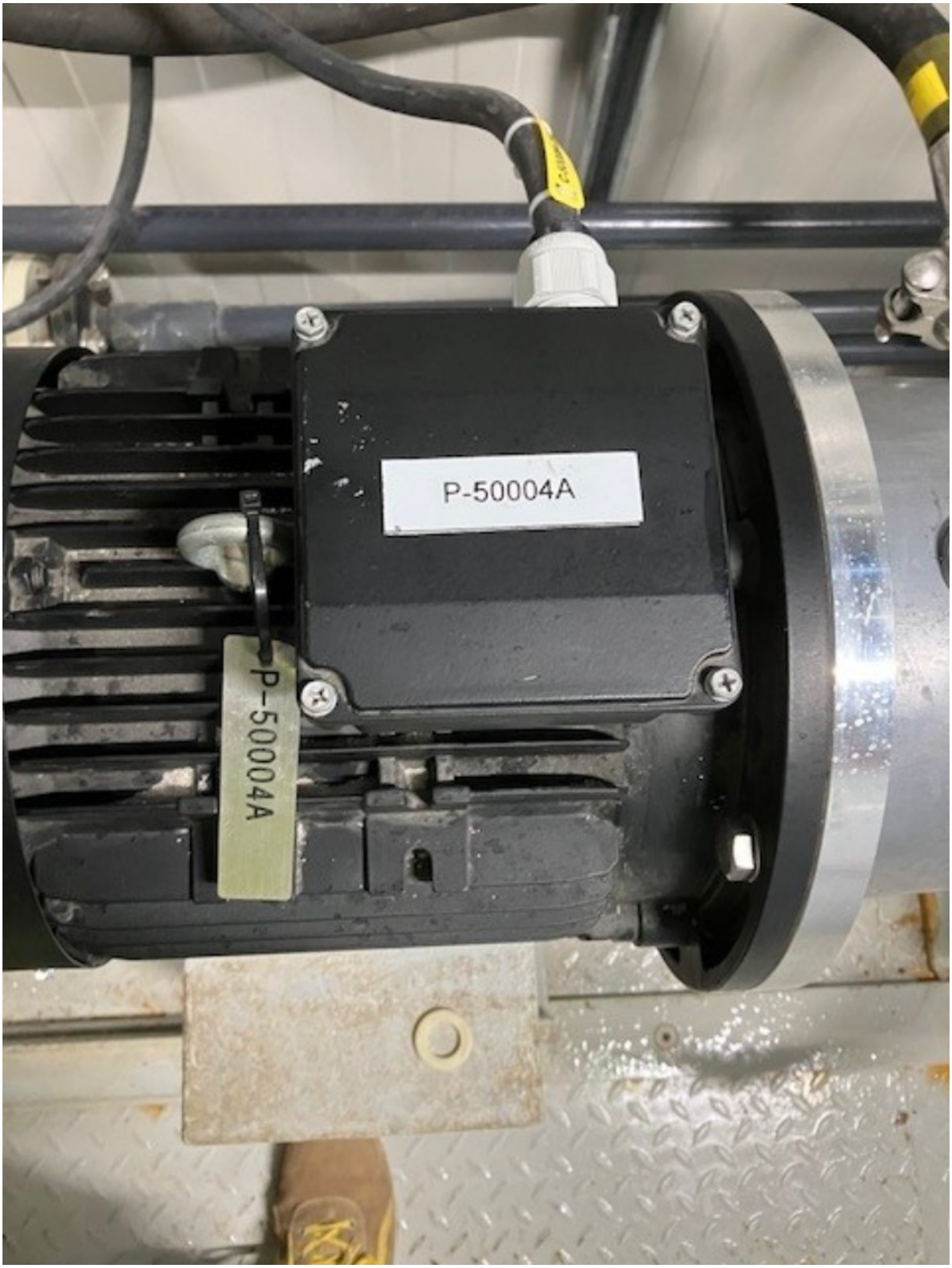
Signature

6- CLEARANCE APPROVAL

Name

Date

Signature


P-50004A
P-50004A


P-50004B



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001223

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Instrument damaged (50-HS-02)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

FIXED AND TESTED

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

FIXED AND TESTED

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001224

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Missing adhesive labels (A-50007A/B_water reverse osmosis units)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED

Name VENDOR PSC

Date 2025-02-07

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2025-02-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature


A-50007A
A-50007B

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001225

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

PSV-039, PSV-036 to be reversed

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

ACTIVITY DONE

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

ACTIVITY DONE

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001226

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Missing main description labels. To be installed (Fire alarm push button)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001227

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Inside panel to be installed ferrules on power cable side (50-LP-001)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

installed

Name VENDOR PSC

Date 2025-02-07

Signature

5 - CLEARANCE CHECK

installed

Name Stefano Linari

Date 2025-02-07

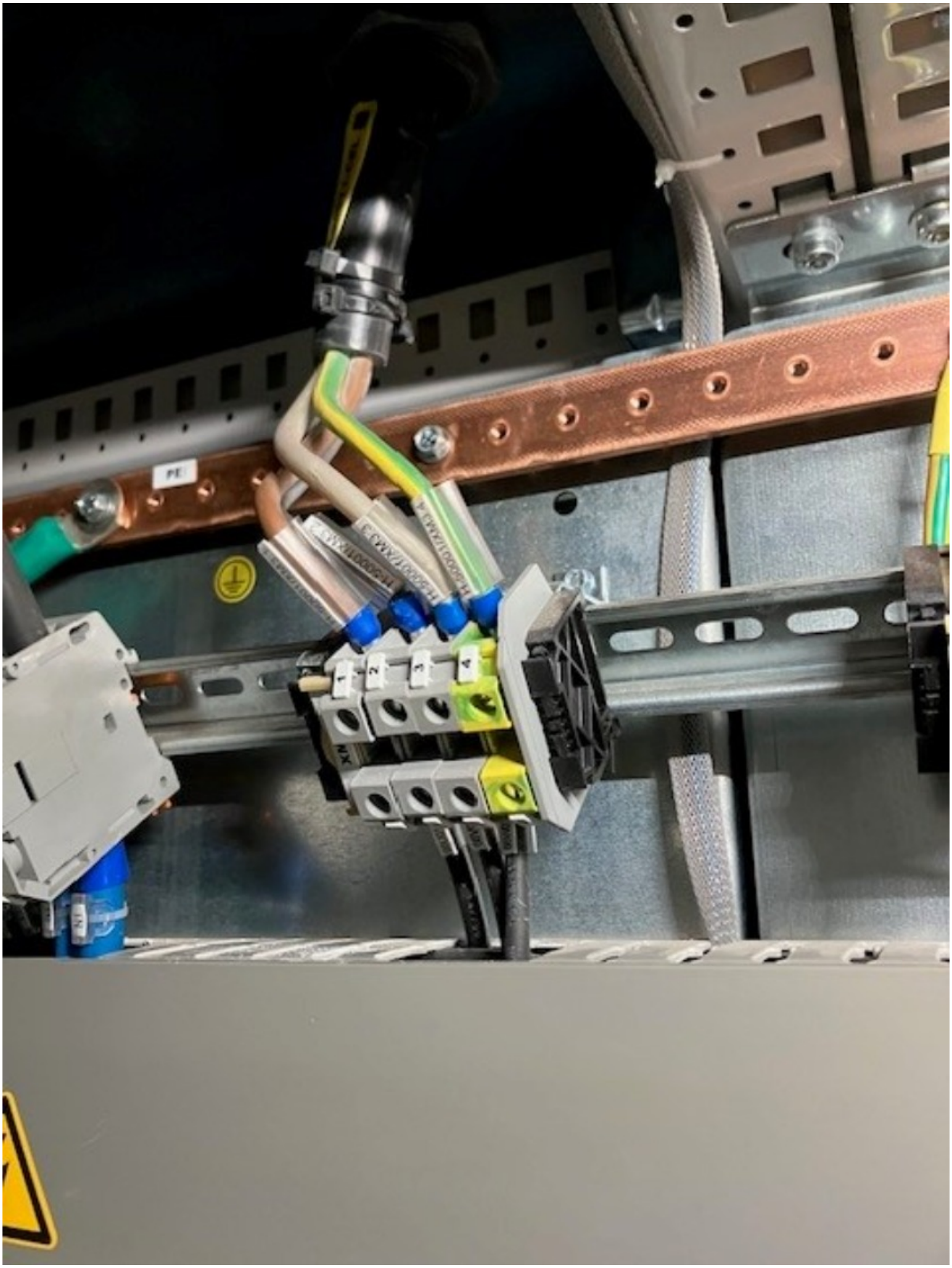
Signature

6- CLEARANCE APPROVAL

Name

Date

Signature


PE
N

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001228

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

All MCT's to be fixed and closed (50-LP-001)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

DONE

Name VENDOR PSC

Date 2025-02-07

Signature

5 - CLEARANCE CHECK

DONE

Name Stefano Linari

Date 2025-02-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001229

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Earthing cable to be fixed properly inside panel (50-LP-001)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

FIXED

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

FIXED

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001230

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Cables to be fixed properly inside the cable tray of the panel (50-LP-001)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

FIXED

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

FIXED

Name Stefano Linari

Date 2024-12-19

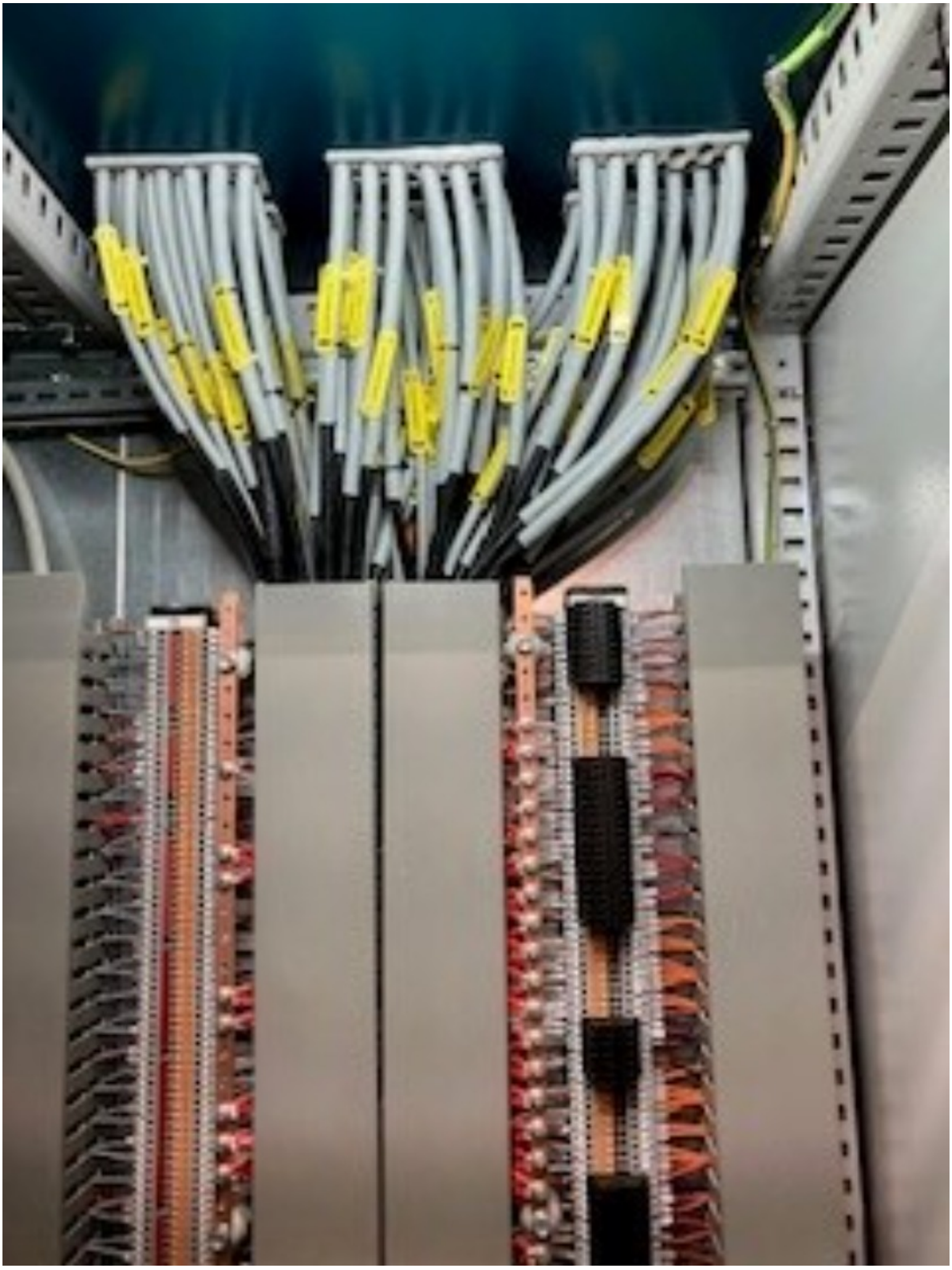
Signature

6- CLEARANCE APPROVAL

Name

Date

Signature



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001231

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Missing TAG outside container

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

installed

Name VENDOR PSC

Date 2025-01-28

Signature

5 - CLEARANCE CHECK

installed

Name Stefano Linari

Date 2025-01-28

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature


APPROVED FOR TRANSPORT
UNDER CUSTOMS SEAL
CSC SAFETY APPROVAL
TIMBER COMPONENT TREATMENT
EQUIPMENT
WATER TREATMENT PACKAGE
ITEM
A-50000
PROJECT
HOLLANDSE KUSTNOORD
WIND PARK PROJECT
YEAR OF CONSTR.
2024
OUTLET FLUID
FRESH WATER
WEIGHT
CE


APPROVED FOR TRANSPORT
UNDER CUSTOMS SEAL
CSC SAFETY APPROVAL
TIMBER COMPONENT TREATMENT
EQUIPMENT
WATER TREATMENT PACKAGE
ITEM
A-50000
PROJECT
HOLLANDSE KUSTNOORD
WIND PARK PROJECT
YEAR OF CONSTR.
2024
OUTLET FLUID
FRESH WATER
WEIGHT
CE

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001232

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Plastic strips to be cut

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

DONE

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

DONE

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001233

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Cables to be properly fixed in some points of the container

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

DONE

Name VENDOR PSC

Date 2025-02-07

Signature

5 - CLEARANCE CHECK

DONE

Name Stefano Linari

Date 2025-02-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001234

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Additional light to be added inside the container tank side, due to low visibility

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Light has been moved in order to light better the area

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

Light has been moved in order to light better the area

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001235

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Electrical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Missing traffolyte tag for all lamps

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED

Name VENDOR PSC

Date 2025-02-07

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2025-02-07

Signature

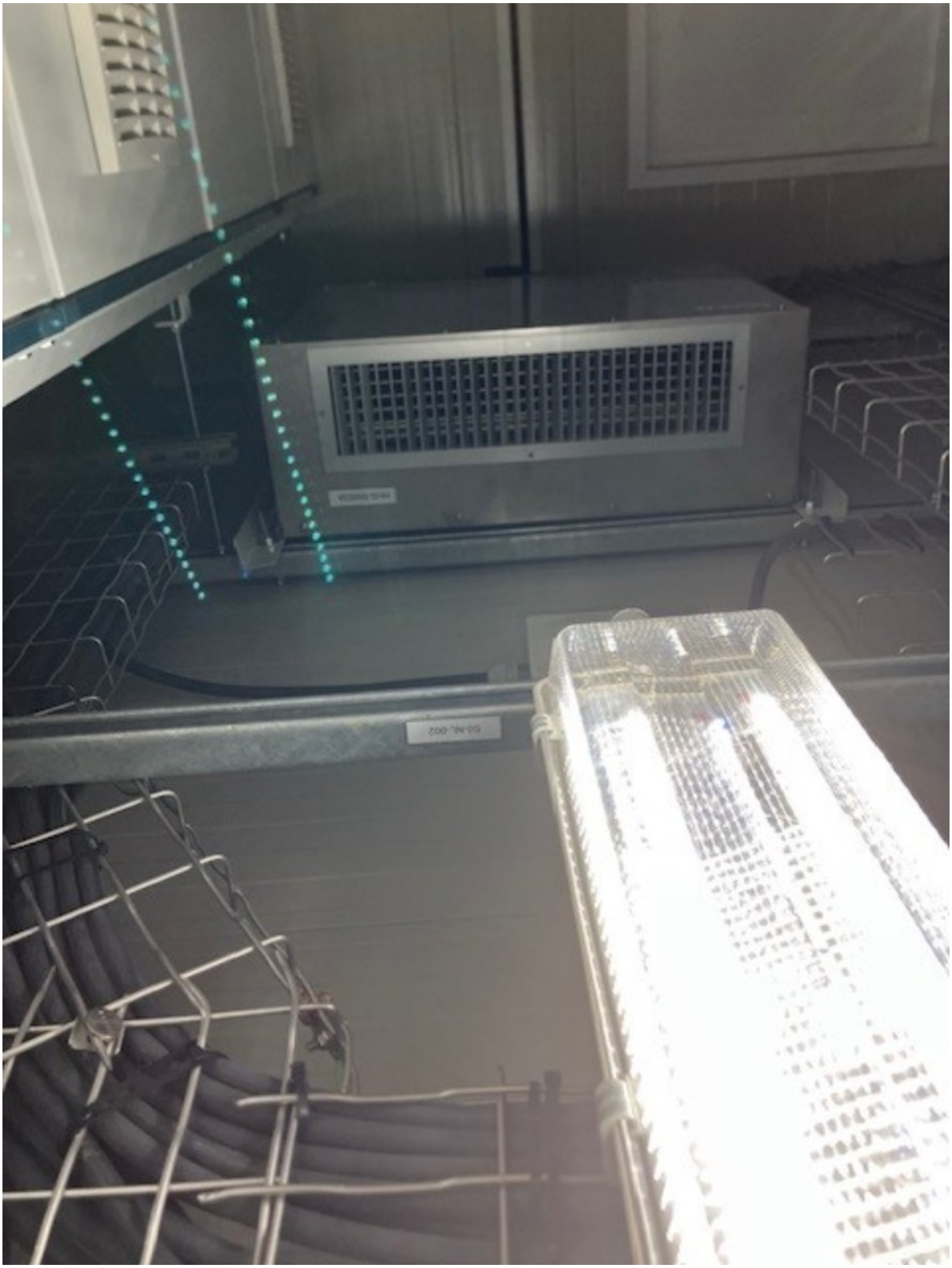
6- CLEARANCE APPROVAL

Name

Date

Signature


60-NL-001




50-NL-003

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001236

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

PI-031, PI-033 to be tightened

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-11-29
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

DONE

Name VENDOR PSC

Date 2024-12-19

Signature

5 - CLEARANCE CHECK

DONE

Name Stefano Linari

Date 2024-12-19

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000480

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Surface preparation activities complied with ISO 12944. Inspection records were satisfactorily completed, but physical inspection of the container showed some issues:
- door seals contaminated during painting activities+
- visible welding spatters painted over.

Corrective actions are required to address issues identified during the physical inspection of the container, including cleaning contaminated seals and removing welding spatters.

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-10-28
3.5 Action by	RM_CONSTR RM	Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Completed

Name Raffaele Degli Esposti

Date 2025-07-30

Signature

5 - CLEARANCE CHECK

Cable is properly dressed.

Name Raffaele Degli Esposti

Date 2025-07-30

Signature

6- CLEARANCE APPROVAL

Name

Date 2025-07-30

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000481

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Mechanical
1.2 Item	A-50000		Water Treatment Package
1.3 Subsystem	50-10		Water Desalination Package & Distribution

2 - OBSERVATION

Cable trays support fixed with pins inserted externally; PSC will put an epoxy fille (e.g. Sikaflex 291i) and painting (see Advisor Note n. 123A90-AUR-QA-VDR-006_1)

Name

Date

Signature

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Stefano Linari
3.4 Activity code	FAT factory acceptance test	Date	2024-10-28
3.5 Action by	VND Vendor	Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Activity done – see pictures

Name Vendor Crosswind

Date 2025-04-23

Signature

5 - CLEARANCE CHECK

Activity done – see pictures

Name Stefano Linari

Date 2025-04-23

Signature

6- CLEARANCE APPROVAL

Name

Date 2025-04-23

Signature





ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000923

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004348	1.4 Discipline	Telecom
1.2 Item	50-LP-001/B400-NET-001	COMMUNICATION / NETWORK CABINET	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

The copper conductor of the cable armor must be individually connected to the earthing bar. See 123A90-DDL-EL-DD-20090.

Name: Alessio Polo
Date: 2024-11-26
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

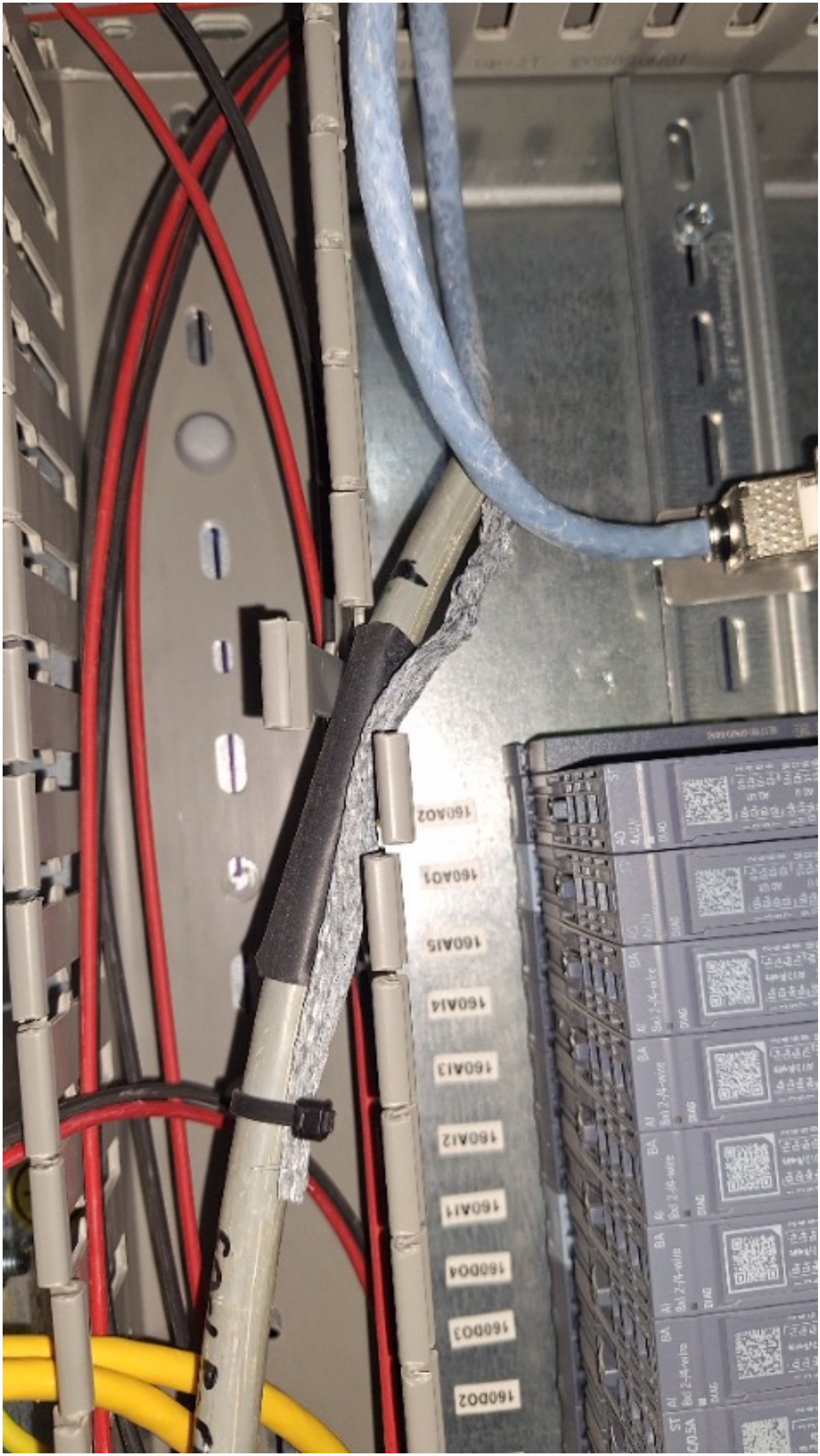
5 - CLEARANCE CHECK

Done .

Name: Giovanni Tangianu
Date: 2025-01-09
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:


160AO2
160AO1
160AI5
160AI4
160AI3
160AI2
160AI1
160DO4
160DO3
160DO2

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000924

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004348	1.4 Discipline	Telecom
1.2 Item	50-LP-001/B400-NET-001	COMMUNICATION / NETWORK CABINET	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

The copper conductor of the cable armor must be individually connected to the earthing bar. See 123A90-DDL-EL-DD-20090.

Name: Alessio Polo
Date: 2024-11-26
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

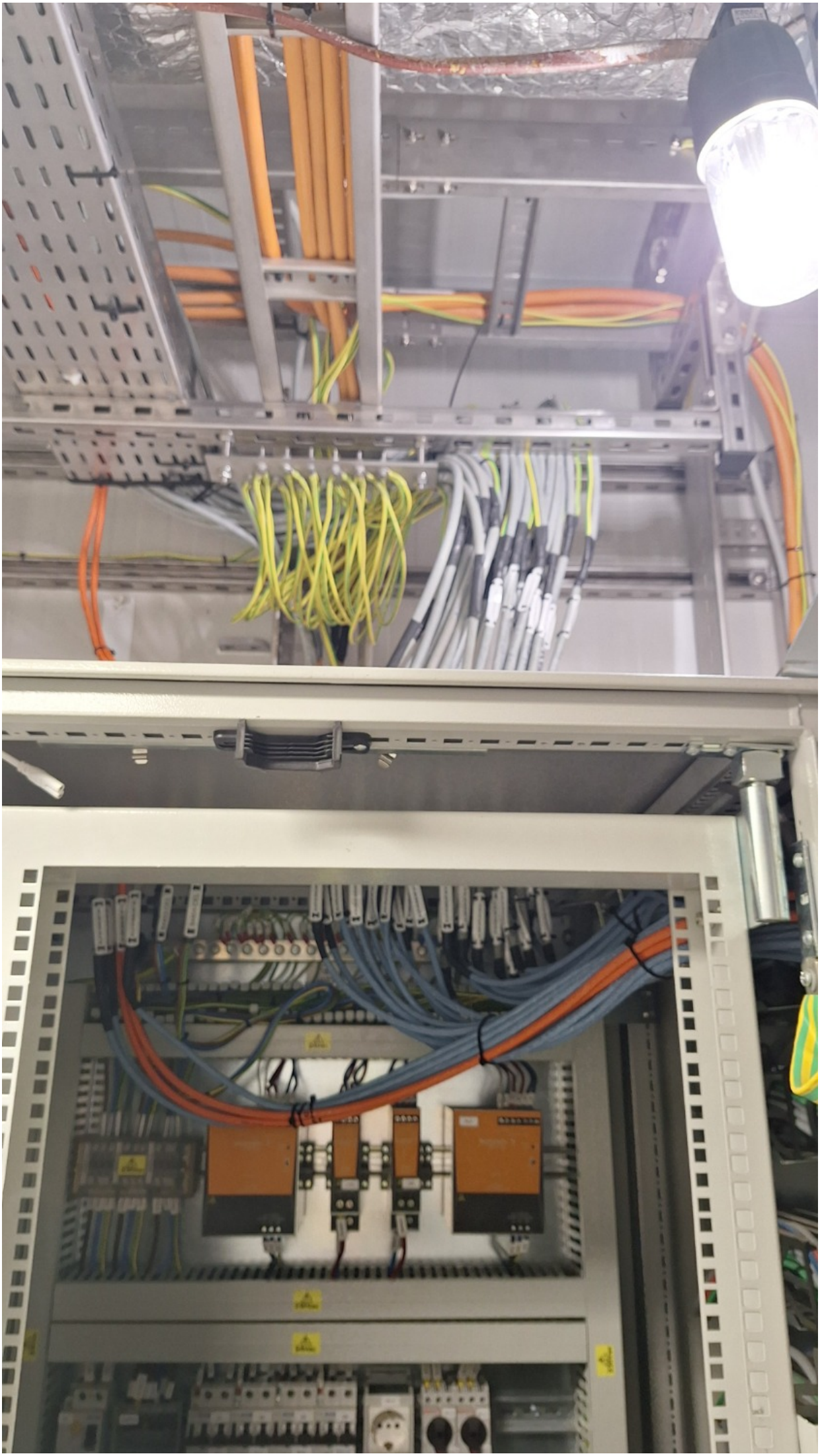
DONE

Name: Alessio Polo
Date: 2025-02-04
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:





ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000925

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004348	1.4 Discipline	Telecom
1.2 Item	50-LP-001/B400-NET-001	COMMUNICATION / NETWORK CABINET	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing cable tag , cabinet input A-50000.

Name: Alessio Polo

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date: 2025-03-10

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-03-10

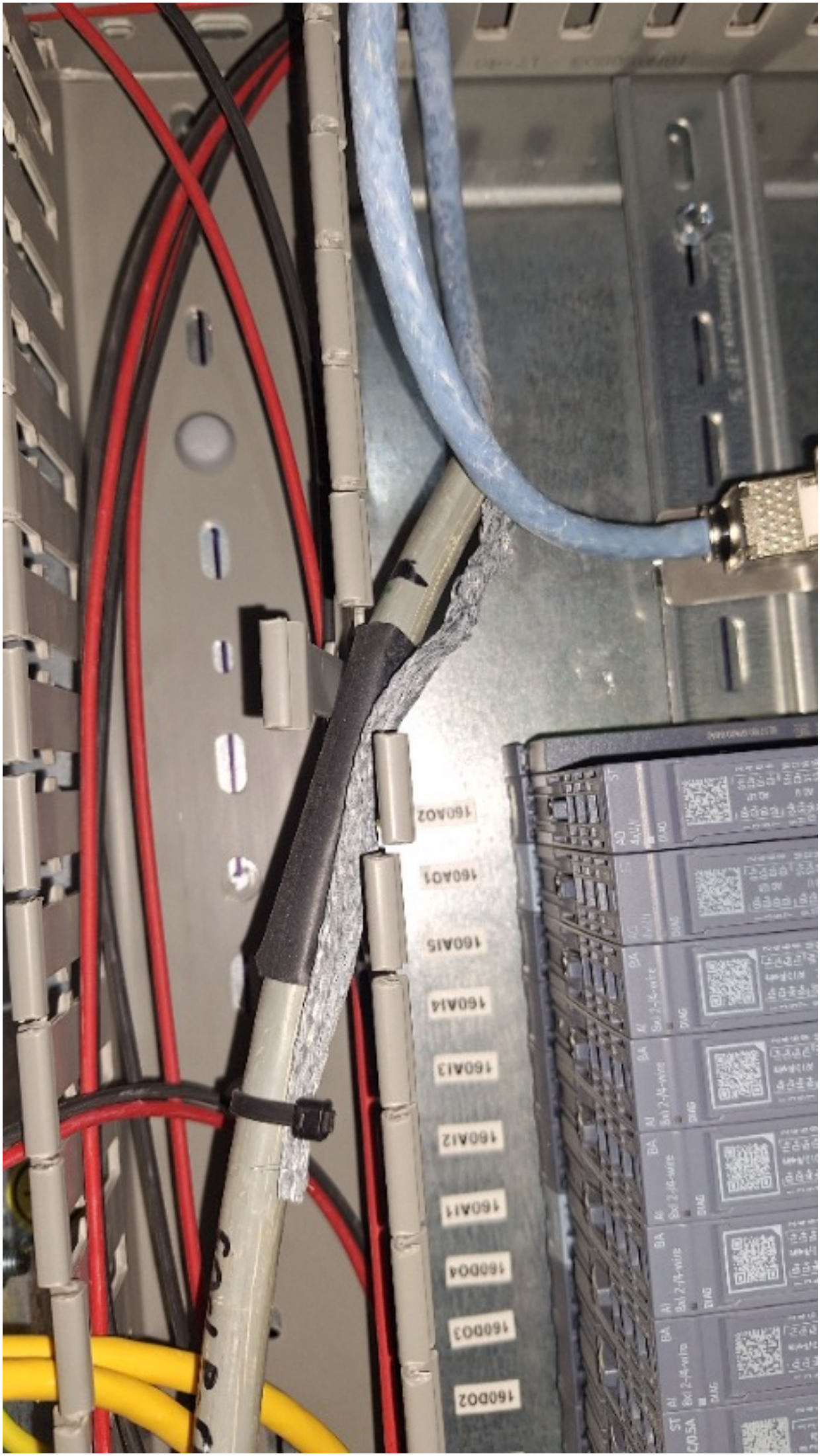
Signature:

6- CLEARANCE APPROVAL

Name:

Date: 2025-03-10

Signature:


160AO2
160AO1
160AI5
160AI4
160AI3
160AI2
160AI1
160DO4
160DO3
160DO2

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000926

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004348	1.4 Discipline	Telecom
1.2 Item	50-LP-001/B400-NET-001	COMMUNICATION / NETWORK CABINET	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing SS cable tag on MCT.

Name: Alessio Polo

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Alessio Polo
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000930

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001450	1.4 Discipline	Instrumental
1.2 Item	C-50-XS-001/B400-SIS-001	TRIP SIGNAL TO UCP / MARSHALLING PCS	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing cable tags all along the route.

Name: Giovanni Tangianu
Date: 2024-11-26
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu
Date: 2025-02-04
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000931

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001450	1.4 Discipline	Instrumental
1.2 Item	C-50-XS-001/B400-SIS-001	TRIP SIGNAL TO UCP / MARSHALLING PCS	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing all core identification tags both side

Name: Giovanni Tangianu

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-04-08

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000932

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004541	1.4 Discipline	Instrumental
1.2 Item	C-50-XA-003/B400-SIS-001	50-LP-001/B400-SIS-001	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing all core identification tags both side.

Name: Giovanni Tangianu

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-04-08

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000933

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004541	1.4 Discipline	Instrumental
1.2 Item	C-50-XA-003/B400-SIS-001	50-LP-001/B400-SIS-001	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Shield not connected side B400-SIS-001

Name: Giovanni Tangianu

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-01-31

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000934

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004541	1.4 Discipline	Instrumental
1.2 Item	C-50-XA-003/B400-SIS-001	50-LP-001/B400-SIS-001	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Missing cable tag all along the route.

Name: Giovanni Tangianu

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Paolo Schintu

Date: 2025-02-26

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000935

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10004541	1.4 Discipline	Instrumental
1.2 Item	C-50-XA-003/B400-SIS-001	50-LP-001/B400-SIS-001	
1.3 Subsystem	50-10	Water Desalination Package & Distribution	

2 - OBSERVATION

Cable needs to be better dressed inside the Package (A-50000 Water treatment) See attached photo.

Name: Giovanni Tangianu

Date: 2024-11-26

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-26
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Cable is properly dressed.

Name: Giovanni Tangianu

Date: 2025-02-04

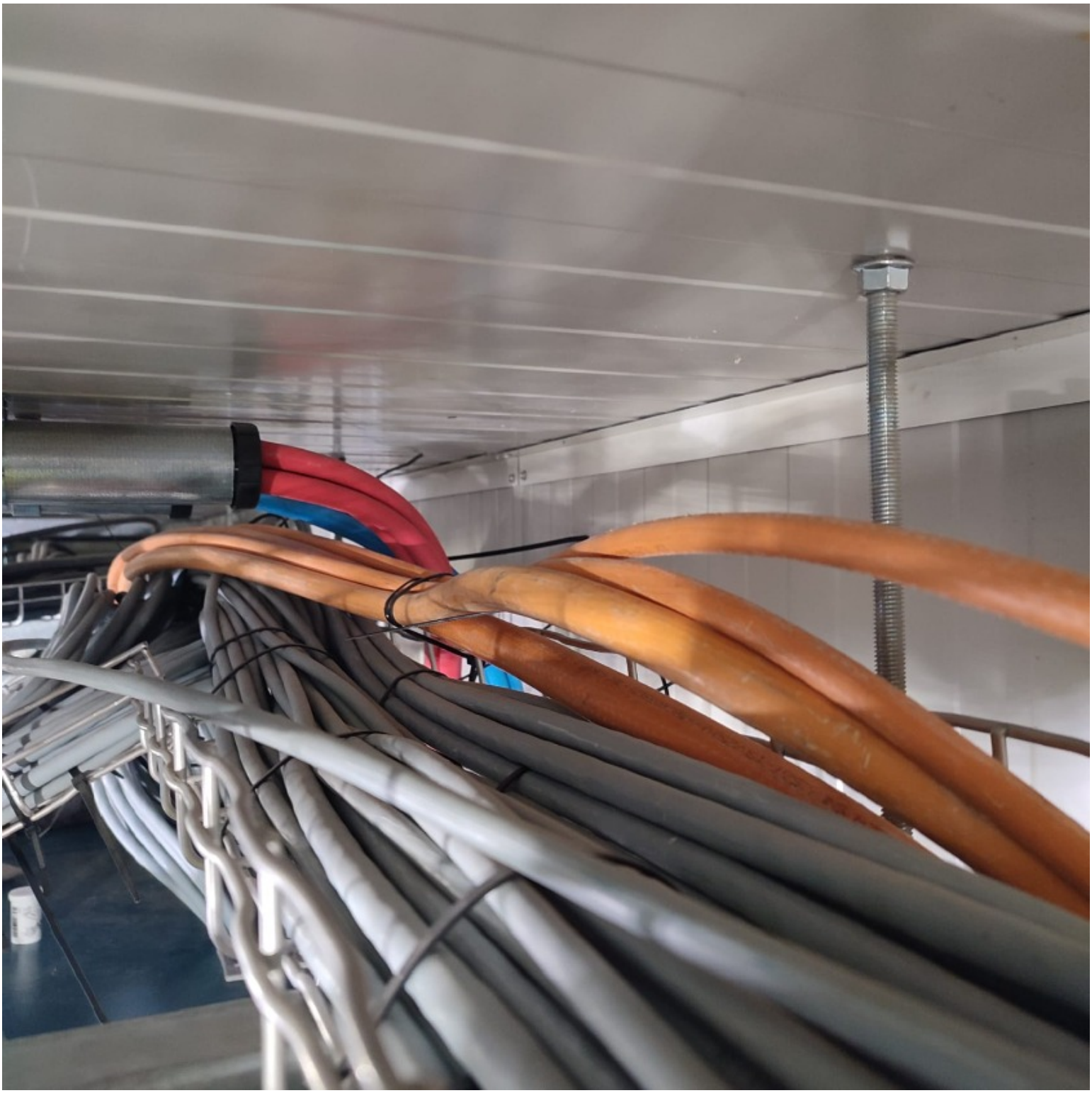
Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



Section 4 FUNCTIONAL TESTS SHEETS

Section 4.1 Electrical functional test sheets index

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM & discipline : E

Electrical	50-10 Water Desalination Package & Distribution						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A3/+08-QF1	WATER DESALINATION PACKAGE - UCP - A3/+08-QF1	ONSHORE	C10002938	FP00	100	2024-12-07	RFO 2
		ONSHORE	C10002939	FTR-2	100	2024-10-02	RFO 2
		ONSHORE	C10002940	FTR-6	100	2024-10-03	RFO 2
		ONSHORE	C10003021	FTR-5	100	2025-04-29	RFO 2
UP-200F3-QF36	WATER DESALINATION PACKAGE - UCP	ONSHORE	C10004575	FTR-2	100	2024-12-07	RFO 2

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	A3/+08-QF1	: WATER DESALINATION PACKAGE - UCP - A3/+08-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	50-10	: Water Desalination Package & Distribution			Module	
TASK	code	C10002938		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FP00 Miscellaneous electrical Consumer

DATA

Switchboard	SG-200N1	Circuit ref:	A3/+08-QF1
Breaker rating (A)	160A	Nominal current (A)	107A

FUNCTION TEST REQUIREMENT

1	Check pre-commissioning activities have been carried out				OK
2	Check equipment for cleaness				OK
3	Measure I/R value of equipment and feeder cable at 1000V (Min value: 10 Mohm)	>1000	MΩ		OK
4	Energise control of equipment feeder				OK
5	Full test feeder breaker operation in test position				OK
6	Check protection setting				OK
7	Test interface trips and signals (remote alarms & status). Check the relevant ITR presence in the system				OK
8	Test control and safety functions according to manufacturer's procedure.				OK
9	Energize				OK
10	Measure Voltage and Current values at feeder breaker	399	V	0.1 A	OK
11	Attach test procedure, if any				NA

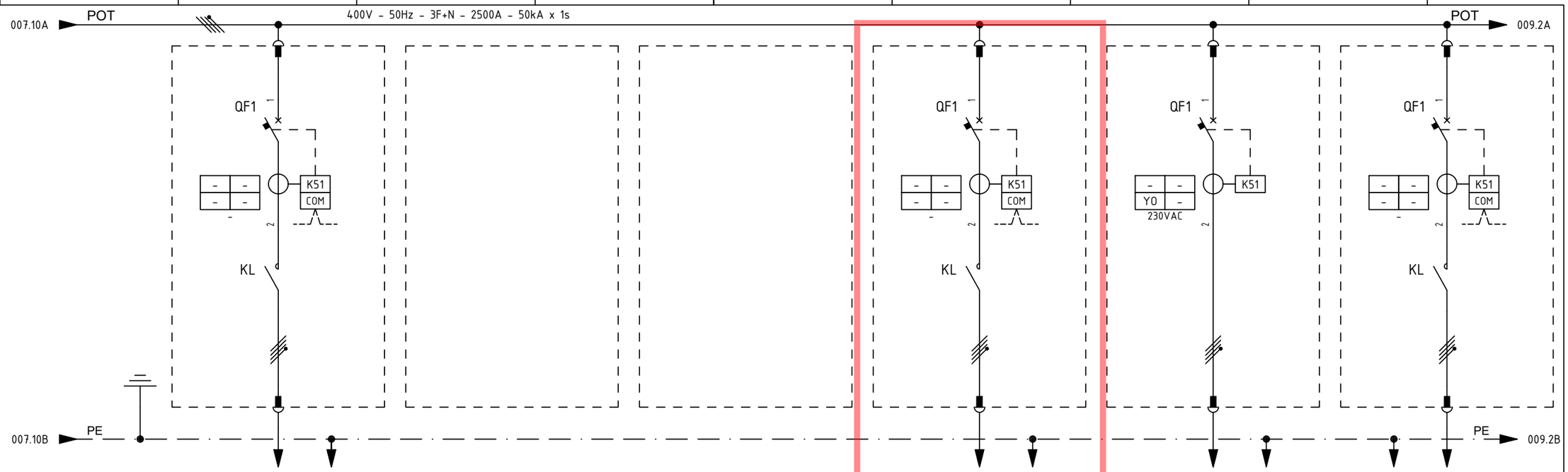
FUNCTION TEST REQUIREMENT	RESULT

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025
FLUKE 376	A1711003	7710/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Davide Zucconelli	Kristian Castellani	Witness waived
Date	2024-11-29	2024-12-05	2024-12-07
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2024-11-29T10:45:13.101Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-12-05T09:28:08.082Z	PROVERLIS Digitaly signed by Witness waived 2024-12-07T10:34:09.741Z



ITEM			1	SPARE		-			JB-500E8		UP-200F3		B100-HSB-001	
UTILITY			2	SPARE		FUTURE			WATER PACKAGE		AC UPS PAS - 30 MIN UP-200F3 - LINE B		HVAC PANELS HV ROOM	
COLUMN/CUBICLE			3	A3 / +05		A3 / +06			A3 / +08		A4 / +01		A4 / +02	
RATED POWER | RATED CURRENT			4/5	5.5 kW	9.93 A	-	-		67 kW	107.00 A	36.0 kW	57.8 A	18 kW	34.1 A
TYPICAL FUNCTIONAL			6	LK1-40					LK2-160		L1-100		LK1-40	
CIRCUIT BREAKER (ABB)	TYPE		7	XT2S - 160					XT4S - 250		XT2S - 160		XT2S - 160	
	VERSION		8	4P - FIXED					4P - FIXED		4P - FIXED		4P - FIXED	
	TRIP UNITS		9	EKIP HI TOUCH LSIG (In = 40A)					EKIP HI TOUCH LSIG (In = 160A)		EKIP DIP LSIG (In = 100A)		EKIP HI TOUCH LSIG (In = 40A)	
	Icu	KA	10	50 kA					50 kA		50 kA		50 kA	
OVERLOAD	L	Range A	11	(0.4 - 1) x In					(0.4 - 1) x In		(0.4 - 1) x In		(0.4 - 1) x In	
		Range t	12	k/I^2					k/I^2		k/I^2		k/I^2	
SEL. SHORT-CIRCUIT	S	Range A	13	(0.6 - 10) x In					(0.6 - 10) x In		(1 - 10) x In		(0.6 - 10) x In	
		Range t	14	0.05 - 0,4 sec / k/I^2					0.05 - 0.4 sec / k/I^2		0.05 - 0.4 sec / k/I^2		0.05 - 0,4 sec / k/I^2	
INST. SHORT-CIRCUIT	I	Range A	15	(1.5 - 15) x In					(1.5 - 15) x In		(1 - 10) x In		(1.5 - 15) x In	
		Range t	16	instantaneous					instantaneous		<= 0.02 sec		instantaneous	
EARTH FAULT PROTECTION	G	Range A	17	(0.1 - 1) x In					(0.1 - 1) x In		(0.2 - 1) x In		(0.1 - 1) x In	
		Range t	18	t=k / t=k/I^2					t=k / t=k/I^2		0.1 - 0.8 sec		t=k / t=k/I^2	
CONTACTOR (ABB)			19	AF40-40-00-13 (70A-AC1); 100-250VAC/DC					AF190-40-11-13 (275A-AC1); 100-250 VAC/DC		-		AF40-40-00-13 (70A-AC1); 100-250VAC/DC	
THERMAL OVERLOAD RELAY (ABB)			20	-					-		-		-	
SURGE ARRESTER (DEHN)			21	-					-		-		-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-					-		-		-	
FUSE HOLDER (ITALWEBER)			23	-					-		-		-	
INDIRECT PROTECTION (ABB)			24	-					-		-		-	
VOLTMETER			25	-					-		-		-	
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-					-		-		-	
	PERFORMANCE/CLASS		27	-					-		-		-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-					-		-		-	
	PERFORMANCE/CLASS		29	-					-		-		-	
LOCK-OUT RELAY (-)			30	-					-		-		-	
POWER CONDUCTOR		mmq	31	-					5G70		4G35		5G16	

=

+

DWG n° : 231298/SD/11

Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	08/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
2	03/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
1	28/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	15/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00011

SHEET 008

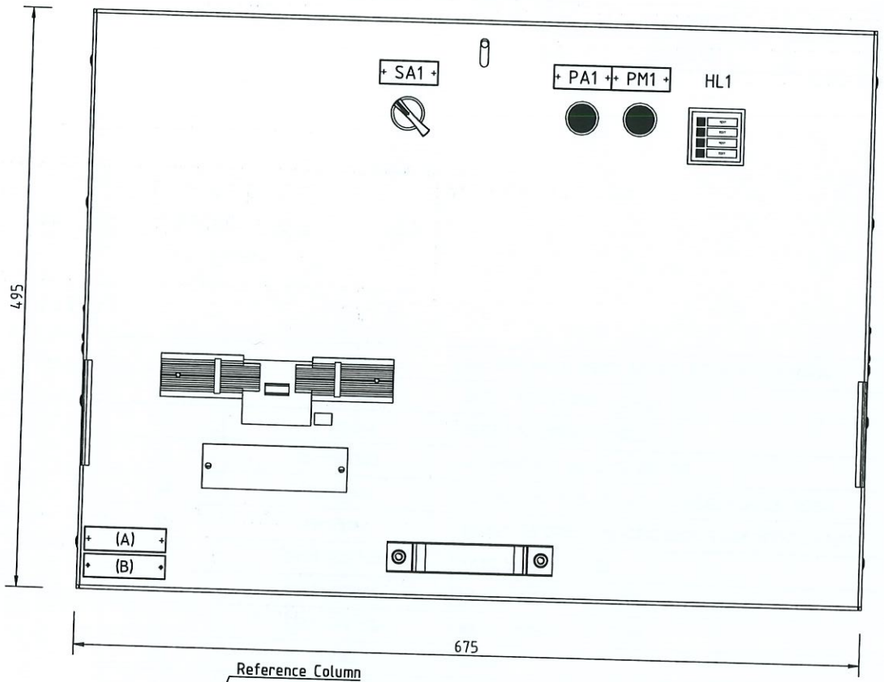
REV. 03

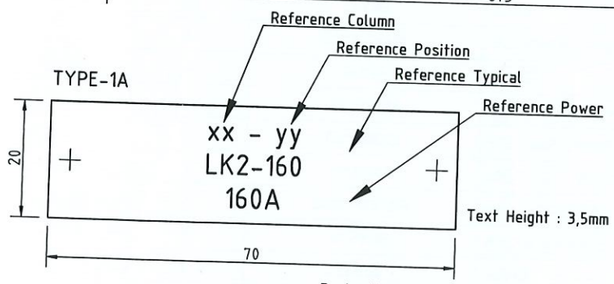
F.to UNI A3: 420mmx297mm

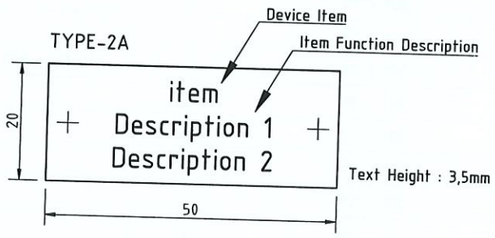
File Name : 1723002197-EL-DG-00011 Rev. 03

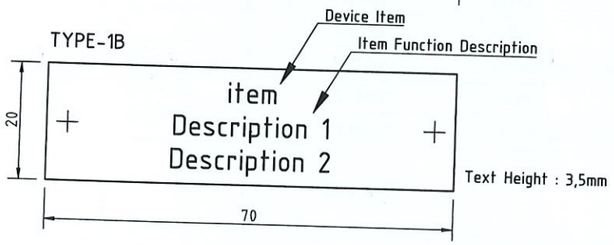
DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK2-n"









NOTE :

A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

B) USER name plate (type-1B), with :
- Item User [to see SLD diagrams]
- User Description [to see SLD diagrams]

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	MOTOR ok	Type-2A
PM1	RUN	MOTOR ok	Type-2A
HL1	Multiled	Signalling	NO plate

= TYPICAL
+ LK-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 035

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

USERS LEGEND

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE NOMINAL CURRENT C.B. TRIP UNIT (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	DP-200N2	DB-LIGHTING & SMALL POWER INSIDE LV ROOM	A2 / +05	40A	LK1-40
2	JB-200E2	CRANE	A3 / +02	40A	LK1-40
3	DP-200N1	DB-LIGHTING & SMALL POWER BoP	A3 / +03	40A	LK1-40
4	SPARE	SPARE	A3 / +04	63A	LK1-63
5	SPARE	SPARE	A3 / +05	40A	LK1-40
6	A-50000	WATER PACKAGE	A3 / +08	160A	LK2-160
7	B100-HSB-001	HVAC PANELS HV ROOM	A4 / +02	40A	LK1-40
8	A-80000	FUELL CELL AUXIALIRY LOAD	A4 / +03	63A	LK1-63
9	CP-850F03	BESS PCS CABINET	A4 / +04	40A	LK1-40
10	DP-300N1	DB-LIGHTING & SMALL POWER INSIDE UPS ROOM	A4 / +05	40A	LK1-40
11	SPARE	SPARE	A4 / +06	40A	LK1-40
12	DP-630E01A	INSTRUMENTS AIR PACKAGE 01A	A4 / +08	160A	LK2-160
13	SPARE	SPARE	A5 / +01	40A	LK1-40
14	B200-HSB-001	HVAC PANELS - LV ROOM	A5 / +02	40A	LK1-40
15	B300-HSB-001	HVAC PANELS - UPS ROOM	A5 / +03	40A	LK1-40
16	B400-HSB-001	HVAC PANELS - ITER	A5 / +04	40A	LK1-40
17	CN-200N1	IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM	A5 / +05	40A	LK1-40
18	DP-400N1	DB-LIGHTING & SMALL POWER INSIEDE INSTR. ROOM	A5 / +06	40A	LK1-40
19	DP-630E01B	INSTRUMENTS AIR PACKAGE 01B	A5 / +08	160A	LK2-160
20	CP-850F01	BESS LV1 CABINAT (+DISTR 1)	A6 / +02	40A	LK1-40
21	CP-850F02	BESS LV2 CABINAT (+DISTR 2)	A6 / +03	40A	LK1-40
22	DP-100N1	DB-LIGHTING & SMALL POWER INSIDE HV/MV ROOM	A6 / +04	40A	LK1-40

= TYPICAL
+ LK-x

OWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Users Legend - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 036 | REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

ITEMS ACRONYM

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

Composition of Typical :

LK-x = Common Parts
LK1-"nn" or LK2-"nn"= Specific Parts

Example for Composition of LK1-63:
- to take "LK-x" plus "LK1-63"

Example for Composition of LK2-160:
- to take "LK-x" plus "LK2-160"

	ACRONYM ITEMS (Comun parts)	ACRONYM ITEMS (Specific parts)				
	LK-x	LK1-40 (In=40A) (Current Trip Unit)	LK1-63 (In=63A) (Current Trip Unit)	LK2-160 (In=160A) (Current Trip Unit)		
ASSOCIATED TYPICAL	This Item include all devices that are comun for both "Specific Parts" Items	This Items include only devices that are detail for "Specific Parts" Items				
LK1-40	X	X				
LK1-63	X		X			
LK2-160	X			X		
-						

=	TYPICAL					
+	LK-x					
DWG n° : 231298/SD/31						
Item n° : PF1002983/26						
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)	
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION	

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

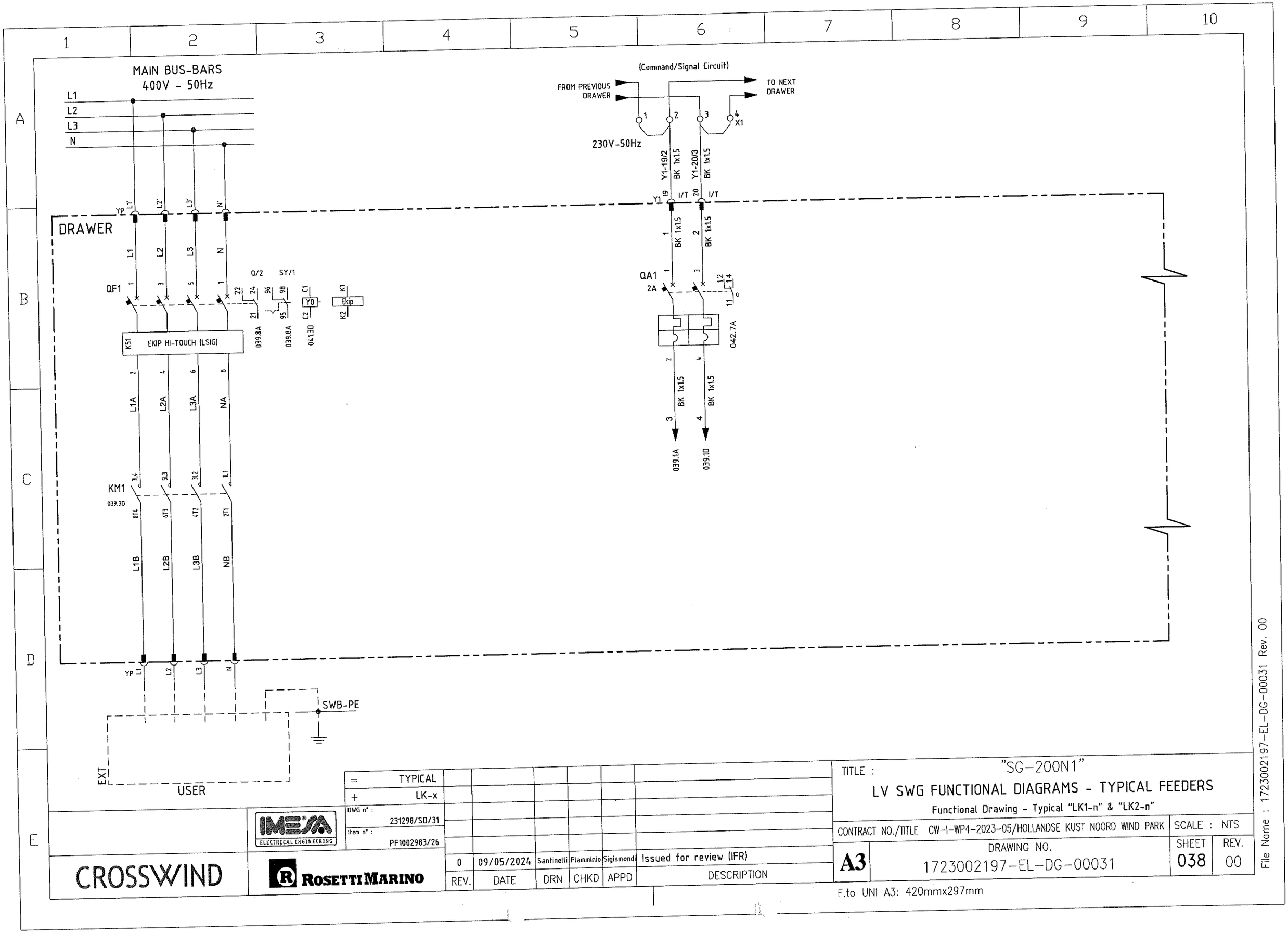
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 037 | REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00



=	TYPICAL						
+	LK-x						
DWG n° : 231298/SD/31							
Item n° : PF1002983/26							
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)		
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION		

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 038

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

APERTO IN INS.

038.6C 3 230V-50Hz

KA3 039.8D

KA6 042.9D

SA1 LOC REM CLOSE ON "LOC" 042.9A 039.7B 039.5B

SA1 039.3B CLOSE ON "REM"

PM1 GR

KM1 039.3D

PA1 RD

KA7 042.6D

KA6 042.5D

KA3 039.8D

SA1 039.3B CLOSE ON "REM"

KM1 039.3D

KA5 039.9D

QF1 038.1B Q

QF1 038.1B SY

Y1 22 T Y1 21 I/T

3 040.1B

7 BK 1x1.5

8 BK 1x1.5

9 BK 1x1.5

10 BK 1x1.5

11 BK 1x1.5

12 BK 1x1.5

5 BK 1x1.5

6 BK 1x1.5

13 BK 1x1.5

14 BK 1x1.5

15 BK 1x1.5

16 BK 1x1.5

17 BK 1x1.5

18 BK 1x1.5

19 BK 1x1.5

KM1 A1 A2 MAIN CONTACTOR

KA1 A1 A2 STATUS C.B/CONTACTOR

KA2 A1 A2 USER AVAILABLE

KA3 A1 A2 C.B. OPEN/CLOSED

KA4 A1 A2 C.B. TRIPPED

KA5 A1 A2 DRAWER ON TEST

038.6C 4

4 040.1D

038.1C 2T1 1L1
038.1C 4T2 3L2
038.1C 6T3 5L3
038.1C 8T4 7L4
039.6B 14 13
039.4B 24 23
039.5B 34 33
040.3B 44 43

042.4A 11 12 14 22 21 24 32 31 34 42 41 44

042.6A 11 12 14 22 21 24 32 31 34 42 41 44

039.6A 039.2A 040.3B 11 12 14 22 21 24 32 31 34 42 41 44

040.4B 042.6A 11 12 14 22 21 24 32 31 34 42 41 44

042.5A 039.7B 11 12 14 22 21 24 32 31 34 42 41 44

= TYPICAL
+ LK-x

DWG n° : 231298/SD/31
Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

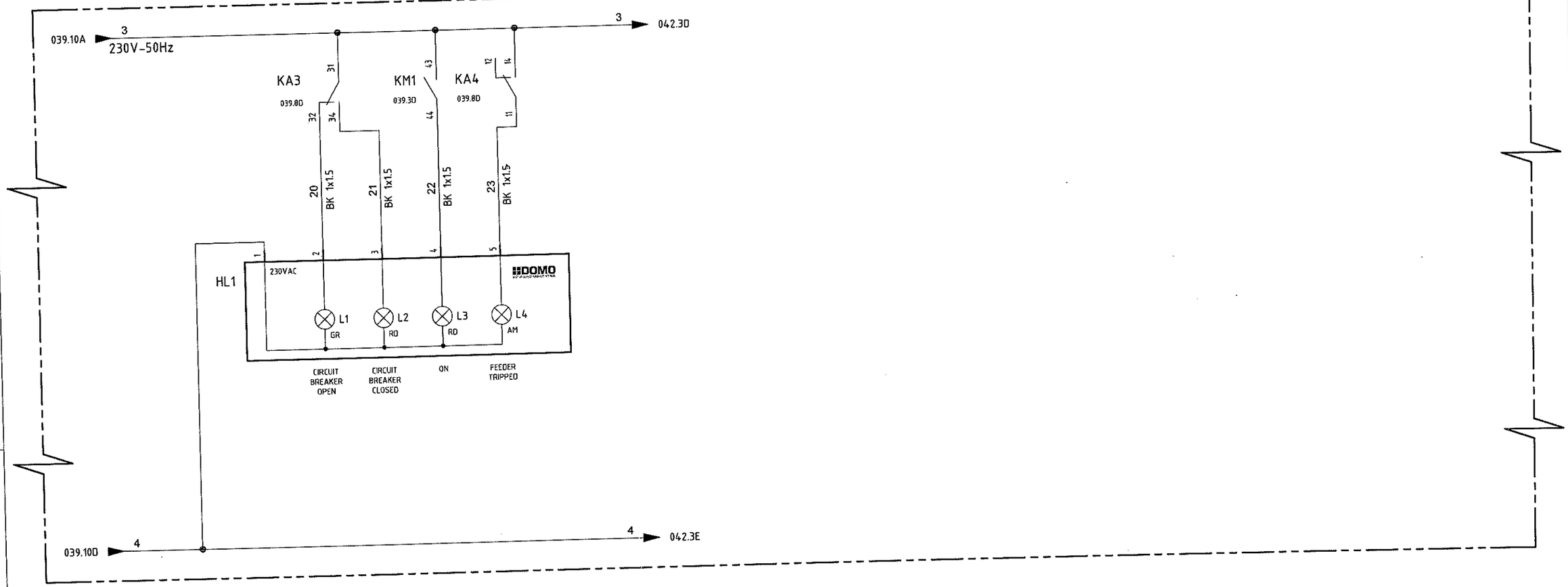
DRAWING NO. 1723002197-EL-DG-00031

SHEET 039

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00



=	TYPICAL						
+	LK-x						
DWG n° :	231298/SD/31						
Item n° :	PF1002983/26						
		0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

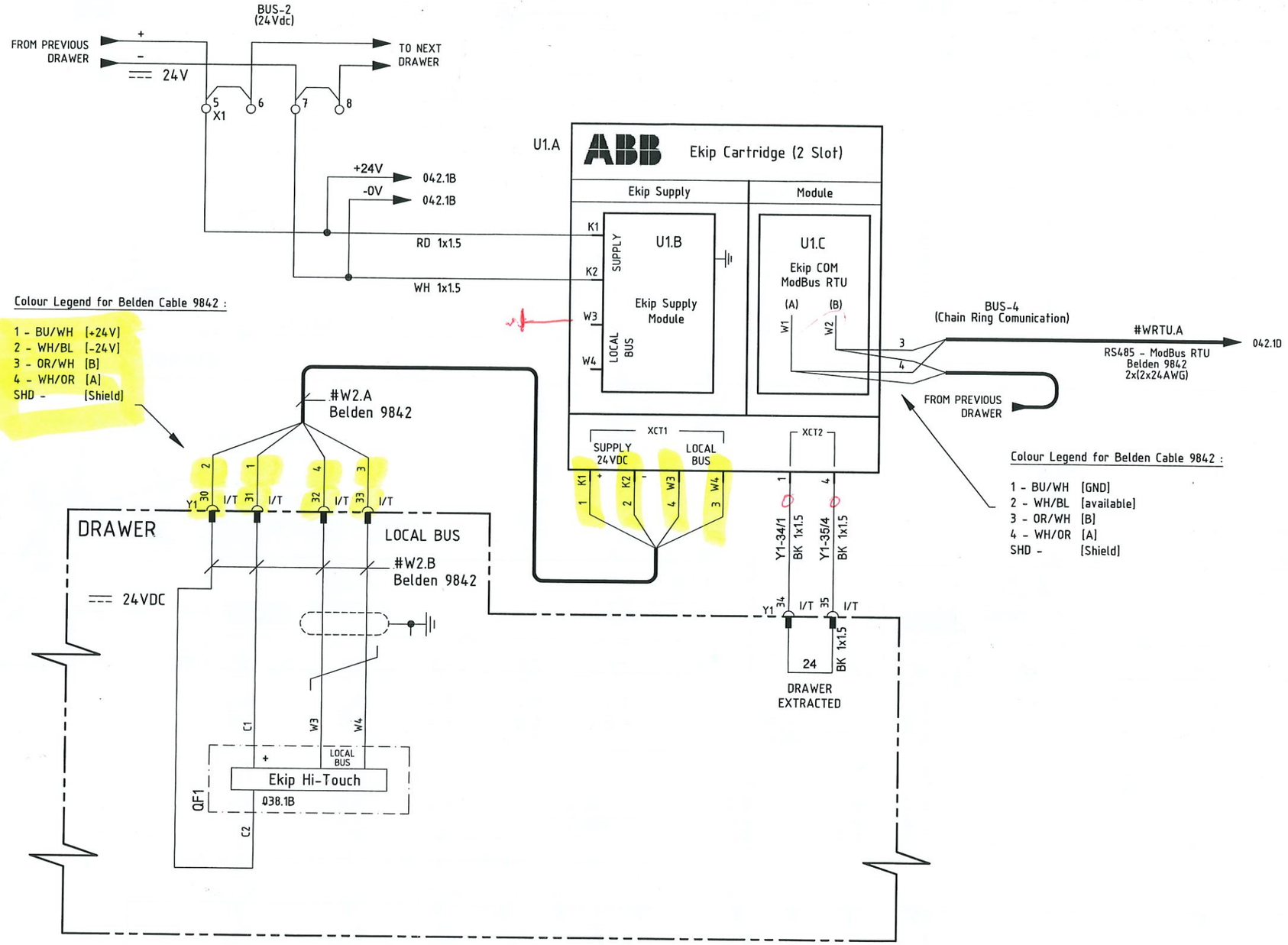
DRAWING NO. 1723002197-EL-DG-00031

SHEET 040

REV. 00

F.to UNI A3: 420mmx297mm

3 Name : 1723002197-EL-DG-00031 Rev. 00



=	TYPICAL						
+	LK-x						
DWG n° : 231298/SD/31							
Item n° : PF1002983/26							
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)		
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION		

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

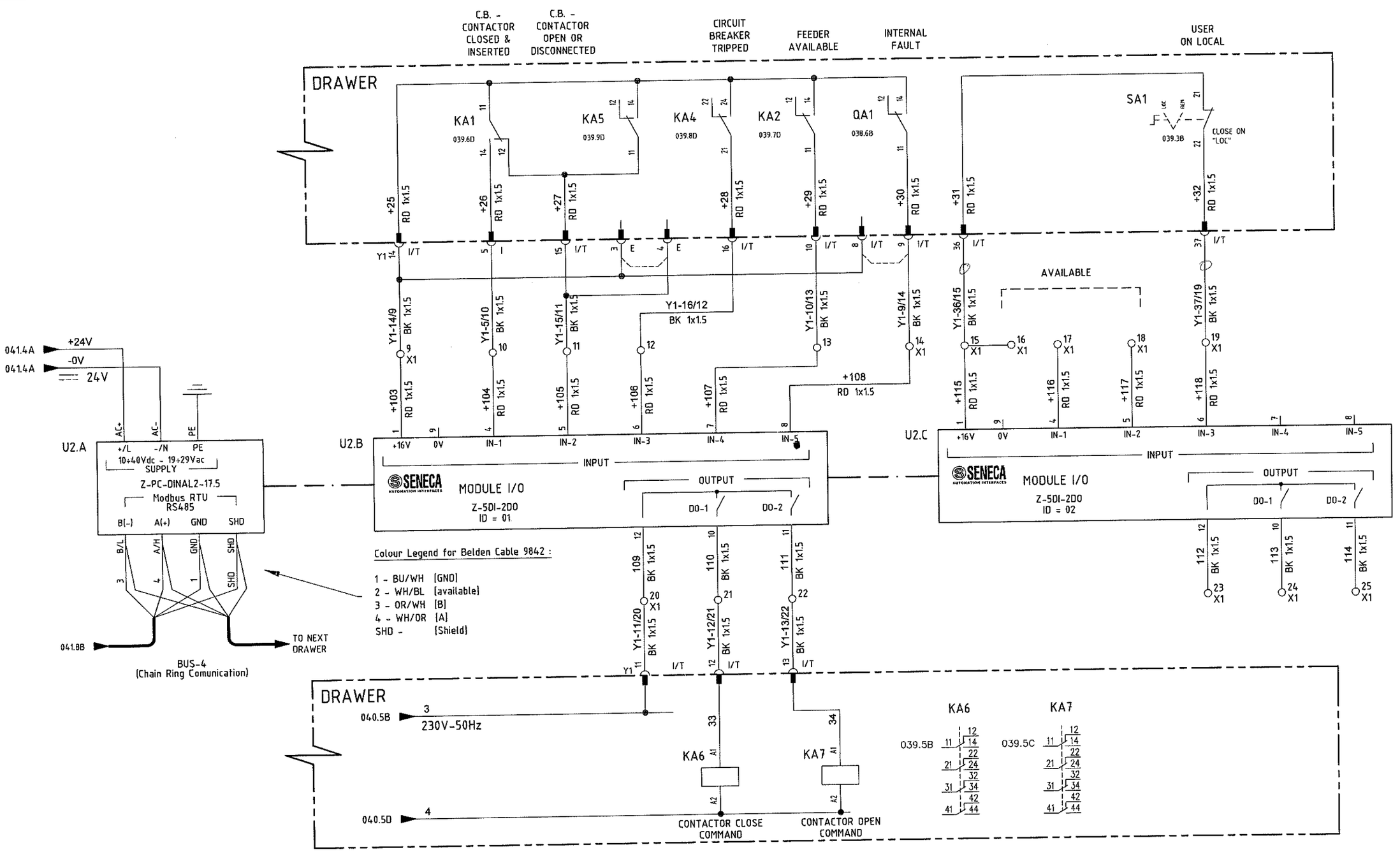
Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 041 | REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00



=	TYPICAL						
+	LK-x						
OWG n° : 231298/SD/31							
item n° : PF1002983/26							
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)		
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION		

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 042

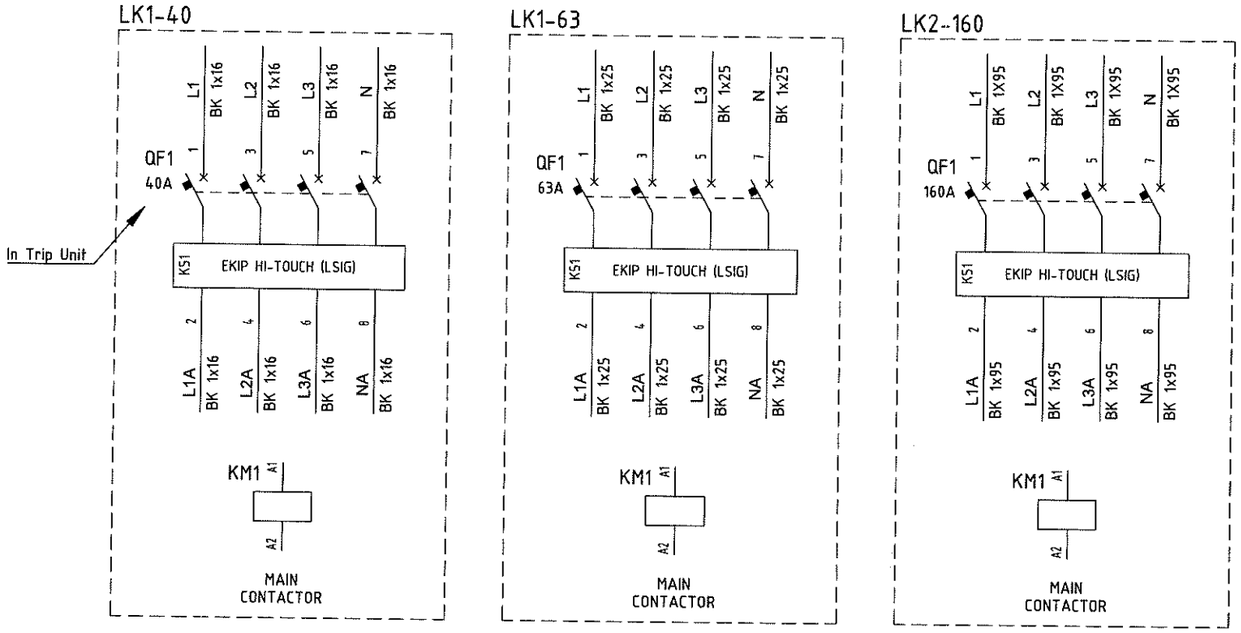
REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

SPECIFIC PARTS

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"



=	TYPICAL						
+	LK-x						
DWG n° :	231298/SD/31						
Item n° :	PF1002983/26						
		0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 043

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

AUXILIARY SOCKET

136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			•	•				•	•																																			
RACKED–OUT			X	X				X	X																																			
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED–IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			042.5B	042.5B	042.4B			042.6B	042.7B	042.6B	042.5D	042.5D	042.6D	042.3B	042.4B	042.6B			038.6A	038.6A	039.9A	039.9A								041.3C	041.3C	041.4C	041.4C	041.6C	041.7C	042.7B	042.9B							

TYPICAL - LK-x - Y1

SX DX

- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION
- FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION
- CROS-REFERENCE USED PIN

x 19 CASSETTI

=	TYPICAL						
+	LK-x						
DWG n° :	231298/SD/31						
Item n° :	PF1002983/26						
		0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
		REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG–200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 044 | REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

TYPICAL - LK-x

X1

NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	038.5A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	038.6A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	041.3A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	041.4A	2.5	HD100GR__	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	042.3B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	042.4B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	042.5B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	042.6B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	042.7B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	042.8B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	042.9B	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	042.5C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	042.6C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	042.9C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
25	042.10C	2.5	HD400GR__	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

=	TYPICAL
+	LK-x

IMESA ELECTRICAL ENGINEERING

DWG n° : 231298/SD/31

Item n° : PF1002983/26

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 045

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	040	ML22/484L230STLTTR	1	MULTILED 48x48 - 4 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LK-x
KA1	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA2	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA3	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA4	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA5	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA6	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA7	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
PA1	039	KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
PM1	039	KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
QA1	038	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LK-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LK-x
SA1	039	KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
U1.2	041	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LK-x
U1.3	041	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LK-x
U1.A	041	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LK-x
U2.A	042	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LK-x
U2.B	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
U2.C	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		HD400GR_	17	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LK-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LK-x

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 046

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
X1		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LK-x

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF40400013	1	AF40-40-00-13 CONTACTOR 4P 40A 100-250VAC/DC	ABB	TYPICAL LK1-40
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-40
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-40
		1SDA100162R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=40A XT2 4p	ABB	TYPICAL LK1-40
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF52400013	1	AF52-30-00-13 CONTACTOR 4P 53A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-63
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-63
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-63
		1SDA100163R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=63A XT2 4p	ABB	TYPICAL LK1-63
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF190401113	1	AF190-40-11-13 CONT 4P 190A AC3 100-250VAC/DC	ABB	TYPICAL LK2-160
		CAL1911	1	CAL19-11 CONTATTO AUSILIARIO 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
		CAL1911B	2	CAL19-11B AUXILIARY CONTACT 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
QF1	043	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL LK2-160
		1SDA100334R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=160A XT4 4p	ABB	TYPICAL LK2-160
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK2-160

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31

Item n° : PF1002983/26

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00031

SHEET 047

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 00

ITEM	Tag	A3/+08-QF1	: WATER DESALINATION PACKAGE - UCP - A3/+08-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	50-10	: Water Desalination Package & Distribution			Module	
TASK	code	C10002939	Location	Onshore Activities		User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Electrical	Form	FTR-2	Protection Relay

FTR2 - Protection relay
Record sheet

RELAY DATA

Manufacturer:	ABB	Serial N°:	EGA000354350N000	Relay type:	EKIP HI TOUCH LSIG
Auxiliary supply:	24Vdc	Location:	B200	Cubicle:	A3/+08
Switchboard:	SG-200N1				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
L	115,2A	480A		3s	1588ms
S	560A	800A		0.1s	104ms
I	1120A	1600A		INSTANT	20ms
G	32A			0.1s	

Testing & measurement instruments used

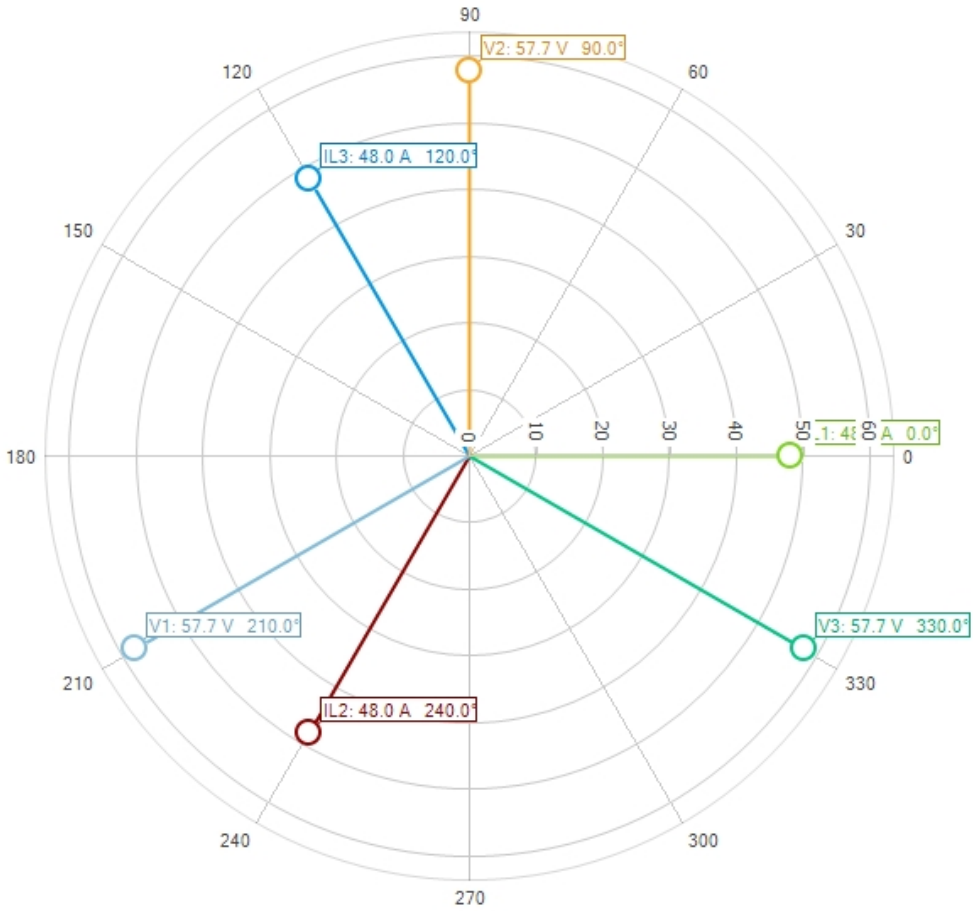
Type	Serial n°	Calibration certificate	Validity
ABB EKIP T&P	E34013804410W050		

Comments: See attachments for full tests

Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-10-01	2024-10-01	2024-10-02
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-01T12:56:55.322Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-01T14:43:29.082Z	PROVERLIS Digitaly signed by Witness waived 2024-10-02T06:34:59.773Z

Page Name	Group Name	Variable Name	Variable Value	Variable Unit
Settings A				
	Overload Protection (L - ANSI 49)			
		PU nominal current In	160	
		Status	Enabled	
		Function	t=k/i^2	
		Prealarm I1	90	% I1
		Threshold I1	0.720	In
		Time t1 std	3.00	s
		Thermal memory (TM)	Disabled	
		TM Algorithm	RMS-independent	
		TM Time	Automatic	
		TM custom time	830	s
	Time-delayed overcurrent protection (S - ANSI 50 TD/68/51)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Threshold I2 (t=k)	3.50	In
		Time t2 (t=k) IEC - UL489	0.10	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.60	In
		Set Startup th. on ProgStatusD	--------	
		Thermal memory status	Disabled	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Second time-delayed overcurrent protection (S2 - ANSI 50 TD)			
		Status	Disabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I5 (t=k)	2.00	In
		Time t5 (t=k)	0.05	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Instantaneous overcurrent protection (I - ANSI 50)			
		Status	Enabled	
		Threshold I3	7.00	In
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	1.50	In
		Set Startup th. on ProgStatusD	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Second I			
		Prot Second I	---	
		Status	Disabled	
		Threshold I31	1.50	In
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
		Second I Mode	Function Dependent	
		Function	Disabled	
		Delay On	0.00	s
		Delay Off	15.00	s
	Earth fault protection (G - ANSI 50N TD/68/51N)			
		Status	Enabled	
		Trip enable	Enabled	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Function	t=k	
		Prealarm I4	90	% I4
		Threshold I4 (t=k)	0.200	In
		Time t4 (t=k) IEC - UL489	0.10	s

		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold	0.20	In
		Set Startup th. on ProgStatusD	--------	
		Zone selectivity status	Disabled	
		Zone selectivity time	0.04	s
		Zone Selectivity Type	Logic and Hardware	
	Directional overcurrent protection (D - ANSI 67/68)			
		Status	Disabled	
		Trip enable	Disabled	
		tripOnlyForward	--------	
		tripOnlyBackward	--------	
		BlockOnStartUp	--------	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I7 FWD	2.00	In
		Time t7 FWD	0.20	s
		Threshold I7 BWD	2.00	In
		Time t7 BWD	0.20	s
		Startup enable	Disabled	
		Startup time	0.10	s
		Startup threshold FWD	2.00	In
		Startup threshold BWD	2.00	In
		Set Startup th. on ProgStatusD	--------	
		Zone Selectivity status	Disabled	
		Zone Selectivity time FWD	0.13	s
		Zone Selectivity time BWD	0.13	s
		Zone Selectivity Type	Logic and Hardware	
		Direction minimum angle	3.6	°
	Closing on short-circuit protection (MCR)			
		Status	Disabled	
		BlockOnOutOfFrequency	--------	
		BlockOnProgStatusA	--------	
		BlockOnProgStatusB	--------	
		BlockOnProgStatusC	--------	
		BlockOnProgStatusD	--------	
		Threshold I3	6.00	In
		Time t3	0.04	s
		Zone Selectivity status	Disabled	
		Zone Selectivity Type	Logic and Hardware	
	Over Temperature (T)			
		Trip enable	Disabled	



Test

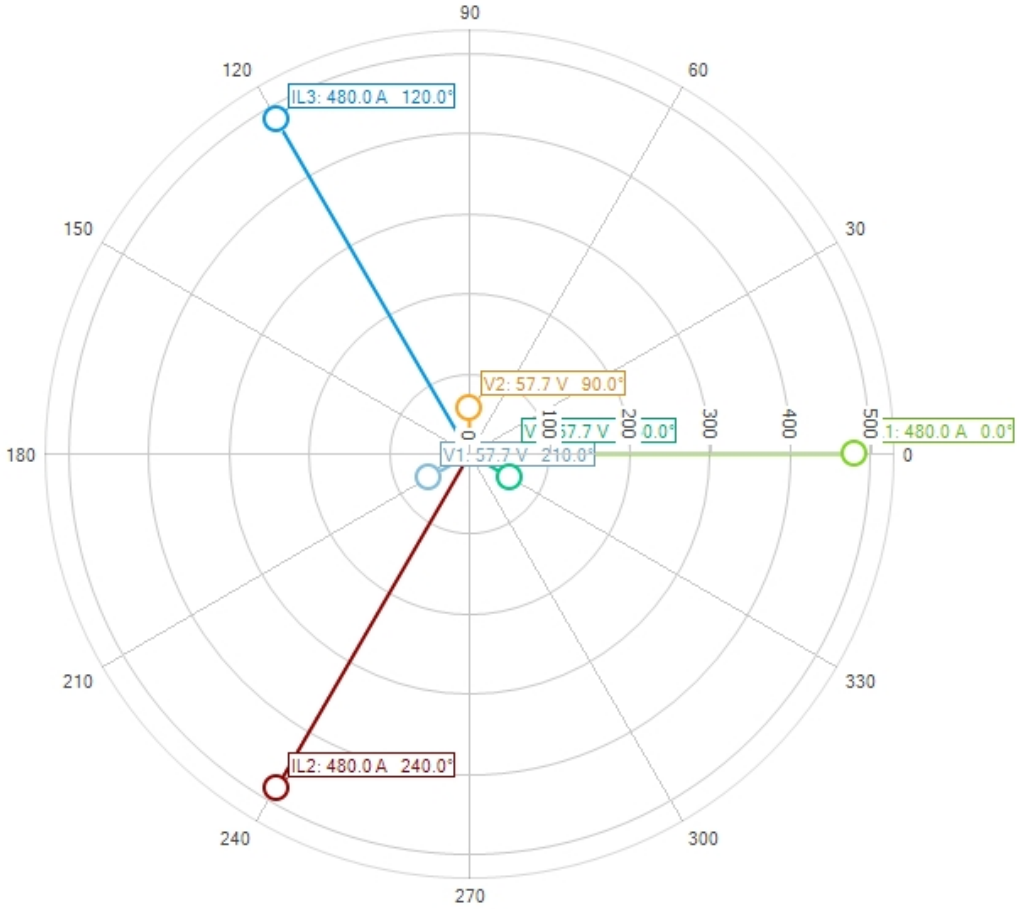
Name	Automatic test 1
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+08
Relay Serial Number	EGA000354350N000
Circuit Breaker Serial Number	CE61036996number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed without any trip in 3000 ms.



Test

Name	Automatic test 2
Session	Default session
Customer	
Location	
Operator	

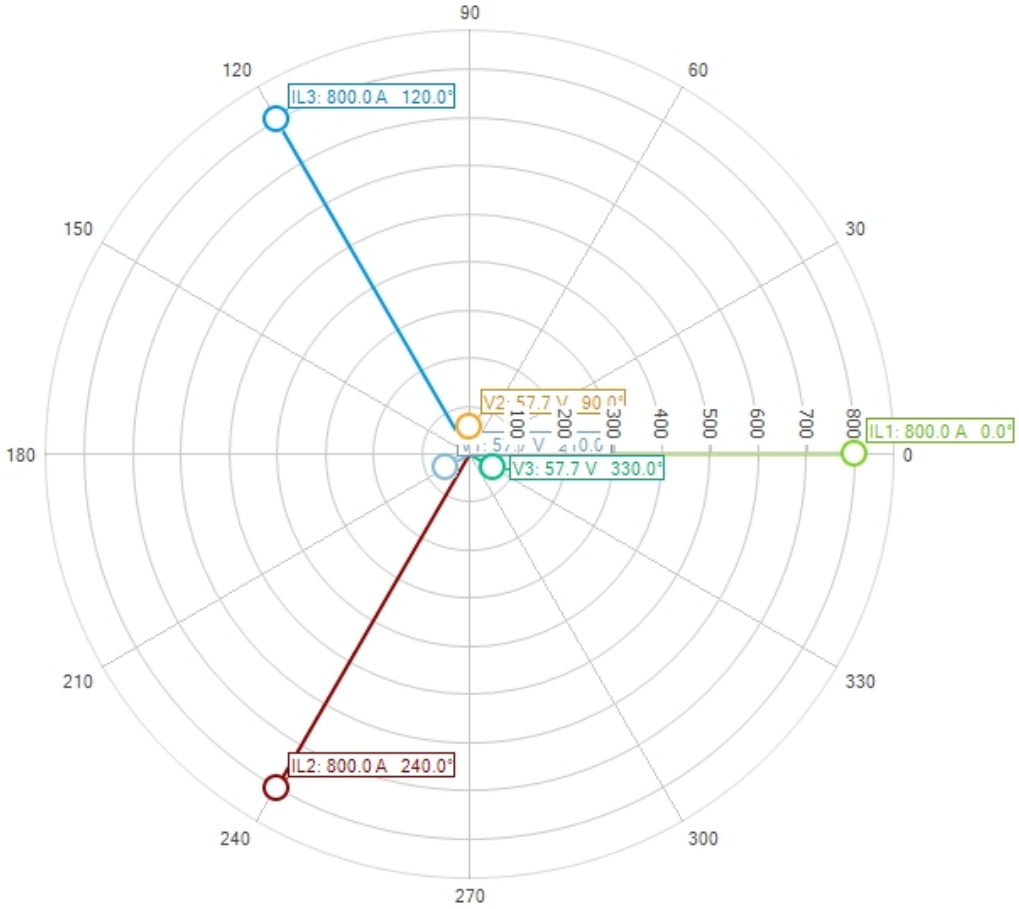
Device

Tag name	A3/+08
Relay Serial Number	EGA000354350N000
Circuit Breaker Serial Number	CE61036996number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

⚠ Test completed with trip but out of time. Protection L tripped in 1588 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 3
Session	Default session
Customer	
Location	
Operator	

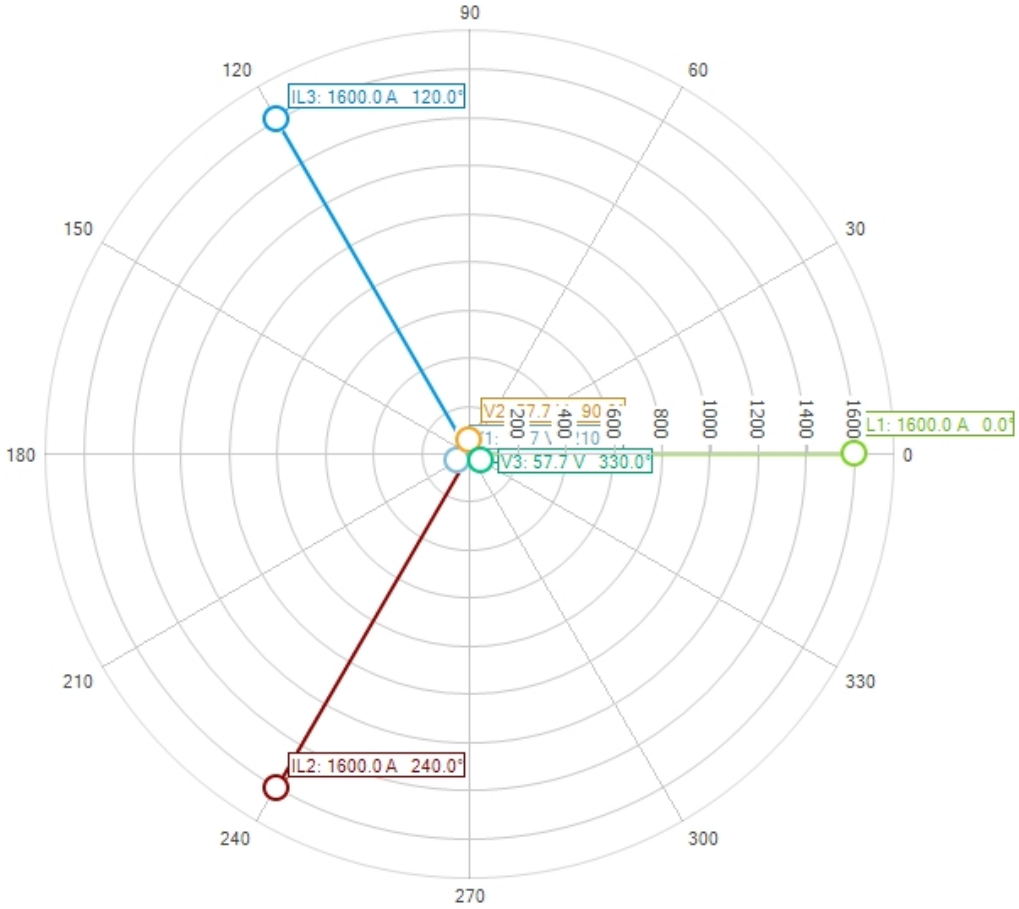
Device

Tag name	A3/+08
Relay Serial Number	EGA000354350N000
Circuit Breaker Serial Number	CE61036996number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection S tripped in 104 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 4
Session	Default session
Customer	
Location	
Operator	

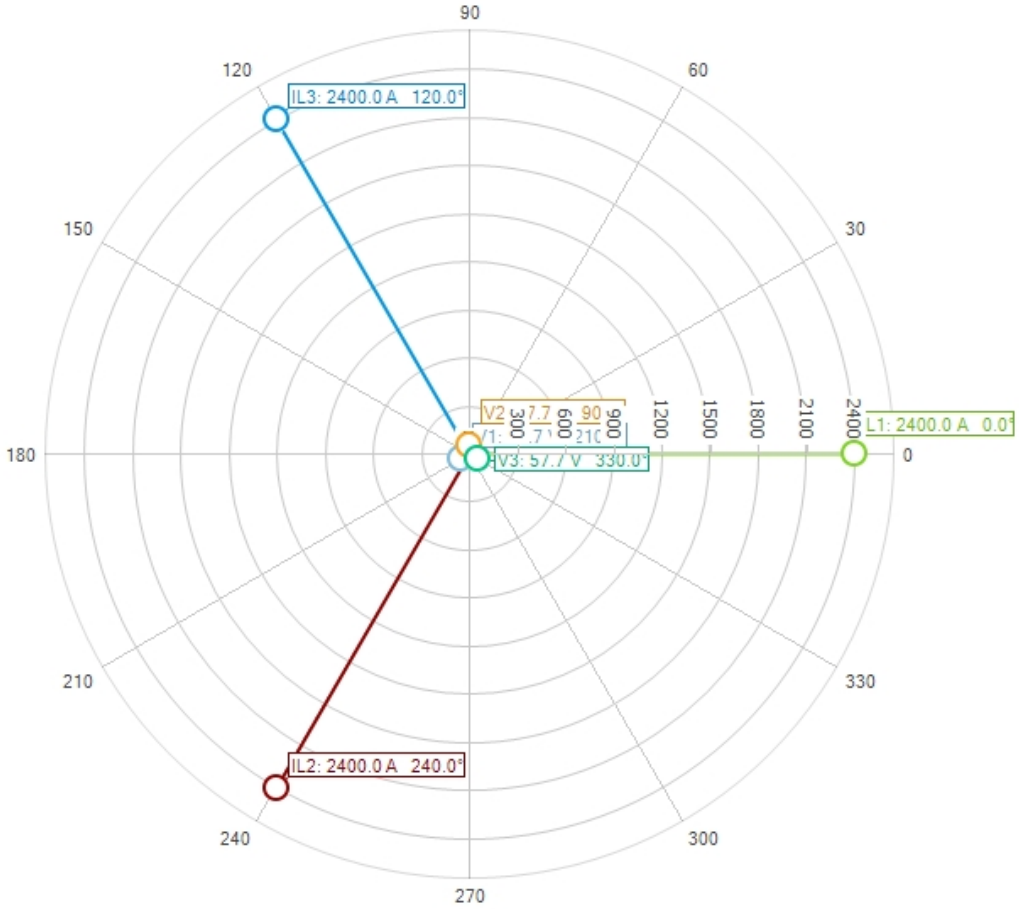
Device

Tag name	A3/+08
Relay Serial Number	EGA000354350N000
Circuit Breaker Serial Number	CE61036996number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 20 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.



Test

Name	Automatic test 5
Session	Default session
Customer	
Location	
Operator	

Device

Tag name	A3/+08
Relay Serial Number	EGA000354350N000
Circuit Breaker Serial Number	CE61036996number
	XT2/4
Device settings	In = 160 A Un = 100 V fn = 50 Hz
Protection Settings	Protection = L Curve type = t=k/i^2 Threshold = 0.720 In Time = 3.00 s Protection = S Curve type = t=k Threshold = 3.50 In Time = 0.10 s Protection = I Threshold = 7.00 In Protection = G Curve type = t=k Threshold = 0.200 In Time = 0.10 s
Preconditions	All preconditions satisfied.

Test result

Test completed with trip. Protection I tripped in 25 ms.
Trip time must be between 0 ms and 1000 ms

Trip time must be between 0 ms and 1000 ms.

ITEM	Tag	A3/+08-QF1	: WATER DESALINATION PACKAGE - UCP - A3/+08-QF1	Dwg	1723002197-EL-DG-00011		
	S/Sys	50-10	: Water Desalination Package & Distribution	Module			
TASK	code	C10002940	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity	FTS	Discipline	Electrical	Form	FTR-6		Electrical IO

FTR 6 - Electrical I/O check record sheet

Equipment Tag:	JB-500E8 WATER PACKAGE	Instrument Type / Serial N° :	FLUKE 175 / 17140769
Cubicle N°:	A3/+08	Calibration certificate date:	7715/24 - 10/07/2025

Link Type:	●	Hardwired	Communication	(strike through unapplicable type)
I/O Type:	●	Digital	Analogic	(strike through unapplicable type)

DIGITAL

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Text Labelling Display Satisfactory (Y/N)	Blinking/Static Display Satisfactory (Y/N)	Color Coding Satisfactory (Y/N)	Status Check			Time Stamping Satisfactory (Y/N)	Refresh Time (if >1s)	Appearing in all applicable display (Y/N)
									Event (Y/N)	Alarm (Y/N)	Fault (Y/N)			
1	C.B. - CLOSED & INSERTED	HW	DI	A3/+08 - KA1/11-14	A3/+08 - X1/9-10	NA	NA	NA	Y	NA	NA	NA	NA	NA
2	C.B. - OPEN OR DISCONNECTED	HW	DI	A3/+08 - KA1/11-12	A3/+08 - X1/9-11	NA	NA	NA	Y	NA	NA	NA	NA	NA
3	C.B. - TRIPPED	HW	DI	A3/+08 - KA4/21-24	A3/+08 - X1/9-12	NA	NA	NA	NA	NA	Y	NA	NA	NA
4	INTERNAL FAULT	HW	DI	A3/+08 - QA1/11-14	A3/+08 - X1/9-14	NA	NA	NA	NA	NA	Y	NA	NA	NA
5	FEEDER AVAILABLE	HW	DI	A3/+08 - KA2/11-14	A3/+08 - X1/9-13	NA	NA	NA	Y	NA	NA	NA	NA	NA
6	USER ON LOCAL	HW	DI	A3/+08 - SA1/21-22	A3/+08 - X1/15-19	NA	NA	NA	Y	NA	NA	NA	NA	NA
7	DRAWER ON TEST	HW	DI	A3/+08 - KA5/11-14	A3/+08 - X1/9-11	NA	NA	NA	Y	NA	NA	NA	NA	NA
8														

ANALOGIC

Item	Signal description	Link Type (Hardwired/ Communication)	I/O Type (Digital/Analogic)	Point of Origin (From)	Point of Receival (to)	Min value sent	Min value received	Max value sent	Max value received	Intermediate value sent	Intermediate value received	Out of scale test (OK, Not OK)	Refresh time (if >2s)	Appearing in all applicable display (Y/N)
1														
2														
3														

Comments: The test of the cubicle was carried out on a test bench.

Page 1/1	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-10-03	2024-10-03	2024-10-03
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-03T10:26:28.040Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-03T13:55:06.777Z	PROVERLIS Digitaly signed by Witness waived 2024-10-03T14:30:10.619Z

ITEM	Tag	A3/+08-QF1	: WATER DESALINATION PACKAGE - UCP - A3/+08-QF1			Dwg	1723002197-EL-DG-00011
	S/Sys	50-10	: Water Desalination Package & Distribution			Module	
TASK	code	C10003021		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	COMM	Activity FTS	Discipline	Electrical	Form	FTR-5 Remote Signalling

FTR5 - Remote signalling
Record sheet

DATA

Switchboard:	SG-200N1	Cubicle N°:	A3/+08

FUNCTION TEST

	Order/Inputs				Status/Output											
	Start order		Stop order		Run		Fault		Stop Signalisation		Available/Ready to start		TRIP		CB OPEN/CLOSED	
UCP																
ECS																
SSS																
PSS																
PCS	●	●	●	●	●	●	●	●			●	●	●	●	●	●
Control Station																
Control Panel																
HVAC Panel																
MCC	●	●	●	●	●	●							●	●	●	●

Column 1 (To check) to be filled during commissioning preparation stage - black if the check is asked
Column 2 (Checked) to be filled black if check is Ok

Comments: During the test, we tested all the Analog Input with success: Current "L1",Current "L2",Current "L3", Voltage "L1-L2", Voltage "L2-L3", Voltage "L1-L3", Frequency, Apparent Power, Real Power, Reactive Power and Power Factor.

	Performed by	☐ WITNESS ☑ REVIEW	☑ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CW
Name	Davide Zucconelli	Kristian Castellani	David Musgrove
Date	2025-04-29	2025-04-29	2025-04-29
Signature	PROVERLIS Digitaly signed by Davide Zucconelli 2025-04-29T07:56:55.427Z	PROVERLIS Digitaly signed by Kristian Castellani 2025-04-29T14:09:31.416Z	PROVERLIS Digitaly signed by David Musgrove 2025-04-29T15:43:09.656Z

ITEM	Tag	UP-200F3-QF36	: WATER DESALINATION PACKAGE - UCP			Dwg	1724000372-EL-DG-00009
	S/Sys	50-10	: Water Desalination Package & Distribution			Module	
TASK	code	C10004575		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Electrical	Form	FTR-2 Protection Relay

FTR2 - Protection relay
Record sheet

RELAY DATA

Manufacturer:	ABB	Serial N°:	NA	Relay type:	TYPE A
Auxiliary supply:	24 Vdc	Location:	B300	Cubicle:	NA
Switchboard:	UPS-200F3				

Current transformers

Tag	Number of	Ratio	Location

Voltage transformers

Tag	Number of	Ratio	Location

Test result (refer to manufacturer's procedure)

ANSI function	Setting	Injection	Trip value	Time delay	
				Setting	Trip value
64	300mA	300mA	270mA	FIXED	36.2ms

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025

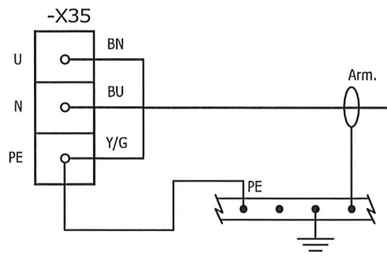
Comments:

Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-11-29	2024-12-05	2024-12-07
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-29T10:30:10.576Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-12-05T09:34:22.087Z	PROVERLIS Digitaly signed by Witness waived 2024-12-07T10:37:08.487Z

Section 4.2 Electrical
“As-Commissioned” interconnection diagrams

FROM	TO

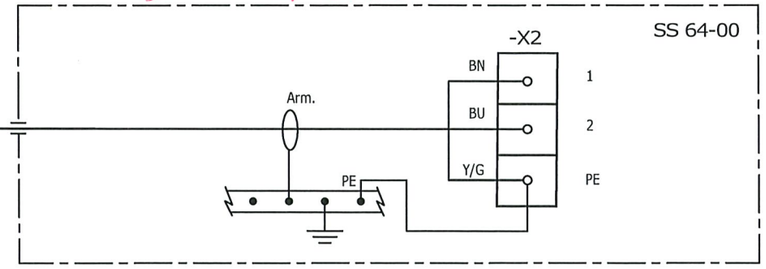
DESCRIPTION: AC UPS - PAS DB
TAG NUMBER: ~~DP-200F3~~ UP-200 F3 BY PASS



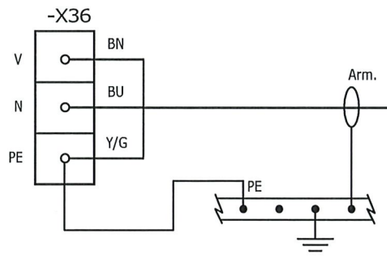
84312-CEL
3G2.5 mm²

MARCO MORETTO
19/3/25

DESCRIPTION: UCP - N2 PACKAGE
TAG NUMBER: ~~CP-640E1~~ 64-LP001

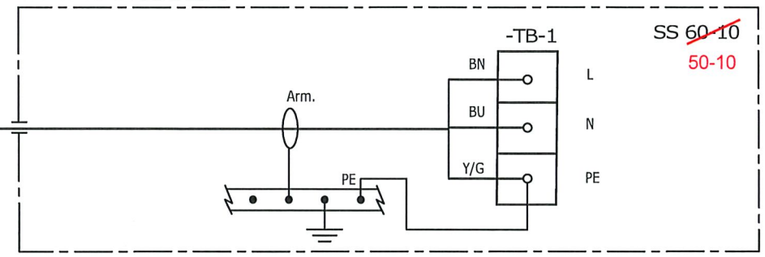


NO MARK UP MARCO MORETTO
21/3/25

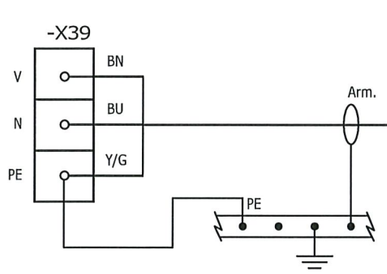


84313-CEL
3G2.5 mm²

DESCRIPTION: UCP - WATER PACKAGE
TAG NUMBER: JB-500F8

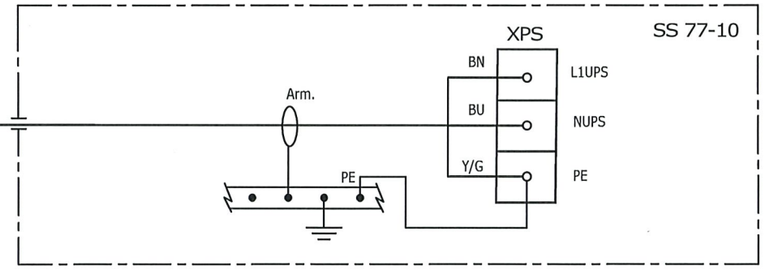


NO MARK UP MARCO MORETTO
21/3/25

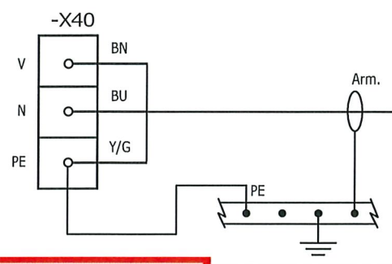


84314-CEL
3G2.5 mm²

DESCRIPTION: UCP - HVAC HV ROOM
TAG NUMBER: B100-HSB-001

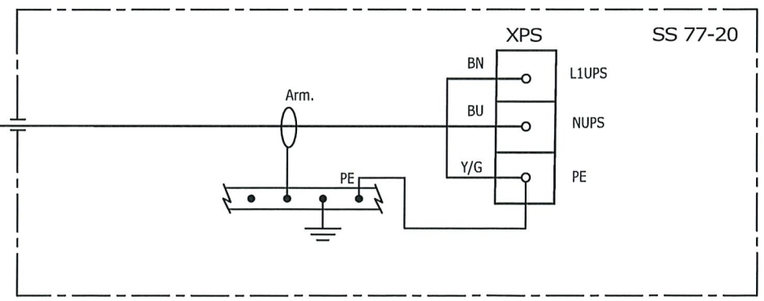


NO MARK UP MARCO MORETTO
21/3/25



84315-CEL
3G2.5 mm²

DESCRIPTION: UCP - HVAC LV ROOM
TAG NUMBER: B200-HSB-001



AS COMMISSIONED: MATTIA GIRTZ

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DG-20149**

REV.:	DATE:	SIGNATURE:
2_F	09/01/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	19/11/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	16/10/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	SAI	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
AC UPS – PAS DB DP-200F3

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : 1:X

A3	DRAWING NO.	SHEET	REV.
	123A90-DDL-EL-DG-20149	041	02

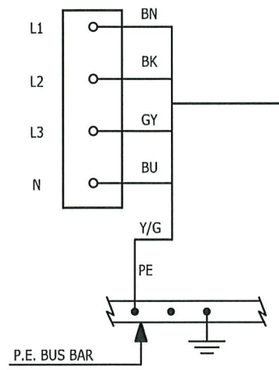
F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DG-20149 Rev. 02

FROM	TO

DESCRIPTION: LV SWITCHGEAR
TAG NUMBER: SG-200N1

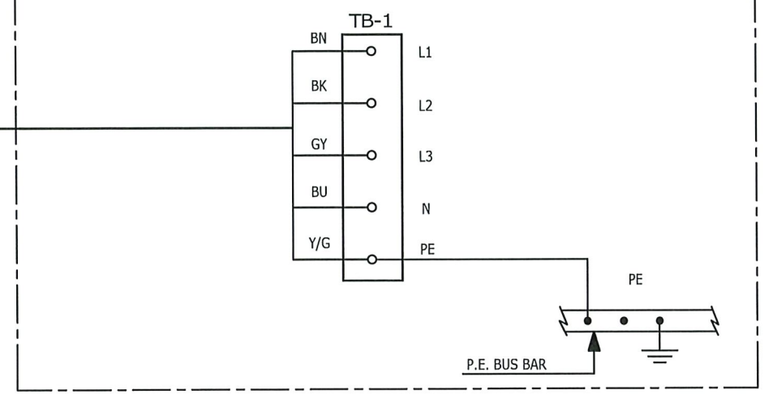
COLUMN/CUBIC.:A3/+08



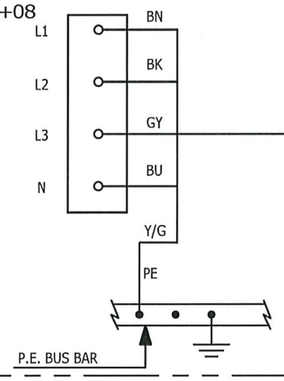
83016-CEL
5G70 mm²

NO MARK UP
MARCO MORETTO
21/3/25

DESCRIPTION: WATER PACKAGE
TAG NUMBER: JB-500E8



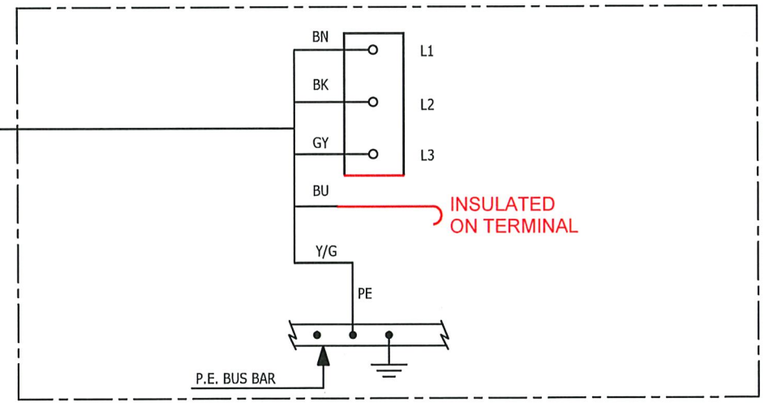
COLUMN/CUBIC.:A4/+08



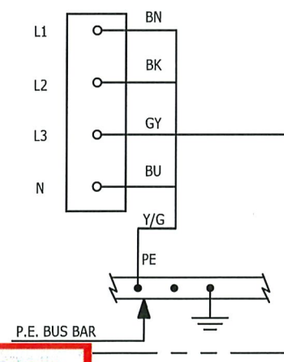
83017-CEL-1
5G70 mm²

NO MARK UP
MARCO MORETTO
20/3/25

DESCRIPTION: INSTRUMENT AIR PACKAGE
TAG NUMBER: K-63001-A



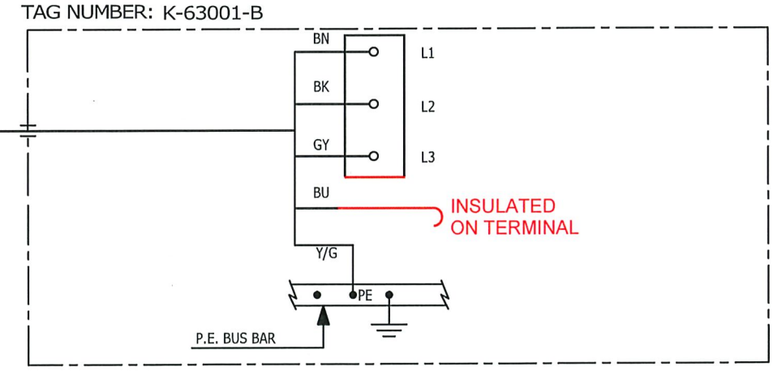
COLUMN/CUBIC.:A5/+08



83017-CEL-2
5G70 mm²

NO MARK UP
MARCO MORETTO
20/3/25

DESCRIPTION: INSTRUMENT AIR PACKAGE
TAG NUMBER: K-63001-B



AS COMMISSIONED: MATTIA GIRTI

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DG-20149

REV.:	DATE:	SIGNATURE:
2_F	09/01/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	19/11/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	16/10/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	SAI	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
LV SWITCHGEAR SG-200N1

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : 1:X

A3

DRAWING NO. 123A90-DDL-EL-DG-20149

SHEET 023

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DG-20149 Rev. 02

Section 4.3 Instrumentation functional test sheets index

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & discipline : I

Instrumental	50-10 Water Desalination Package & Distribution						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
50-XA-003	A-500003 (A-50000) Sea water treatment PKG F&G LCP fault	ONSHORE	C10003759	FJ01D	100	2025-02-11	RFO 2
50-XS-001	SHUT-DOWN A-500003 (A50000) Sea water treatment PKG	ONSHORE	C10003760	FJ01D	100	2025-02-11	RFO 2
A-50000	Water Treatment Package	ONSHORE	C10004885	FJ05	100	2025-02-14	RFO 2

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	50-XA-003	: A-500003 (A-50000) Sea water treatment PKG F&G LCP fault			Dwg	123A90-DDL-PR-PID-80022
	S/Sys	50-10	: Water Desalination Package & Distribution			Module	
TASK	code	C10003759		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	PRE-COMM	Activity FTS	Discipline	Instrumental	Form	FJ01D Digital Loop

LOOP DATA

Loop TAG	50-XA-003			TSLD	123A90-DDL-IN-DG-40014 rev. 1_A		
IO Type	Input	Yes	Output	No	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-SIS-001	Terminal	04A/04B	Slot	01	Rack	03	Chanel	04

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	No	Alarm/trip	Yes	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control			Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No	NA	Yes	Yes	OK	OK
7	Loop not energized	Yes	NA	Yes	Yes	OK	OK
8	Checking of line monitoring	NA	NA	NA	NA	NA	NA
9	Checking of Maintenance Inhibition	NA	NA	NA	NA	NA	NA
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	OK
14	Any defect is recorded for punch list issuance	NA

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CW
Name	Marco Di Maria	Giandonato Delmissier	John Mackillop
Date	2025-02-10	2025-02-10	2025-02-11

PROVERLIS Digitaly signed by Marco Di Maria 2025-02-10T12:58:16.510Z

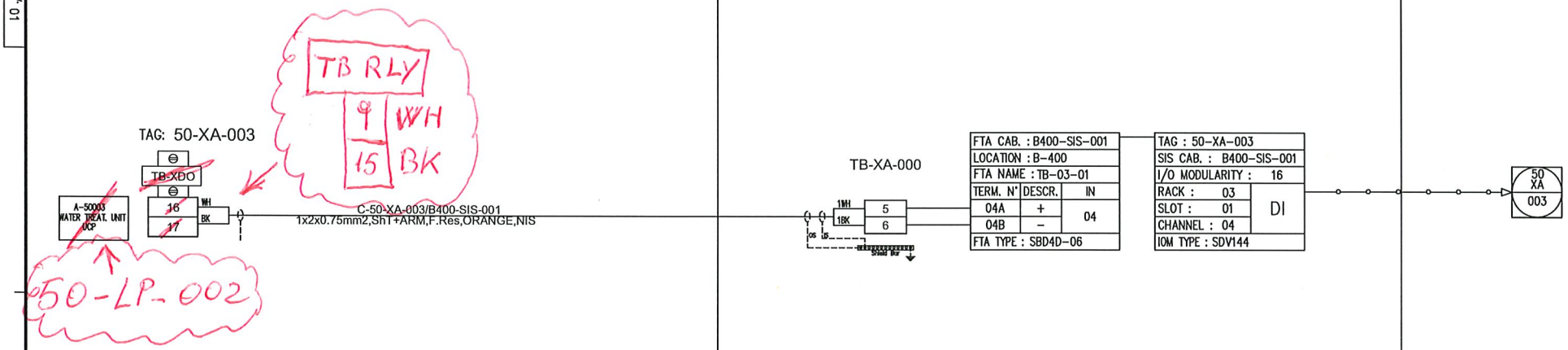
PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-10T15:09:55.924Z

PROVERLIS Digitaly signed by John Mackillop 2025-02-11T05:30:01.349Z

Signature			

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	SAFETY INSTRUMENTED SYSTEM	OPERATOR CONSOLE



04/02/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A DATE: 20/12/24 SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
50-XA-003
A-500003 SEA WATER TREATMENT PKG F&G LCP FAULT

CONTRACT NO./TITLE CONTRACT_NO.			SCALE 1:1
DRAWN: VBA	CHECKED: LCA	APPROVED: DLO	DATE 23/10/2024

A3	DRAWING NO. 123A90-DDL-IN-DG-40014	SHEET 130	REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01

ROSETTI MARINO — PROVERLIS — CROSSWIND

ITEM	Tag	50-XS-001	: SHUT-DOWN A-500003 (A50000) Sea water treatment PKG	Dwg	123A90-DDL-PR-PID-80022		
	S/Sys	50-10	: Water Desalination Package & Distribution	Module			
TASK	code	C10003760	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	PRE-COMM	Activity FTS	Discipline	Instrumental	Form FJ01D	Digital Loop

LOOP DATA

Loop TAG	50-XS-001			TSLD	123A90-DDL-IN-DG-40014 rev. 1_A		
IO Type	Input	No	Output Yes	Energy by transmitter	No	Energy by system	Yes
Marshalling	B400-SIS-001	Terminal	05A/05B	Slot	05	Rack 02	Chanel 05

LOOP TEST

1	Check earth isolation of the loop.					OK
2	Connect loop to terminal					OK
3	Energise Loop (close loop) and record status	Normal	Yes	Alarm/trip	No	OK
4	De-Energise Loop (open loop) and record status	Normal	No	Alarm/trip	Yes	OK
5	Record Fail Safe position	Open	NA	Closed	NA	NA

LOOP SERVICE

		Action	Alarm / Control			Display	
		Trip	GA	DCS	SOE	DCS	
6	Loop energized	No	NA	Yes	Yes	OK	OK
7	Loop not energized	Yes	NA	Yes	Yes	OK	OK
8	Checking of line monitoring	NA	NA	NA	NA	NA	NA
9	Checking of Maintenance Inhibition	NA	NA	NA	NA	NA	NA
10	Associated safety Level / bar						NA
11	Associated outputs						NA

LOOP DOCUMENTATION

12	Loop diagram is marked up and attached to this test sheet	OK
13	Cause and effect chart is highlighted accordingly	OK
14	Any defect is recorded for punch list issuance	NA

TESTING & MEASUREMENT INSTRUMENT USED

Type	Serial N.	Calibration Certificate	Validity
MULTIMETER FLUKE	AW1/018 17140769	7715/24	10/07/2025

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CW
Name	Marco Di Maria	Giandonato Delmissier	John Mackillop
Date	2025-02-10	2025-02-10	2025-02-11

PROVERLIS Digitaly signed by Marco Di Maria 2025-02-10T12:59:09.412Z

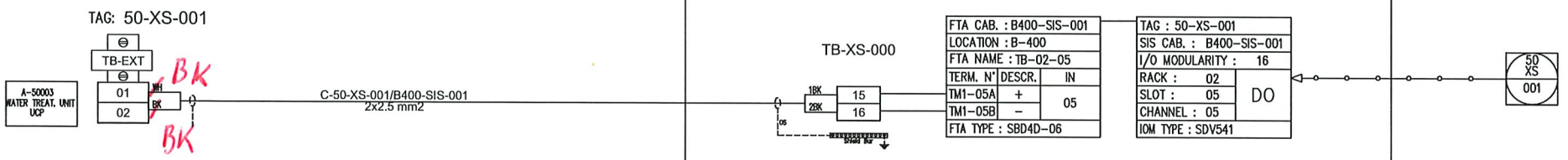
PROVERLIS Digitaly signed by Giandonato Delmissier 2025-02-10T15:10:15.017Z

PROVERLIS Digitaly signed by John Mackillop 2025-02-11T05:30:11.267Z

Signature			

DRAWING NO. 123A90-DDL-IN-DG-40014 REV. 01

FIELD	ITER – B400	CENTRAL CONTROL ROOM
	SAFETY INSTRUMENTED SYSTEM	OPERATOR CONSOLE



04/02/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/12/2024	VBA	LCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	23/10/2024	VBA	LCA	DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-IN-DG-40014
REV: 1_A | DATE: 20/12/24 | SIGNATURE: C.Pilato
ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

TITLE : INSTRUMENT LOOP DIAGRAM
50-XS-001
SHUT-DOWN A-500003 SEA WATER TREATMENT PKG

CONTRACT NO./TITLE CONTRACT_NO. | SCALE 1:1

DRAWN: VBA | CHECKED: LCA | APPROVED: DLO | DATE 23/10/2024

A3 | DRAWING NO. 123A90-DDL-IN-DG-40014 | SHEET 145 | REV. 01

File Name : 123A90-DDL-IN-DG-40014_REV.01

ITEM	Tag	A-50000	: Water Treatment Package		Dwg	123A90-DDL-PR-PID-80022	
	S/Sys	50-10	: Water Desalination Package & Distribution		Module	LD	
TASK	code	C10004885	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	COMM	Activity FTS	Discipline Instrumental	Form	FJ05	Serial Communication Test

SERIAL COMMUNICATION TEST

Reference document number: 1724000448-IN-LIS-00019

Associated subsystems: 50-10

Completion date: 12/02/2025

Comments/Remarks:

	Performed by	☐ WITNESS ☐ REVIEW	☒ WITNESS ☐ REVIEW
Company	RM COMM		CW
Name	Fabio Sirigu		John Mackillop
Date	2025-02-14		2025-02-14
Signature	PROVERLIS Digitaly signed by Fabio Sirigu 2025-02-14T10:52:49.705Z		PROVERLIS Digitaly signed by John Mackillop 2025-02-14T13:58:17.871Z

CROSSWIND

HOLLANDSE KUST NOORD WIND PARK Project
Contract No. CW-I-WP4-2023-05

ROSETTI MARINO

Sh. 6 of 12
Date: #RIF!
Rev. #

Document Title: Modbus/TCP Table

ID	STATUS	P&ID	LOOP NAME	FIELD TAG/DEVICE	CONTROLLER TAG	SERVICE	ICSS I/O TYPE	TYPE	FORMAT	MIN/0 STATE	MAX/1 STATE	EU	ALARM	ALARM TRESHOLD	ALARM PRIORITY	IP ADDRESS	MODBUS FUNCTION	MODBUS REGISTER	REGISTER BIT	NOTE	
1	ACTIVE	1724000448-PR-PID-00013 / 001	50-A-020	50-AT-020A	_50AT020A	H2 gas detection in container	SAI	ANALOG	FLOATING	0	100	% LEL	NO	-	-		3	40001	-		
2	ACTIVE	1724000448-PR-PID-00013 / 001	50-A-020	50-AT-020B	_50AT020B	H2 gas detection in container	SAI	ANALOG	FLOATING	0	100	% LEL	NO	-	-		3	40003	-		SAI
3	ACTIVE	1724000448-PR-PID-00013 / 001	50-A-020	50-AT-020C	_50AT020C	H2 gas detection in container	SAI	ANALOG	FLOATING	0	100	% LEL	NO	-	-		3	40005	-		SAI
4	ACTIVE	1724000448-PR-PID-00013 / 002	50-A-023	50-AT-023	_50AT023	Filtered seawater conductivity to P-50003A/B	SAI	ANALOG	FLOATING	0	80000	uS/cm	NO	-	-		3	40007	-		SAI
5	ACTIVE	1724000448-PR-PID-00013 / 003	50-A-024	50-AT-024	_50AT024	Fresh water conductivity from A-50007A/B	SAI	ANALOG	FLOATING	0	1000	uS/cm	NO	-	-		3	40009	-		SAI
6	ACTIVE	1724000448-PR-PID-00013 / 004	50-A-026	50-AT-026	_50AT026	Fresh water outlet total hardness	SAI	ANALOG	FLOATING	0	25	ppm CaCO3	NO	-	-		3	40011	-		SAI
7	ACTIVE	1724000448-PR-PID-00013 / 004	50-A-027	50-AT-027	_50AT027	Fresh water outlet pH	SAI	ANALOG	FLOATING	0	14	pH	NO	-	-		3	40013	-		SAI
8	ACTIVE	1724000448-PR-PID-00013 / 001	50-F-020	50-FT-020	_50FT020	Seawater flow to S-50001	SAI	ANALOG	FLOATING	0	8	m3/h	NO	-	-		3	40015	-		SAI
9	ACTIVE	1724000448-PR-PID-00013 / 002	50-F-022	50-FT-022	_50FT022	Filtered seawater flow from P-50003A	SAI	ANALOG	FLOATING	0	4	m3/h	NO	-	-		3	40019	-		SAI
10	ACTIVE	1724000448-PR-PID-00013 / 002	50-F-023	50-FT-023	_50FT023	Filtered seawater flow from P-50003B	SAI	ANALOG	FLOATING	0	4	m3/h	NO	-	-		3	40021	-		SAI
11	ACTIVE	1724000448-PR-PID-00013 / 003	50-F-024	50-FT-024	_50FT024	Fresh water flow from A-50007A/B	SAI	ANALOG	FLOATING	0	2	m3/h	NO	-	-		3	40023	-		SAI
12	ACTIVE	1724000448-PR-PID-00013 / 004	50-F-027	50-FT-026	_50FT026	Fresh water outlet flow	SAI	ANALOG	FLOATING	0	4	m3/h	NO	-	-		3	40017	-		SAI
13	ACTIVE	1724000448-PR-PID-00013 / 001	50-L-020	50-LT-020	_50LT020	T-50006 level	SAI	ANALOG	FLOATING	0	100	%	NO	-	-		3	40025	-		SAI
14	ACTIVE	1724000448-PR-PID-00013 / 004	50-L-021	50-LT-021	_50LT021	T-50008 level	SAI	ANALOG	FLOATING	0	100	%	NO	-	-		3	40027	-		SAI
15	ACTIVE	1724000448-PR-PID-00013 / 005	50-L-022	50-LT-022	_50LT022	T-50002 level	SAI	ANALOG	FLOATING	0	100	%	NO	-	-		3	40029	-		SAI
16	ACTIVE	1724000448-PR-PID-00013 / 005	50-L-023	50-LT-023	_50LT023	T-50003 level	SAI	ANALOG	FLOATING	0	100	%	NO	-	-		3	40031	-		SAI
17	ACTIVE	1724000448-PR-PID-00013 / 006	50-L-024	50-LT-024	_50LT024	T-50004 level	SAI	ANALOG	FLOATING	0	100	%	NO	-	-		3	40033	-		
18	CHANGED	1724000448-PR-PID-00013 / 001	50-P-052	50-PDT-052	_50PDT052	dP across S-50001	SAI	ANALOG	FLOATING	0	1.5	bar	NO	-	-		3	40035	-		
19	ACTIVE	1724000448-PR-PID-00013 / 001	50-P-020	50-PT-020	_50PT020	Seawater inlet pressure	SAI	ANALOG	FLOATING	0	6	bar	NO	-	-		3	40037	-		SAI
20	ACTIVE	1724000448-PR-PID-00013 / 002	50-P-025	50-PT-025	_50PT025	Filtered seawater pressure from P-50003A	SAI	ANALOG	FLOATING	0	6	bar	NO	-	-		3	40039	-		SAI
21	ACTIVE	1724000448-PR-PID-00013 / 002	50-P-026	50-PT-026	_50PT026	Filtered seawater pressure to P-50004A	SAI	ANALOG	FLOATING	0	6	bar	NO	-	-		3	40041	-		SAI
22	ACTIVE	1724000448-PR-PID-00013 / 002	50-P-027	50-PT-027	_50PT027	Filtered seawater pressure from P-50003B	SAI	ANALOG	FLOATING	0	6	bar	NO	-	-		3	40043	-		SAI
23	ACTIVE	1724000448-PR-PID-00013 / 002	50-P-028	50-PT-028	_50PT028	Filtered seawater pressure to P-50004B	SAI	ANALOG	FLOATING	0	6	bar	NO	-	-		3	40045	-		SAI
24	ACTIVE	1724000448-PR-PID-00013 / 003	50-P-030	50-PT-030	_50PT030	Filtered seawater pressure from P-50004A	SAI	ANALOG	FLOATING	0	100	bar	NO	-	-		3	40047	-		SAI
25	ACTIVE	1724000448-PR-PID-00013 / 003	50-P-032	50-PT-032	_50PT032	Filtered seawater pressure from P-50004B	SAI	ANALOG	FLOATING	0	100	bar	NO	-	-		3	40049	-		SAI
26	ACTIVE	1724000448-PR-PID-00013 / 004	50-P-041	50-PT-041	_50PT041	Fresh water outlet pressure	SAI	ANALOG	FLOATING	0	6	bar	NO	-	-		3	40051	-		SAI
27	ACTIVE	1724000448-PR-PID-00013 / 004	50-P-047	50-PT-047	_50PT047	Softening filter inlet pressure	SAI	ANALOG	FLOATING	0	6	bar	NO	-	-		3	40053	-		SAI
28	ACTIVE	1724000448-PR-PID-00013 / 003	50-P-50004A	50-SI-P50004A	_50SIP50004A	HP pump speed feedback	SAI	ANALOG	FLOATING	0	100	%	NO	-	-		3	40055	-		SAI
29	ACTIVE	1724000448-PR-PID-00013 / 003	50-P-50004B	50-SI-P50004B	_50SIP50004B	HP pump speed feedback	SAI	ANALOG	FLOATING	0	100	%	NO	-	-		3	40057	-		SAI
30	ACTIVE	1724000448-PR-PID-00013 / 001	50-T-021	50-TT-021	_50TT021	Seawater temperature from H-50001	SAI	ANALOG	FLOATING	0	50	degC	NO	-	-		3	40059	-		SAI
31	ACTIVE	1724000448-PR-PID-00013 / 001	50-T-022	50-TT-022	_50TT022	Seawater temperature from H-50001	SAI	ANALOG	FLOATING	0	50	degC	NO	-	-		3	40061	-		SAI
32	ACTIVE	1724000448-PR-PID-00013 / 001	50-T-023	50-TT-023	_50TT023	Ambient air temperature inside container	SAI	ANALOG	FLOATING	0	50	degC	NO	-	-		3	40063	-		SAI
33	ACTIVE	1724000448-PR-PID-00013 / 004	50-T-024	50-TT-024	_50TT024	Fresh water outlet temperature	SAI	ANALOG	FLOATING	0	50	degC	NO	-	-		3	40065	-		SAI
18	ADDED		50-P-024	50-PDT-024	_50PDT024	dP across S-50002A - S-50003A	SAI	ANALOG	FLOATING	0	2.5	bar	NO	-	-		3	40067	-		SAI
18	ADDED		50-P-029	50-PDT-029	_50PDT029	dP across S-50002B - S-50003B	SAI	ANALOG	FLOATING	0	2.5	bar	NO	-	-		3	40069	-		SAI
18	ADDED		50-P-049	50-PDT-049	_50PDT049	dP across S-50004 - S-50010	SAI	ANALOG	FLOATING	0	1	bar	NO	-	-		3	40071	-		SAI
34	ACTIVE	1724000448-PR-PID-00013 / 002	50-A-023	50-AT-023	_50AT023_H	Filtered seawater conductivity to P-50003A/B high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	uS/cm	YES	6300	2		3	40101	0		
35	ACTIVE	1724000448-PR-PID-00013 / 003	50-A-024	50-AT-024	_50AT024_H	Fresh water conductivity from A-50007A/B high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	uS/cm	YES	670	2		3	40101	1		
36	ACTIVE	1724000448-PR-PID-00013 / 003	50-A-024	50-AT-024	_50AT024_HH	Fresh water conductivity from A-50007A/B very high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	uS/cm	YES	750	1		3	40101	2		
37	ACTIVE	1724000448-PR-PID-00013 / 004	50-A-026	50-AT-026	_50AT026_H	Fresh water outlet total hardness high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	ppm CaCO3	YES	8	2		3	40101	3		
38	ACTIVE	1724000448-PR-PID-00013 / 004	50-A-026	50-AT-026	_50AT026_HH	Fresh water outlet total hardness very high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	ppm CaCO3	YES	9	1		3	40101	4		
39	ACTIVE	1724000448-PR-PID-00013 / 004	50-A-027	50-AT-027	_50AT027_LL	Fresh water outlet pH very low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	pH	YES	6,9	1		3	40101	5		
40	ACTIVE	1724000448-PR-PID-00013 / 004	50-A-027	50-AT-027	_50AT027_L	Fresh water outlet pH low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	pH	YES	7,1	2		3	40101	6		
41	ACTIVE	1724000448-PR-PID-00013 / 004	50-A-027	50-AT-027	_50AT027_H	Fresh water outlet pH high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	pH	YES	7,8	2		3	40101	7		
42	ACTIVE	1724000448-PR-PID-00013 / 004	50-A-027	50-AT-027	_50AT027_HH	Fresh water outlet pH very high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	pH	YES	8	1		3	40101	8		
43	ACTIVE	1724000448-PR-PID-00013 / 001	50-F-020	50-FT-020	_50FT020_L	Seawater flow to S-50001 low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	m3/h	YES	4	2		3	40101	9		
44	ACTIVE	1724000448-PR-PID-00013 / 001	50-F-020	50-FT-020	_50FT020_H	Seawater flow to S-50001 high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	m3/h	YES	6	2		3	40101	10		
45	ACTIVE	1724000448-PR-PID-00013 / 002	50-F-022	50-FT-022	_50FT022_L	Filtered seawater flow from P-50003A low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	m3/h	YES	1,5	2		3	40101	11		
46	ACTIVE	1724000448-PR-PID-00013 / 002	50-F-022	50-FT-022	_50FT022_H	Filtered seawater flow from P-50003A high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	m3/h	YES	2,5	2		3	40101	12		
47	ACTIVE	1724000448-PR-PID-00013 / 002	50-F-023	50-FT-023	_50FT023_L	Filtered seawater flow from P-50003B low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	m3/h	YES	1,5	2		3	40101	13		
48	ACTIVE	1724000448-PR-PID-00013 / 002	50-F-023	50-FT-023	_50FT023_H	Filtered seawater flow from P-50003B high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	m3/h	YES	2,5	2		3	40101	14		
49	ACTIVE	1724000448-PR-PID-00013 / 003	50-F-024	50-FT-024	_50FT024_L	Fresh water flow from A-50007A/B low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	m3/h	YES	0,5	2		3	40101	15		
50	ACTIVE	1724000448-PR-PID-00013 / 004	50-F-027	50-FT-026	_50FT026_L	Fresh water outlet flow low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	m3/h	YES	0,5	2		3	40102	0		
51	ACTIVE	1724000448-PR-PID-00013 / 001	50-L-020	50-LT-020	_50LT020_LL	T-50006 level very low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	%	YES	10	1		3	40102	1		
52	ACTIVE	1724000448-PR-PID-00013 / 001	50-L-020	50-LT-020	_50LT020_L	T-50006 level low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	%	YES	20	2		3	40102	2		
53	ACTIVE	1724000448-PR-PID-00013 / 001	50-L-020	50-LT-020	_50LT020_H	T-50006 level high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	%	YES	90	2		3	40102	3		
54	ACTIVE	1724000448-PR-PID-00013 / 004	50-L-021	50-LT-021	_50LT021_LL	T-50008 level very low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	%	YES	10	1		3	40102	4		
55	ACTIVE	1724000448-PR-PID-00013 / 004	50-L-021	50-LT-021	_50LT021_L	T-50008 level low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	%	YES	20	2		3	40102	5		
56	ACTIVE	1724000448-PR-PID-00013 / 004	50-L-021	50-LT-021	_50LT021_H	T-50008 level high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	%	YES	90	2		3	40102	6		
57	ACTIVE	1724000448-PR-PID-00013 / 005	50-L-022	50-LT-022	_50LT022_LL	T-50002 level very low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	%	YES	10	1		3	40102	7		
58	ACTIVE	1724000448-PR-PID-00013 / 005	50-L-022	50-LT-022	_50LT022_L	T-50002 level low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	%	YES	20	2		3	40102	8		
59	ACTIVE	1724000448-PR-PID-00013 / 005	50-L-023	50-LT-023	_50LT023_LL	T-50003 level very low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	%	YES	10	1		3	40102	9		

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

60	CHANGED	1724000448-PR-PID-00013 / 005	50-L-023	50-LT-023	_50LT023_L	T-50003 level low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	%	YES	20	2	3	40102	10	
61	ACTIVE	1724000448-PR-PID-00013 / 006	50-L-024	50-LT-024	_50LT024_LL	T-50004 level very low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	%	YES	10	1	3	40102	11	
62	ACTIVE	1724000448-PR-PID-00013 / 006	50-L-024	50-LT-024	_50LT024_L	T-50004 level low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	%	YES	20	2	3	40102	12	
63	CHANGED	1724000448-PR-PID-00013 / 001	50-P-052	50-PDT-052	_50PDT052_H	dP across S-50001 high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	1	2	3	40102	13	
64	ACTIVE	1724000448-PR-PID-00013 / 001	50-P-020	50-PT-020	_50PT020_L	Seawater inlet pressure low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	4	2	3	40102	14	
65	ACTIVE	1724000448-PR-PID-00013 / 002	50-P-025	50-PT-025	_50PT025_L	Filtered seawater pressure from P-50003A low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	3	2	3	40102	15	
66	ACTIVE	1724000448-PR-PID-00013 / 002	50-P-026	50-PT-026	_50PT026_L	Filtered seawater pressure to P-50004A low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	2,5	2	3	40103	0	
67	ACTIVE	1724000448-PR-PID-00013 / 002	50-P-027	50-PT-027	_50PT027_L	Filtered seawater pressure from P-50003B low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	3	2	3	40103	1	
68	ACTIVE	1724000448-PR-PID-00013 / 002	50-P-028	50-PT-028	_50PT028_L	Filtered seawater pressure to P-50004B low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	2,5	2	3	40103	2	
69	ACTIVE	1724000448-PR-PID-00013 / 003	50-P-030	50-PT-030	_50PT030_L	Filtered seawater pressure from P-50004A low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	55	2	3	40103	3	
70	ACTIVE	1724000448-PR-PID-00013 / 003	50-P-030	50-PT-030	_50PT030_H	Filtered seawater pressure from P-50004A high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	65	2	3	40103	4	
71	ACTIVE	1724000448-PR-PID-00013 / 003	50-P-032	50-PT-032	_50PT032_L	Filtered seawater pressure from P-50004B low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	55	2	3	40103	5	
72	ACTIVE	1724000448-PR-PID-00013 / 003	50-P-032	50-PT-032	_50PT032_H	Filtered seawater pressure from P-50004B high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	65	2	3	40103	6	
73	ACTIVE	1724000448-PR-PID-00013 / 004	50-P-041	50-PT-041	_50PT041_L	Fresh water outlet pressure low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	4	2	3	40103	7	
74	ACTIVE	1724000448-PR-PID-00013 / 004	50-P-041	50-PT-041	_50PT041_H	Fresh water outlet pressure high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	6	2	3	40103	8	
75	ACTIVE	1724000448-PR-PID-00013 / 004	50-P-047	50-PT-047	_50PT047_L	Softening filter inlet pressure low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	4	2	3	40103	9	
76	ACTIVE	1724000448-PR-PID-00013 / 004	50-P-047	50-PT-047	_50PT047_H	Softening filter inlet pressure high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	6	2	3	40103	10	
77	ACTIVE	1724000448-PR-PID-00013 / 001	50-T-022	50-TT-022	_50TT022_L	Seawater temperature from H-50001 low	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	degC	YES	10	2	3	40103	11	
78	ACTIVE	1724000448-PR-PID-00013 / 001	50-T-022	50-TT-022	_50TT022_H	Seawater temperature from H-50001 high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	degC	YES	35	2	3	40103	12	
79	ACTIVE	1724000448-PR-PID-00013 / 001	50-T-022	50-TT-022	_50TT022_HH	Seawater temperature from H-50001 very high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	degC	YES	40	1	3	40103	13	
63	ADDED		50-P-024	50-PDT-024	_50PDT024_H	dP across S-50002A - S-50003A high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	2	2	3	40103	14	
63	ADDED		50-P-029	50-PDT-029	_50PDT029_H	dP across S-50002B - S-50003B high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	2	2	3	40103	15	
63	ADDED		50-P-049	50-PDT-049	_50PDT049_H	dP across dP across S-50004 - S-50010 high	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL	bar	YES	2	2	3	40104	0	
63	ADDED		50-H-021	50-HS-021	_50HS021	Manual alarm call point	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL		YES	N.A	1	3	40104	1	DELETED
63	ADDED		50-A-021	50-AT-021A	_50AT021A	Fire detection in container	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL		YES	N.A	1	3	40104	2	
63	ADDED		50-A-021	50-AT-021B	_50AT021B	Fire detection in container	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL		YES	N.A	1	3	40104	3	
63	ADDED		50-A-021	50-AT-021C	_50AT021C	Fire detection in container	SDI	DIGITAL	BOOLEAN	ALARM	NORMAL		YES	N.A	1	3	40104	4	
80	ACTIVE	1724000448-PR-PID-00013 / 001	50-X-020	50-XV-020	_50XV020_O	Seawater inlet valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40111	0	
81	ACTIVE	1724000448-PR-PID-00013 / 001	50-X-020	50-XV-020	_50XV020_C	Seawater inlet valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40111	1	
82	ACTIVE	1724000448-PR-PID-00013 / 001	50-X-020	50-XV-020	_50XV020_F	Seawater inlet valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40111	2	
83	ACTIVE	1724000448-PR-PID-00013 / 002	50-X-021	50-XV-021	_50XV021_O	P-50003A suction valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40111	3	
84	ACTIVE	1724000448-PR-PID-00013 / 002	50-X-021	50-XV-021	_50XV021_C	P-50003A suction valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40111	4	
85	ACTIVE	1724000448-PR-PID-00013 / 002	50-X-021	50-XV-021	_50XV021_F	P-50003A suction valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40111	5	
86	ACTIVE	1724000448-PR-PID-00013 / 002	50-X-022	50-XV-022	_50XV022_O	P-50003B suction valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40111	6	SDI
87	ACTIVE	1724000448-PR-PID-00013 / 002	50-X-022	50-XV-022	_50XV022_C	P-50003B suction valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40111	7	SDI
88	ACTIVE	1724000448-PR-PID-00013 / 002	50-X-022	50-XV-022	_50XV022_F	P-50003B suction valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40111	8	SDI
89	ACTIVE	1724000448-PR-PID-00013 / 002	50-X-023	50-XV-023	_50XV023_O	P-50003A flushing valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40111	9	
90	ACTIVE	1724000448-PR-PID-00013 / 002	50-X-023	50-XV-023	_50XV023_C	P-50003A flushing valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40111	10	
91	ACTIVE	1724000448-PR-PID-00013 / 002	50-X-023	50-XV-023	_50XV023_F	P-50003A flushing valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40111	11	
92	ACTIVE	1724000448-PR-PID-00013 / 002	50-X-024	50-XV-024	_50XV024_O	P-50003B flushing valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40111	12	SDI
93	ACTIVE	1724000448-PR-PID-00013 / 002	50-X-024	50-XV-024	_50XV024_C	P-50003B flushing valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40111	13	SDI
94	ACTIVE	1724000448-PR-PID-00013 / 002	50-X-024	50-XV-024	_50XV024_F	P-50003B flushing valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40111	14	SDI
95	ACTIVE	1724000448-PR-PID-00013 / 003	50-X-025	50-XV-025	_50XV025_O	Fresh water from A-50007A/B valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40111	15	
96	ACTIVE	1724000448-PR-PID-00013 / 003	50-X-025	50-XV-025	_50XV025_C	Fresh water from A-50007A/B valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40112	0	
97	ACTIVE	1724000448-PR-PID-00013 / 003	50-X-025	50-XV-025	_50XV025_F	Fresh water from A-50007A/B valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40112	1	
98	ACTIVE	1724000448-PR-PID-00013 / 003	50-X-026	50-XV-026	_50XV026_O	Fresh water drain from A-50007A/B valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40112	2	
99	ACTIVE	1724000448-PR-PID-00013 / 003	50-X-026	50-XV-026	_50XV026_C	Fresh water drain from A-50007A/B valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40112	3	
100	ACTIVE	1724000448-PR-PID-00013 / 003	50-X-026	50-XV-026	_50XV026_F	Fresh water drain from A-50007A/B valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40112	4	
101	ACTIVE	1724000448-PR-PID-00013 / 003	50-X-027	50-XV-027	_50XV027_O	Brine from A-50007A valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40112	5	
102	ACTIVE	1724000448-PR-PID-00013 / 003	50-X-027	50-XV-027	_50XV027_C	Brine from A-50007A valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40112	6	
103	ACTIVE	1724000448-PR-PID-00013 / 003	50-X-027	50-XV-027	_50XV027_F	Brine from A-50007A valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40112	7	
~~104~~	DELETED	~~1724000448-PR-PID-00013 / 003~~	~~50-X-028~~	~~50-XV-028~~	~~_50XV028_O~~	~~Fresh water from A-50007B valve open~~	~~SDI~~	~~DIGITAL~~	~~BOOLEAN~~	~~NOT OPEN~~	~~OPEN~~	~~-~~	~~NO~~	~~-~~	~~-~~	~~3~~	~~40112~~	~~8~~	~~SDI~~
~~105~~	DELETED	~~1724000448-PR-PID-00013 / 003~~	~~50-X-028~~	~~50-XV-028~~	~~_50XV028_C~~	~~Fresh water from A-50007B valve closed~~	~~SDI~~	~~DIGITAL~~	~~BOOLEAN~~	~~NOT CLOSED~~	~~CLOSED~~	~~-~~	~~NO~~	~~-~~	~~-~~	~~3~~	~~40112~~	~~9~~	~~SDI~~
~~106~~	DELETED	~~1724000448-PR-PID-00013 / 003~~	~~50-X-028~~	~~50-XV-028~~	~~_50XV028_F~~	~~Fresh water from A-50007B valve failure~~	~~SDI~~	~~DIGITAL~~	~~BOOLEAN~~	~~FAILURE~~	~~NORMAL~~	~~-~~	~~YES~~	~~-~~	~~3~~	~~3~~	~~40112~~	~~10~~	~~SDI~~
~~107~~	DELETED	~~1724000448-PR-PID-00013 / 003~~	~~50-X-029~~	~~50-XV-029~~	~~_50XV029_O~~	~~Fresh water drain from A-50007B valve open~~	~~SDI~~	~~DIGITAL~~	~~BOOLEAN~~	~~NOT OPEN~~	~~OPEN~~	~~-~~	~~NO~~	~~-~~	~~-~~	~~3~~	~~40112~~	~~11~~	~~SDI~~
~~108~~	DELETED	~~1724000448-PR-PID-00013 / 003~~	~~50-X-029~~	~~50-XV-029~~	~~_50XV029_C~~	~~Fresh water drain from A-50007B valve closed~~	~~SDI~~	~~DIGITAL~~	~~BOOLEAN~~	~~NOT CLOSED~~	~~CLOSED~~	~~-~~	~~NO~~	~~-~~	~~-~~	~~3~~	~~40112~~	~~12~~	~~SDI~~
~~109~~	DELETED	~~1724000448-PR-PID-00013 / 003~~	~~50-X-029~~	~~50-XV-029~~	~~_50XV029_F~~	~~Fresh water drain from A-50007B valve failure~~	~~SDI~~	~~DIGITAL~~	~~BOOLEAN~~	~~FAILURE~~	~~NORMAL~~	~~-~~	~~YES~~	~~-~~	~~3~~	~~3~~	~~40112~~	~~13~~	~~SDI~~
110	ACTIVE	1724000448-PR-PID-00013 / 003	50-X-030	50-XV-030	_50XV030_O	Brine from A-50007B valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40112	14	SDI
111	ACTIVE	1724000448-PR-PID-00013 / 003	50-X-030	50-XV-030	_50XV030_C	Brine from A-50007B valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40112	15	SDI
112	ACTIVE	1724000448-PR-PID-00013 / 003	50-X-030	50-XV-030	_50XV030_F	Brine from A-50007B valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40113	0	SDI
113	ACTIVE	1724000448-PR-PID-00013 / 004	50-X-031	50-XV-031	_50XV031_O	Fresh water outlet valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40113	1	SDI
114	ACTIVE	1724000448-PR-PID-00013 / 004	50-X-031	50-XV-031	_50XV031_C	Fresh water outlet valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40113	2	SDI
115	ACTIVE	1724000448-PR-PID-00013 / 004	50-X-031	50-XV-031	_50XV031_F	Fresh water outlet valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40113	3	SDI

TEST OK 12/02/2025 F. Sig. 12/02/2025 S. Macchi

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

116	ACTIVE	1724000448-PR-PID-00013 / 004	50-X-032	50-XV-032	_50XV032_O	Fresh water off-spec valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40113	4		SDI
117	ACTIVE	1724000448-PR-PID-00013 / 004	50-X-032	50-XV-032	_50XV032_C	Fresh water off-spec valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40113	5		SDI
118	ACTIVE	1724000448-PR-PID-00013 / 004	50-X-032	50-XV-032	_50XV032_F	Fresh water off-spec valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40113	6		SDI
110	ADDED		50-X-033	50-XV-033	_50XV033_O	Seawater drain from H-50001 valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40113	7		SDI
111	ADDED		50-X-033	50-XV-033	_50XV033_C	Seawater drain from H-50001 valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40113	8		SDI
112	ADDED		50-X-033	50-XV-033	_50XV033_F	Seawater drain from H-50001 valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40113	9		SDI
113	ADDED		50-X-034	50-XV-034	_50XV034_O	Seawater drain from T-50006 valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40113	10		SDI
114	ADDED		50-X-034	50-XV-034	_50XV034_C	Seawater drain from T-50006 valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40113	11		SDI
115	ADDED		50-X-034	50-XV-034	_50XV034_F	Seawater drain from T-50006 valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40113	12		SDI
116	ADDED		50-X-035	50-XV-035	_50XV035_O	Fresh water from T-50008 drain valve open	SDI	DIGITAL	BOOLEAN	NOT OPEN	OPEN	-	NO	-	-	3	40113	13		SDI
117	ADDED		50-X-035	50-XV-035	_50XV035_C	Fresh water from T-50008 drain valve closed	SDI	DIGITAL	BOOLEAN	NOT CLOSED	CLOSED	-	NO	-	-	3	40113	14		SDI
118	ADDED		50-X-035	50-XV-035	_50XV035_F	Fresh water from T-50008 drain valve failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40113	15		SDI
119	ACTIVE	1724000448-PR-PID-00013 / 001	50-P-50002A	50-P-50002A	_50P50002A_R	Backwash pump running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40121	0		SDI
120	ACTIVE	1724000448-PR-PID-00013 / 001	50-P-50002A	50-P-50002A	_50P50002A_F	Backwash pump failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40121	1		SDI
121	ACTIVE	1724000448-PR-PID-00013 / 001	50-P-50002B	50-P-50002B	_50P50002B_R	Backwash pump running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40121	2		SDI
122	ACTIVE	1724000448-PR-PID-00013 / 001	50-P-50002B	50-P-50002B	_50P50002B_F	Backwash pump failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40121	3		SDI
123	ACTIVE	1724000448-PR-PID-00013 / 002	50-P-50003A	50-P-50003A	_50P50003A_R	SW booster pump running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40121	4		
124	ACTIVE	1724000448-PR-PID-00013 / 002	50-P-50003A	50-P-50003A	_50P50003A_F	SW booster pump failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40121	5		
125	ACTIVE	1724000448-PR-PID-00013 / 002	50-P-50003B	50-P-50003B	_50P50003B_R	SW booster pump running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40121	6		SDI
126	ACTIVE	1724000448-PR-PID-00013 / 002	50-P-50003B	50-P-50003B	_50P50003B_F	SW booster pump failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40121	7		SDI
127	ACTIVE	1724000448-PR-PID-00013 / 003	50-P-50004A	50-P-50004A	_50P50004A_R	HP pump running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40121	8		SDI
128	ACTIVE	1724000448-PR-PID-00013 / 003	50-P-50004A	50-P-50004A	_50P50004A_F	HP pump failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40121	9		SDI
129	ACTIVE	1724000448-PR-PID-00013 / 003	50-P-50004B	50-P-50004B	_50P50004B_R	HP pump running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40121	10		SDI
130	ACTIVE	1724000448-PR-PID-00013 / 003	50-P-50004B	50-P-50004B	_50P50004B_F	HP pump failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40121	11		SDI
131	ACTIVE	1724000448-PR-PID-00013 / 005	50-P-50005A	50-P-50005A	_50P50005A_R	Caustic soda dosing pump running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40121	12		SDI
132	ACTIVE	1724000448-PR-PID-00013 / 005	50-P-50005A	50-P-50005A	_50P50005A_F	Caustic soda dosing pump failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40121	13		SDI
133	ACTIVE	1724000448-PR-PID-00013 / 005	50-P-50005B	50-P-50005B	_50P50005B_R	Caustic soda dosing pump running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40121	14		SDI
134	ACTIVE	1724000448-PR-PID-00013 / 005	50-P-50005B	50-P-50005B	_50P50005B_F	Caustic soda dosing pump failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40121	15		SDI
135	ACTIVE	1724000448-PR-PID-00013 / 005	50-P-50006A	50-P-50006A	_50P50006A_R	Antiscalant dosing pump running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40122	0		SDI
136	ACTIVE	1724000448-PR-PID-00013 / 005	50-P-50006A	50-P-50006A	_50P50006A_F	Antiscalant dosing pump failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40122	1		SDI
137	ACTIVE	1724000448-PR-PID-00013 / 005	50-P-50006B	50-P-50006B	_50P50006B_R	Antiscalant dosing pump running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40122	2		
138	ACTIVE	1724000448-PR-PID-00013 / 005	50-P-50006B	50-P-50006B	_50P50006B_F	Antiscalant dosing pump failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40122	3		
139	ACTIVE	1724000448-PR-PID-00013 / 006	50-P-50007A	50-P-50007A	_50P50007A_R	Non-oxidant biocide dosing pump - container inlet running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40122	4		SDI
140	ACTIVE	1724000448-PR-PID-00013 / 006	50-P-50007A	50-P-50007A	_50P50007A_F	Non-oxidant biocide dosing pump - container inlet failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40122	5		SDI
141	ACTIVE	1724000448-PR-PID-00013 / 006	50-P-50007B	50-P-50007B	_50P50007B_R	Non-oxidant biocide dosing pump - container inlet running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40122	6		
142	ACTIVE	1724000448-PR-PID-00013 / 006	50-P-50007B	50-P-50007B	_50P50007B_F	Non-oxidant biocide dosing pump - container inlet failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40122	7		
143	ACTIVE	1724000448-PR-PID-00013 / 006	50-P-50008A	50-P-50008A	_50P50008A_R	Non-oxidant biocide dosing pump - sea water intake running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40122	8		SDI
144	ACTIVE	1724000448-PR-PID-00013 / 006	50-P-50008A	50-P-50008A	_50P50008A_F	Non-oxidant biocide dosing pump - sea water intake failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40122	9		SDI
145	ACTIVE	1724000448-PR-PID-00013 / 006	50-P-50008B	50-P-50008B	_50P50008B_R	Non-oxidant biocide dosing pump - sea water intake running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40122	10		
146	ACTIVE	1724000448-PR-PID-00013 / 006	50-P-50008B	50-P-50008B	_50P50008B_F	Non-oxidant biocide dosing pump - sea water intake failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40122	11		
147	ACTIVE	1724000448-PR-PID-00013 / 004	50-P-50009A	50-P-50009A	_50P50009A_R	Fresh water pump running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40122	12		SDI
148	ACTIVE	1724000448-PR-PID-00013 / 004	50-P-50009A	50-P-50009A	_50P50009A_F	Fresh water pump failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40122	13		SDI
149	ACTIVE	1724000448-PR-PID-00013 / 004	50-P-50009B	50-P-50009B	_50P50009B_R	Fresh water pump running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40122	14		
150	ACTIVE	1724000448-PR-PID-00013 / 004	50-P-50009B	50-P-50009B	_50P50009B_F	Fresh water pump failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40122	15		
151	ACTIVE	1724000448-PR-PID-00013 / 006	50-P-50010A	50-P-50010A	_50P50010A_R	Non-oxidant biocide dosing pump - waste water tank running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40123	0		SDI
152	ACTIVE	1724000448-PR-PID-00013 / 006	50-P-50010A	50-P-50010A	_50P50010A_F	Non-oxidant biocide dosing pump - waste water tank failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40123	1		SDI
153	ACTIVE	1724000448-PR-PID-00013 / 006	50-P-50010B	50-P-50010B	_50P50010B_R	Non-oxidant biocide dosing pump - waste water tank running	SDI	DIGITAL	BOOLEAN	STOPPED	RUNNING	-	NO	-	-	3	40123	2		SDI
154	ACTIVE	1724000448-PR-PID-00013 / 006	50-P-50010B	50-P-50010B	_50P50010B_F	Non-oxidant biocide dosing pump - waste water tank failure	SDI	DIGITAL	BOOLEAN	FAILURE	NORMAL	-	YES	-	3	3	40123	3		SDI
155	ACTIVE	1724000448-PR-PID-00013 / 001	50-H-50003A	50-H-50003A	_50H50003A_A	Container electrical heater start/stop command	SDI	DIGITAL	BOOLEAN	NOT ACTIVE	ACTIVE	-	NO	-	-	3	40131	0		
156	ACTIVE	1724000448-PR-PID-00013 / 001	50-H-50003B	50-H-50003B	_50H50003B_A	Container electrical heater start/stop command	SDI	DIGITAL	BOOLEAN	NOT ACTIVE	ACTIVE	-	NO	-	-	3	40131	1		
157	ACTIVE	1724000448-PR-PID-00013 / 001	50-H-50003A	50-H-50003A	_50HFA50001A_A	Container air fan start/stop command	SDI	DIGITAL	BOOLEAN	NOT ACTIVE	ACTIVE	-	NO	-	-	3	40131	2		
158	ACTIVE	1724000448-PR-PID-00013 / 001	50-H-50003B	50-H-50003B	_50HFA50001B_A	Container air fan start/stop command	SDI	DIGITAL	BOOLEAN	NOT ACTIVE	ACTIVE	-	NO	-	-	3	40131	3		
159	ACTIVE	1724000448-PR-PID-00013 / 001	50-A-50003	50-A-50003	_50A50003_A	Seawater coarse filter regeneration command	SDI	DIGITAL	BOOLEAN	NOT ACTIVE	ACTIVE	-	NO	-	-	3	40131	4		
160	ACTIVE	1724000448-PR-PID-00013 / 001	50-S-50001	50-S-50001	_50S50001_A	Sand filter regeneration command	SDI	DIGITAL	BOOLEAN	NOT ACTIVE	ACTIVE	-	NO	-	-	3	40131	5		
161	ACTIVE	1724000448-PR-PID-00013 / 004	50-S-50004	50-S-50004	_50S50004_A	Softening Filter regeneration command	SDI	DIGITAL	BOOLEAN	NOT ACTIVE	ACTIVE	-	NO	-	-	3	40131	6		
162	ACTIVE	1724000448-PR-PID-00013 / 004	50-S-50010	50-S-50010	_50S50010_A	UV sterilizer start/stop command	SDI	DIGITAL	BOOLEAN	NOT ACTIVE	ACTIVE	-	NO	-	-	3	40131	7		SDI
163	ADDED		50-S-50010	50-H-50003C	_50HFA50001C_A	Container air fan start/stop command	SDI	DIGITAL	BOOLEAN	NOT ACTIVE	ACTIVE	-	NO	-	-	3	40131	8		SDI
164	ADDED		50-H-001S	50-H-001S	_50HS001S	Seawater pump start request	SDI	DIGITAL	BOOLEAN	N-START	START	-	NO	-	-	3	40131	9		SDI
165	ADDED		50-X-005S	50-X-005S	_50XS005S	Seawater pump stop request	SDI	DIGITAL	BOOLEAN	N-STOP	STOP	-	NO	-	-	3	40131	10		SDI
166	ADDED		50-H-021	50-H-021	_50HS021	WTP local/remote status	SDI	DIGITAL	BOOLEAN	LOCALE	REMOTE	-	NO	-	-	3	40131	11		SDI

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

~~167~~	~~ADDED~~	50-H-011S	50-H-011S	_50HS011S	WTP package start request	SDO	DIGITAL	BOOLEAN	~~N-START~~ STOP	START	-	NO	-	-	16	40140	0	SDO
~~168~~	~~ADDED~~	~~xxxxxx~~	~~xxxxxx~~	~~xxxxxx~~	~~Fresh water start request~~	~~SDO~~	~~DIGITAL~~	~~BOOLEAN~~	~~N-START~~	~~START~~		~~NO~~			~~16~~	~~40140~~	~~1~~	~~SDO~~
~~169~~	~~ADDED~~	~~xxxxxx~~	~~xxxxxx~~	~~xxxxxx~~	~~Fresh water stop request~~	~~SDO~~	~~DIGITAL~~	~~BOOLEAN~~	~~N-STOP~~	~~STOP~~	~~-~~	~~NO~~	~~-~~	~~-~~	~~16~~	~~40140~~	~~2~~	~~SDO~~
170	ADDED	50-X-001	50-X-001	50XL001	Main seawater pump running	SDO	DIGITAL	BOOLEAN	STOP	RUN	-	NO	-	-	16	40140	3	SDO

TEST OK 12/02/2025 F. ERIGU
12-02-2025 S. MACELLARI

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

FROM

DESCRIPTION: AC UPS F&G - BATTERY ISOLATOR-B
TAG NUMBER: CB-200F4B

COLUMN: -

-X3

BATTERY BREAKER STATUS

X3 / 4
X3 / 5

1
2
3
4
5
6
7

BK

84411-CEC
7C X 1.5 mm²

TO

DESCRIPTION: AC UPS F&G - CHARGER-B
TAG NUMBER: BC-200F4B

COLUMN: -

-X15

1
2
3
4
5
6
7

X15 / 8
X15 / 9

BATTERY BREAKER STATUS

BK

DESCRIPTION: WATER PACKAGE

DESCRIPTION: ELECTROLISER PACKAGE
TAG NUMBER: OVIVO

WTP-300

TB- X3

TB-X3 - 16
TB-X3 - 17
TB-X3 - 18
TB-X3 - 19
SPARE
SPARE

Blu
Blk
Blu
Blk
Blu
Blk

PR-1
PR-2
PR-3

Blk

83128-CEC
3 X 2 X 1,5mm²

DESCRIPTION: WATER PACKAGE
TAG NUMBER: JB-500C8

TB-1

PR-1
PR-2
PR-3

Blu
BK
WH
BK

1
2
SH
3
4
SH
5
6
SH

PR1
PR2
PR-1
PR-2

83128/1-CEC
2 X 2 X 1,5mm²

83128/2-CEC
2 X 2 X 1,5mm²

DESCRIPTION: WATER PACKAGE
TAG NUMBER: 50-LP-001

TDI

PR-1
PR-2
PR-1
PR-2

WH
BK

TDI-13
TDI-14
TDI-15
TDI-16
SPARE
SPARE

As commissioned
SAsia Alejandro
09/07/2025

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DG-20149

REV.:	DATE:	SIGNATURE:
2_K	12/02/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	19/11/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	16/10/24	SAI	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	08/07/24	SAI	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
SIGNALS FOR CONTROL SYSTEM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : 1:X

A3

DRAWING NO. 123A90-DDL-EL-DG-20149

SHEET 091

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DG-20149 Rev. 02

Section 4.4 Instrumentation “As-Commissioned” interconnection diagrams

NOT APPLICABLE

Section 4.5 Telecommunication functional test sheets index

NOT APPLICABLE

Section 4.6 Telecommunication
“As-Commissioned” I.C.D. / TSLD's

NOT APPLICABLE

Section 5 SITE / OPERATIONAL

Section 5.1 Operational Test Procedure

Section 5.2 Operational Test Certificates

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM

Electrical	50-10 Water Desalination Package & Distribution						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A3/+08-QF1	WATER DESALINATION PACKAGE - UCP - A3/+08-QF1	ONSHORE	C10002938	FP00	100	2024-12-07	RFO 2
		ONSHORE	C10002939	FTR-2	100	2024-10-02	RFO 2
		ONSHORE	C10002940	FTR-6	100	2024-10-03	RFO 2
		ONSHORE	C10003021	FTR-5	100	2025-04-29	RFO 2
UP-200F3-QF36	WATER DESALINATION PACKAGE - UCP	ONSHORE	C10004575	FTR-2	100	2024-12-07	RFO 2

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM

Instrumental	50-10 Water Desalination Package & Distribution

ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
50-XA-003	A-500003 (A-50000) Sea water treatment PKG F&G LCP fault	ONSHORE	C10003759	FJ01D	100	2025-02-11	RFO 2
50-XS-001	SHUT-DOWN A-500003 (A50000) Sea water treatment PKG	ONSHORE	C10003760	FJ01D	100	2025-02-11	RFO 2
A-50000	Water Treatment Package	ONSHORE	C10004885	FJ05	100	2025-02-14	RFO 2

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM

Piping	50-10 Water Desalination Package & Distribution						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
50-10	Service Test Water Desalination & Distribution System	ONSHORE	C10004908	4245	100	2025-03-28	RFO 2

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM

Miscellaneous	50-10 Water Desalination Package & Distribution						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03042	OTP - Sea Water Intake and Fresh Water Treatment Systems	ONSHORE	C10004614	5300	100	2025-07-28	RFO 2
		OFFSHORE	C10004938	5300	0	-	-

ITEM	Tag	123A90-PML-COM-PRO-03042 : OTP - Sea Water Intake and Fresh Water Treatment Systems				Dwg	123A90-PML-COM-PRO-03042
	S/Sys	50-10 : Water Desalination Package & Distribution				Module	
TASK	code	C10004614		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	COMM	Activity OTS	Discipline	Miscellaneous	Form 5300	Operational Test Procedure

OTP - OPERATIONAL TEST PROCEDURE

Attached procedure number: 123A90-PML-COM-PRO-03042

Associated subsystems: 50-10

Completion date:

Comments/Remarks:

	Performed by	☐ WITNESS ☑ REVIEW	☐ WITNESS ☐ REVIEW
	COMMISSIONING DISCIPLINE LEAD	RM COMMISSIONING MANAGER	CPY COMMISSIONING MANAGER
Name	Fabio Sirigu	Anthony Iveson	Martin Taylor
Date	2025-07-28	2025-07-28	2025-07-28
Signature	PROVERLIS Digitaly signed by Fabio Sirigu 2025-07-28T07:10:35.039Z	PROVERLIS Digitaly signed by Anthony Iveson 2025-07-28T07:19:32.718Z	PROVERLIS Digitaly signed by Martin Taylor 2025-07-28T14:08:39.920Z

Base Load Power Hub (BLPH)

OTP – Sea Water Intake & Fresh Water Treatment Systems

Document Number: 123A90-PML-COM-PRO-03042

Document Class: 2

01	22/04/2025	Accepted for Construction (AFC)	G.DEL MISSIER	A. IVESON	M.BRUNELLI
00	28/03/2025	Issue for Review (IFR)	G.DEL MISSIER	A. IVESON	M.BRUNELLI

This document undergoes an issuance cycle within EDMS "FusionLive". Its distribution is electronically controlled.
Once printed shall be considered as "NOT CONTROLLED" copy.
File: 123A90-PML-COM-PRO-03042

Rev.	Date	Description	Prepared	Reviewed	Approved

Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1	
2	
3	
4	

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

Table of Contents

1. INTRODUCTION 7
   1.1 Project Overview 7
   1.2 Project Location 7
   1.3 Project Concept 8
2. DOCUMENT SCOPE 10
3. OTP SUMMARY 11
   3.1 Test Objective 11
   3.2 System Boundary Limits 11
   3.3 Test and System Description 12
   3.4 Safety Devices 13
   3.5 HSE Management 13
   3.6 Acceptance Criteria 14
4. DOCUMENTS REFERENCES AND ABBREVIATIONS 15
   4.1 Reference Documents 15
      4.1.1 Company Documents and Standards 15
      4.1.2 Project Documents 15
      4.1.3 Vendor Documents 17
   4.2 Acronyms and Abbreviations 18
5. OTP TEST REQUIREMENTS – ONSHORE WORKSITE 20
   5.1 Planning and Manpower 20
      5.1.1 Planned Tasks with Estimated Manpower 20
      5.1.2 Test Duration Estimate 21
      5.1.3 Vendor Assistance 21
      5.1.4 Items Postponed to C&E OTP 21
      5.1.5 Summary of Items HARDWIRED to be Tested 21
      5.1.6 Summary of Items HARDWIRED and Modbus to be Tested 21
   5.2 OTP TEST REQUIREMENTS – ONSHORE WORKSITE 22
      5.2.1 Pre-Commissioning Achievement 22
      5.2.2 Commissioning Achievement 22
      5.2.3 Status of Required Associated Subsystems 22
      5.2.4 Special Tools & Test Equipment 22
      5.2.5 Consumable List 23

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

5.2.6 Commissioning Spare Parts 23
5.2.7 Temporary Facilities 23
5.3 OTP DESCRIPTION – ONSHORE WORKSITE 23
5.3.1 OTP Test Preparation 23
5.3.2 Electrical Preparation 24
5.3.3 Mechanical Preparation 24
5.3.4 Instrument Preparation 25
5.3.5 Piping Preparation 25
5.3.6 Additional Discipline Preparation 25
5.4 OTP TEST STEPS - ONSHORE WORKSITE 25
5.4.1 Test Preparation 26
5.4.2 Test Steps 26
5.4.3 OTP Worksite Tests Notes and Remark 32
5.4.4 OTP Worksite Tests Certifying Authority Table of Attendances 33
5.4.5 OTP Worksite Test Final Signatures and Company Acceptance 33
5.5 POST TEST CONDITION 33
5.6 REINSTATEMENT AND PRESERVATION TASKS 33
6. OTP AT OFFSHORE SITE 34
6.1 PLANNING AND MANPOWER 34
6.1.1 Offshore Site Test Overview 34
6.1.2 Planned Tasks with Estimated Manpower 34
6.1.3 Test Duration Estimate 34
6.1.4 Vendor Assistance 34
6.1.5 Items Postponed to C&E OTP 34
6.1.6 HOLDS 34
6.2 OTP TEST REQUIREMENT – OFFSHORE SITE 34
6.2.1 Pre-Commissioning Achievement 34
6.2.2 Commissioning Achievement 34
6.2.3 Status of Required Associated Subsystem 35
6.2.4 Special Tools & Test Equipment 35
6.2.5 Consumable List 35
6.2.6 Commissioning Spare Parts 35
6.2.7 Temporary Facilities 35
6.3 OTP DESCRIPTION – OFFSHORE SITE 36
6.3.1 OTP Test Preparation 36
6.3.2 Electrical Preparation 36

6.3.3 Mechanical Preparation 36
6.3.4 Instrument Preparation 37
6.3.5 Piping Preparation 37
6.3.6 Additional Discipline Preparation 37
6.4 OTP TEST STEPS - OFFSHORE SITE 37
6.4.1 Test Preparation 37
6.4.2 Test Steps 38
6.4.3 OTP Site Tests Notes and Remarks 42
6.4.4 OTP Site Tests Certifying Authority Table of Attendances 43
6.4.5 OTP Site Tests Final Signatures and Company Acceptance 43
6.5 POST TEST CONDITIONS 43
6.6 REINSTATEMENT AND PRESERVATION TASKS 43
7. APPENDICES 44
7.1 Vendor SAT Procedure (where applicable) 45
7.2 Proverlis Summary System Reports 46
7.3 Equipment Related Technical Queries (where applicable) 47
7.4 As Built Documentation (where applicable) 48
7.5 Management of Change – Summery Table of Tasks and Details of Affected Related Documentation (where applicable) 49

This document undergoes an issuance cycle within EDMS "FusionLive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy.
File: 123A90-PML-COM-PRO-03042

List of Figures

Figure 1 - HOLLANDSE KUST NOORD WIND PARK Location Map 7

Figure 2 - Wind Park Details 8

Figure 3 – BLPH Concept 9

Figure 4 – System Boundary Limits 12

Figure 5 – System Boundary Limits 12

List of Tables

Table 1: *Company Documents and Standards* 15

Table 2: Project Documents 17

Table 3: Vendor Documents 18

Table 4: Acronyms and Abbreviation 20

Table 5: *Items HARDWIRING to be Tested* 21

Table 6 *Items HARDWIRING and PROFINET to be Tested* 21

List of Attachments

Attachment 1 – 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.

1.2 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 is located on coordinates E 590719.1, N 5841602.3 and 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.

1.3 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.

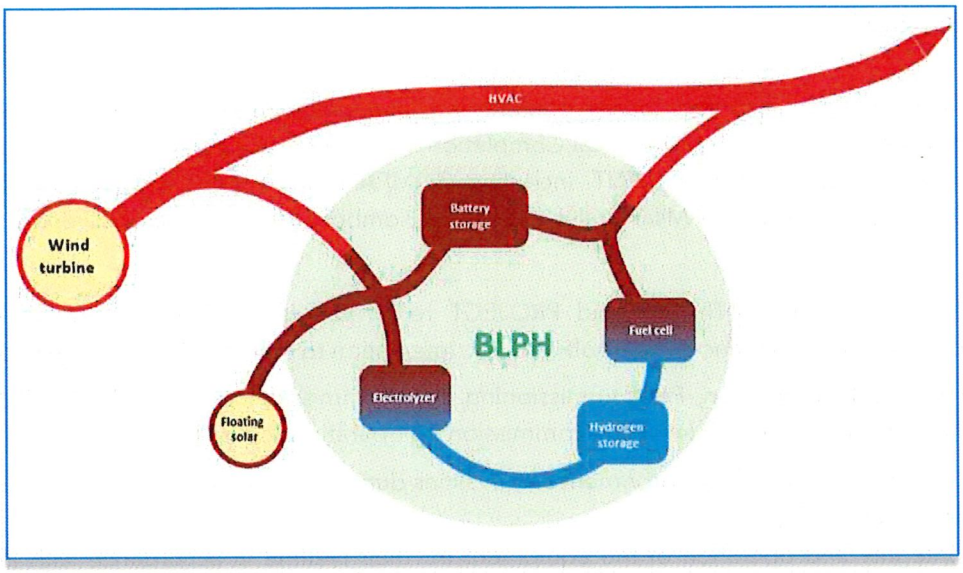


Figure 3 - BLPH Concept

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 is 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

The purpose of this document is to describe the methodology and the planned actions to be implemented for the preparation and execution of Mechanical Completion, Pre-commissioning, Commissioning & Start-Up activities to be performed on the PLANT, including COMPANY PROVIDED ITEMS, at the onshore premises of CONTRACTOR located in Milan (Italy) offices and Piomboni yard - Marina di Ravenna (Italy).

CONTRACTOR, pursuant to CONTRACT and PROJECT requirements, shall implement an exacting methodology, complete with a distinct set of tools and documentation to meet the following key objectives:

Perform the Mechanical Completion, Pre-commissioning and Commissioning on the WORKSITE to the maximum extent possible so as to minimise the commissioning operations on SITE;

- Ensure safety for the people, environment and facilities during the execution of the Commissioning activities at WORKSITE,
- Ensure integrity and operation of the equipment for their lifetime in accordance with PROJECT design and specifications,
- Plan a smooth and flawless execution of the Commissioning activities avoiding unforeseen downtimes and delays.

Achievement of the above objectives shall be obtained by:

- Defining and prioritizing a predetermined sequence of the Mechanical Completion checks, Pre-commissioning and Commissioning tests and tasks,
- Checking, testing systematically and exhaustively all the components of PLANT in compliance with PROJECT approved procedures and CONTRACT terms, managed by a dedicated team of inspectors, technicians and field engineers who will perform the Mechanical Completion, Pre-commissioning, Commissioning and Start-Up tasks and subsequently record the results via discipline specific check, inspection and test sheets (ITR's) & where applicable via discrete Operational Test Procedures (OTP's).
- Ensuring full traceability of the performed checks and tests, through implementation of a dedicated Project Completions Management System (CMS) containing individual references to all tagged items.

3. OTP SUMMARY

3.1 Test Objective

The operating test of the Sea Water Intake System is executed to ensure that the system is started up in a safe and controlled manner and to verify the correct operation according to the project requirements.

The scope of this document is to explain the principal procedure for inspection and test of the Sea Water Intake System associated with the functional logics for the Sea Water Treatment package.
The worksite location will require the installation of temporary facilities for pumping sea water from the yard quayside to holding tanks with a rated capacity of approximately 13 mc. From the temporary holding tanks, sea water will be manually pumped directly to the Sea Water Treatment package in substitution of the incoming piping from the permanent Sea Water Intake system.

3.2 System Boundary Limits

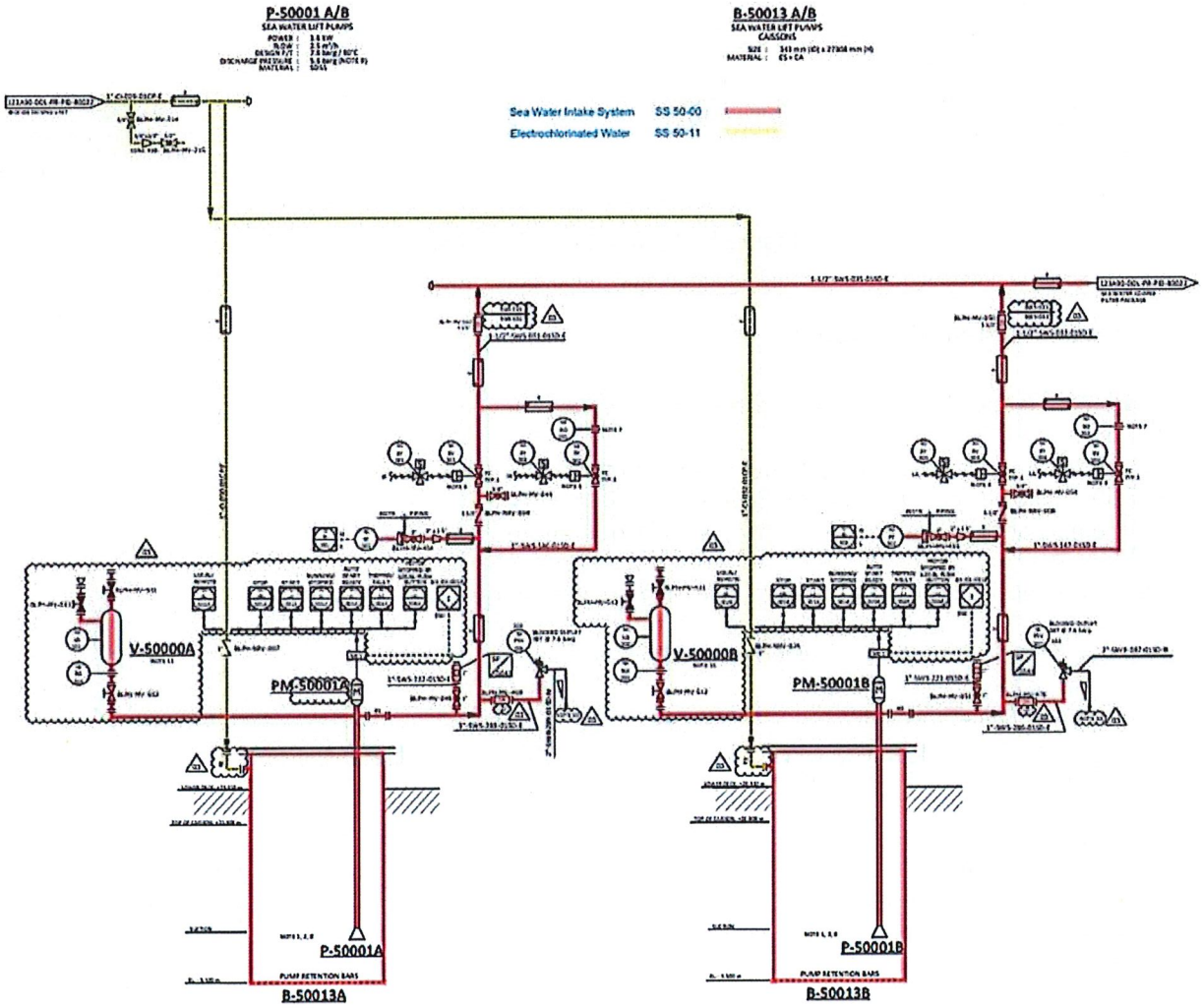


Figure 4 – System Boundary Limits

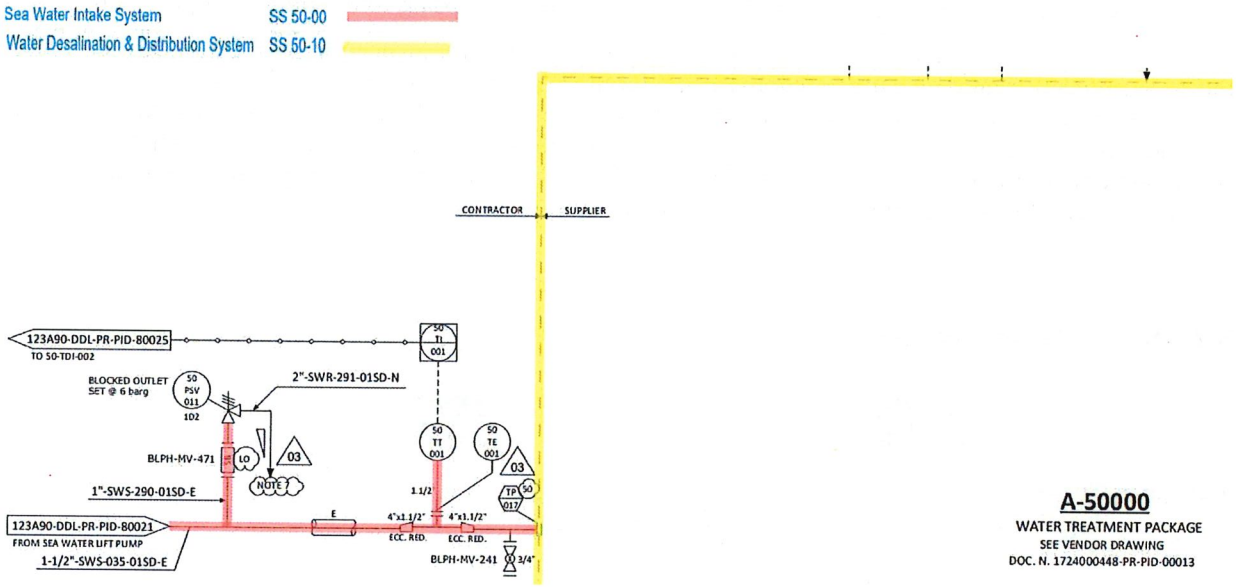


Figure 5 – System Boundary Limits

3.3 Test and System Description

This document is specifically related to the following systems:

- 50-00: Sea Water Intake System (incomplete during Worksite phase)
- 50-10: Sea Water Desalination Package and Distribution System
- Temporary Sea Water Pump (only manually operation)

All equipment must be properly installed in according with vendor documentation.

These parts of the system shall be tested on worksite and on site.

Main components of the Systems:

- SS 50-00: Sea Water Lift Pumps

  - Power: 1.6 Kw
  - Flow: 2.5m³/h
  - Design: 7.6 barg/80°C
  - Discharge pressure: 5.6 barg
  - Material: SDSS

➢ SS 50-10: Sea Water Desalination Package

- Containerised Solution for entire sea water treatment package
- Sea water coarse filter 2.5 m3/h
- Electric heater 30 kW
- Sand filter 2.5 m3/h
- Filtered Water Tank 3 m3
- Backwash pump head 1.5 bar(a), 5 m3/h
- Container electrical heater 8.4 kW
- SW Booster pump head 4 bar(a), 2.5 m3/h
- SW 1st Cartridge Filter 20 µm, 2 m3/h, 6 barg
- SW 2nd Cartridge Filter 5 µm, 2 m3/h, 6 barg
- HP Pump 64.5 bar(a), 2 m3/h
- Sea water reverse osmosis units 0.8 m3/h, 69 barg
- Fresh water tank 2.2 m3
- Fresh water pump 0.8 m3/h, head 5.2 bar(a)
- UV Sterilizer 0.8 m3/h, 8 barg
- Water Softening Filter 0.8 m3/h, 6 barg
- Caustic soda dosing tank 0.05 m3
- Caustic soda dosing pump 0.05 l/h, head 4 bar(a)
- Antiscalant dosing tank 0.05 m3
- Antiscalant dosing pump 0.01 l/h, head 4 bar(a)
- Non oxidant biocide dosing tank 0.1 m3
- Non oxidant biocide dosing pump – container inlet, 0.03 l/h, head 4.5 bar(a)
- Non oxidant biocide dosing pump – sea water intake, 0.85 l/h, head 4.5 bar(a)
- Non oxidant biocide dosing pump – waste water tank, 0.33 l/h, head 4.5 bar(a)

3.4 Safety Devices

- Appropriate Personnel Protective Equipment (PPE) and safety equipment e.g., safety shoes, hand gloves, helmet, earplugs etc. are available and must be used in line with the site requirements.
- Warning safety signs are to be posted with restricted access to essential personnel only.
- Adequate firefighting equipment.

3.5 HSE Management

All necessary safety precautions must be taken to avoid any risk for personnel injury.

- All personnel involved in this operational test shall be competent for the tasks they will be required to undertake
- Place safety / warning signs and segregate the entire area with barrier tapes (safety barriers) of a colour distinguished (blue and white) from those used for construction activities
- Restrict access into area only to authorized personnel
- Conduct "Toolbox Talk" with all personnel prior to starting test work
- Appropriate Personnel Protective Equipment (PPE) and safety equipment e.g. safety shoes, safety glasses, hand gloves, helmet, earplugs etc. are available and must be used in line with the site requirements
- All activities carried out on the project shall be performed in accordance with the "Permit to Work" system Doc. PRO-HSE-23

- Electrical and mechanical isolations are to be assured as per Doc. PRO-HSE-08 and "Commissioning and start-up operation" procedure.
- Observe and enforce all international codes and regulations to safeguard personnel, plant and environment.
- Ensure that the working area is clean, tidy, well illuminated and that access and escape routes are free from obstructions.

Before starting work on any of the activities in this OTP it is the responsibility of the persons performing the work to:

- Familiarize themselves with the plant/equipment to be worked on
- Ensure they are aware of all other work activities that are taking place, or due to take place
- If necessary, re-plan any situation/activity
- Ensure proper communications between parties involved in the execution of the OTP
- Read the relevant Vendor documentation for the equipment covered by this OTP and observe any special requirements and limitations recommended or imposed by Vendor
- Verify that all personnel involved in the implementation of this procedure are familiar with its content as well as the associated safety requirements (Toolbox Talk).

3.6 Acceptance Criteria

Before commissioning the systems:
Visual inspection and verification are a crucial step to identify any obvious issues with the installation, such as loose connections, missing components, or damage to the equipment.
Crosschecking the installation with engineering documentation ensures that the installation is done correctly and according to the manufacturer's guidelines. These steps can help identify any missing or incorrect components and connections.

Test Phase: Preparation and Package Operations Tests

- The Sea Water Lift Pumps P-50001A / P-50001B will receive their power supplies from LV 400V Switchboard SG-200N1, drawers A06/+01 and A07/+01.
- The Sea Water Treatment Package A-500000 will receive power its main supply from LV 400V Switchboard SG-200N1, drawer A03/+08. The secondary LV 230V power supply for the internal control panel will be supplied from UPS UP-200F3.

The main testing phase will validate the following:

- Verify the are powered on and there are no alarms present
- Verify control loop check from SIS to LV 400V Switchboard.
- Verify control loop check from SIS to Sea Water Treatment Package.

Performing the steps in this OTP as per engineering documents is crucial to ensure that the equipment is operating correctly and that it meets the desired design specifications. Observing the results will help identify any issues that may arise during the operation.
Overall, following these steps shall provide a comprehensive and effective way to verify the equipment installation and functionality.

4. DOCUMENTS REFERENCES AND ABBREVIATIONS

4.1 Reference Documents

4.1.1 Company Documents and Standards

Document ID	Document Title
[1] K559-2254-CG-PHI-001	Commissioning Philosophy
[2] K559-2254-EL-ELL-002	BLPH Electrical Load List (CCS MODE 2(A) 'HOT STANDBY')
[3] K559-2254-EL-ELL-003	BLPH Electrical Load List (CCS MODE 3(C) 'DISCHARGING')
[4] K559-2254-EL-ELL-004	BLPH Electrical Load List (CCS MODE 4(A) 'COLD STANDBY')
[5] K559-2254-EL-ELL-005	BLPH Electrical Load List (CCS MODE 4A(D) 'EMERGENCY MODE (Island))
[6] K559-2254-EL-ELL-006	BLPH Electrical Load List (CCS MODE 5(D) 'POWER OUT (Blackout))
[7] K559-2254-PR-PHI-001	Main process control philosophy

Table 1: Company Documents and Standards

These documents were produced in FEED and made available to RM for info. They have subsequently been superseded by Detailed Design, similar or same deliverables.

4.1.2 Project Documents

Document ID	Document Title
[1] 123A90-PML-PM-LIS-01001	Master Document Register
[2] 123A90-PML-COM-PL-03002	Mechanical Completion & Commissioning Execution Plan
[3] 123A90-PML-COM-LIS-03011	System/Sub-Systems List
[4] 123A90-PML-COM-LIS-03012	System/Sub-System Boundary Limit Diagrams
[5] 123A90-PML-COM-PRO-03007	Commissioning Strategy
[6] 123A90-PML-COM-PRO-03038	Leak Test Procedure
[7] 123A90-PML-COM-SP-03032	Pre-Commissioning Functional Test Sheet Template Collection (ITR-B)
[8] 123A90-PML-COM-SP-03014	Commissioning TDS - Temporary Equipment & Facilities
[9] 123A90-PML-COM-PRO-03019	OTP – Onshore Performance & Integrated Test Procedure

Document ID	Document Title
[10] 123A90-PML-COM-LIS-03034	Inhibit-Override Register
[11] 123A90-PML-COM-LIS-03035	PSV Calibration Register
[12] 123A90-PML-COM-PRO-03036	OTP - Black Start Procedure
[13] 123A90-PML-COM-LIS-03024	Commissioning Spare Parts and Consumables List
[14] 123A90-PML-COM-PRO-03022	Initial offshore START-UP procedures
[15] 123A90-PML-COM-RE-03001	Commissioning Final Dossier (ITR-B)
[16] 123A90-PML-QHSE-PRO-00116	Flushing and Cleaning Procedures
[17] 123A90-PML-QHSE-SP-00118	Mechanical Completion Check Sheet Template Collection (ITR-A)
[18] 123A90-PML-QHSE-RE-00115	Mechanical Completion Final Dossier (ITR-A)
[19] 123A90-PML-QHSE-PRO-00117	Punch list Management Procedure
[20] 123A90-PML-COM-PRO-03041	OTP - Hydrogen Storage & Venting Systems
[21] 123A90-PML-COM-PRO-03042	OTP - Sea Water Intake & Fresh Water Treatment Systems
[22] 123A90-PML-COM-PRO-03043	OTP - Instrument Air System
[23] 123A90-PML-COM-PRO-03055	OTP - Nitrogen Generation System
[24] 123A90-PML-COM-PRO-03045	OTP - HV Switchgear & 66 kV Transformer Systems
[25] 123A90-PML-COM-PRO-03046	OTP - MV Switchgear & 6.6 kV Transformer Systems
[26] 123A90-PML-COM-PRO-03047	OTP - LV Switch Boards & LV Distribution Board Systems
[27] 123A90-PML-COM-PRO-03048	OTP - Lighting & Small Power Systems
[28] 123A90-PML-COM-PRO-03049	OTP - Electrical Heat Tracing Systems
[29] 123A90-PML-COM-PRO-03050	OTP - DC UPS System 10KVA UP-200F1
[30] 123A90-PML-COM-PRO-03051	OTP - Data Network Systems
[31] 123A90-PML-COM-PRO-03053	OTP - Navaid System
[32] 123A90-PML-COM-PRO-03054	OTP - F&G and ESD C&E Logics
[33] 123A90-PML-COM-SP-03057	Worksite WEF (Work Execution Flow Scheme)
[34] 123A90-PML-COM-SP-03058	Site WEF (Work Execution Flow Scheme)
[35] 123A90-PML-QHSE-PL-00001	Project HSE Plan
[36] 123A90-PML-QHSE-PRO-00120	Proverlis Management Procedure
[37] 123A90-PML-COM-PRO-03056	OTP – Document Template
[38] 123A90-PML-COM-PRO-03059	OTP - AC UPS System 35kVA UP-200F3

Document ID	Document Title
[39] 123A90-PML-COM-PRO-03060	OTP - AC UPS System 15kVA UP-200F4
[40] 123A90-PML-COM-PRO-03061	OTP – Electrolyser (CPI)
[41] 123A90-PML-COM-PRO-03062	OTP – Fuel Cell (CPI)
[42] 123A90-PML-COM-PRO-03063	OTP – BESS (CPI)

Table 2: Project Documents

4.1.3 Vendor Documents

Document ID	Document Title
[1] 1724000936-MD-LIS-00001	SMIR - SUPPLIER MASTER INFORMATION REGISTER
[2] 1724000936-QC-ITP-00002	INSPECTION TEST PLAN-PROGRESSIVE CAVITY PUMPS
[3] 1724000936-MAC-RE-00003	VIBRATION ANALYSIS DATA-LATERAL ANALYSIS-PROGRESSIVE CAVITY PUMPS
[4] 1724000936-MAC-DA-00004	GENERAL ARRANGEMENT AND DIMENSIONAL OUTLINE DRAWINGS (INCLUDING: NAMEPLATE, BASE FRAME, SEAL SYSTEMS, FOUNDATION LOADS NOZZLES LOADS BATTERY LIMITS LIFTING DETAILS)
[5] 1724000936-MAC-DG-00005	MOTOR OUTLINE DRAWING AND WIRING DIAGRAM-PROGRESSIVE CAVITY PUMPS
[6] 1724000926-MAC-DD-00006	PUMP CROSS SECTIONAL DRAWING AND BILL OF MATERIAL (INCLUDING SPEED REDUCER)
[7] 1724000936-MAC-DD-00007	SHAFT SEAL DRAWING AND BILLS OF MATERIAL (INCLUDING FLUSHING PLAN 51)
[8] 1724000936-MAC-DD-00008	SHAFT COUPLING ASSEMBLY DRAWING AND BILL OF MATERIALS
[9] 1724000936-MAC-DD-00009	SPEED REDUCER ASSEMBLY DRAWING AND BILL OF MATERIALS
[10] 1724000936-MAC-DD-00010	PRIMARY AND AUXILIARY FLUSH PIPING SCHEMATICS AND BILL OF MATERIALS
[11] 1724000936-MAC-DD-00011	HEATING JACKET SYSTEM DETAILED DRAWING (INCLUDING ELECTRICAL CONNECTIONS)
[12] 1724000936-MAC-DS-00012	PUMP DATA SHEETS INCLUDING WEIGHT DATA SHEET-PROGRESSIVE CAVITY PUMPS
[13] 1724000936-MAC-DS-00013	PUMP AND MOTOR NOISE DATA SHEET - PROGRESSIVE CAVITY PUMPS
[14] 1724000936-MAC-DS-00014	ELECTRIC MOTOR DATA SHEET - PROGRESSIVE CAVITY PUMPS
[15] 1724000936-MAC-DS-00015	PUMP PERFORMANCE CURVES - PROGRESSIVE CAVITY PUMPS
[16] 1724000936-MAC-DS-00016	ELECTRIC MOTOR PERFORMANCE DATA -PROGRESSIVE CAVITY PUMPS
[17] 1724000936-MAC-LIS-00017	ELECTRICAL LOAD LIST - PROGRESSIVE CAVITY PUMPS
[18] 1724000936-MAC-PRO-00018	COATING PROCEDURE- ACCORDING TO CROSSWIND PROJECT SPECIFICATION

Document ID	Document Title
[19] 1724000936-WEL-PRO-00020	WELD PROCEDURE SPECIFICATION (WPS), WELD LOCATION PLAN (WLP) AND QUALIFICATIONS (PQR) RECORDS
[20] 1724000936-NDT-PRO-00021	NON-DESTRUCTIVE EXAMINATIONS PROCEDURES (NDE) NDE OPERATORS LIST and QUALIFICATIONS
[21] 1724000936-QC-PRO-00022	HYDROSTATIC AND OR PNEUMATIC TEST PROCEDURE - PROGRESSIVE CAVITY PUMPS
[22] 1724000936-QC-PRO-00023	FAT (FINAL ACCEPTANCE TEST) PROCEDURES - PROGRESSIVE CAVITY PUMPS
[23] 1724000936-COM-PRO-00024	PRE-COMMISSIONING -COMMISSIONING PROCEDURES - PROGRESSIVE CAVITY PUMPS
[24] 1724000936-QC-LIS-00025	EQUIPMENT MANUFACTURER RECORD BOOK INDEX - PROGRESSIVE CAVITY PUMPS
[25] 1724000936-MAC-LIS-00026	VENDOR ASSET REGISTER (REF DOC N 123A90-DDL-MAC-SP-50013 - PARA 9 DIGITAL DOCUMENT REQUIREMENTS)
[26] 1724000936-MAC-LIS-00027	ATEX REGISTER - PROGRESSIVE CAVITY PUMPS
[27] 1724000936-QC-DB-00028	EQUIPMENT MANUFACTURERS RECORD BOOK – COMPLETE (A4 bound volume(s) to Purchaser specifications)
[28] 1724000936-COM-LIS-00029	SPARE PART INDEX REGISTER (COMMISSIONING, 2 YEAR OPERATION) - PROGRESSIVE CAVITY PUMPS
[29] 1724000936-MAC-LIS-00030	SPECIAL TOOLS LIST (PUMP AND MOTOR) - PROGRESSIVE CAVITY PUMPS
[30] 1724000936-MAC-MAN-00031	INSTALLATION, OPERATING AND MAINTENANCE MANUAL (PUMP AND MOTOR, INCLUDING SITE ERECTION INSTRUCTIONS AND PROCEDURES)
[31] 1724000936-QC-PRO-00032	PREPARATION FOR SHIPPING PROCEDURES (A4 procedure) INCLUDING BELOW DOCUMENT
[32] 1724000936-QC-PRO-00033	PREPARATION FOR HANDLING AND STORAGE PROCEDURES (A4 procedure) - PROGRESSIVE CAVITY PUMPS
[33] 1724000936-MAC-LIS-00035	UTILITIES & LUBRICANT LIST - PROGRESSIVE CAVITY PUMPS

Table 3: Vendor Documents

4.2 Acronyms and Abbreviations

Acronyms and Abbreviations	Description
AOC	Achievement of Commissioning
BLPH	Base Load Power Hub
BESS	Battery Energy Storage System
C&E	Cause & Effects
CCR	Central Control Room
CCS	Central Control System
CCTV	Closed Circuit Television
CMS	Completions Management System
CPI	Company Provided Item

Acronyms and Abbreviations	Description
CSU	Commissioning & Start-Up
E&I	Electrical & Instrumentation
EMCS	Electrical Monitoring & Control System
ESD	Emergency Shut Down
F&G	Fire & Gas
FAT	Factory Acceptance Test
FT	Functional Test
GALT	Gross Air Leak Test
HAZID	Hazard Identification Studies
HAZOP	Hazard and Operability Studies
HKN	Hollandse Kust Noord
HSE	Health, Safety, & Environment
HSSE	Health, Safety, Security & Environment
HV	High Voltage
HVAC	Heating, Ventilation and Air Conditioning
ICSS	Integrated Control and Safety System
ITR	Inspection & Test Record
LC	Locked Closed
LO	Locked Open
LOTO	Lock-Out / Tag-Out
LV	Low Voltage
OCC	Onshore Commissioning Complete
OEM	Original Equipment Manufacturer
OICT	Onshore Utility Commissioning Complete
OMAR	Operating Modes Assurance Review
OR	Operations Readiness
ORR	Operations Readiness Review
OTP	Operational Test Procedure (Commissioning)
PACO	Process Automation, Control and Optimisation
PCS	Process Control System
PC&C	Pre-Commissioning & Commissioning
PID (P&ID)	Piping and Instrumentation Diagram
PSV	Pressure Safety Valve
PSSR	Pre Start-up Safety Review

Acronyms and Abbreviations	Description
PTW	Permit to Work
PV	Photovoltaic
PVP	Piping and Vessels Preparation
RFC	Ready for Commissioning
RFO	Ready for Operation
RFSA	Ready For Sail Away
RFSU	Ready For Start-Up
SAT	Site Acceptance test
SECE	Safety Environmental Critical Element
SIF	Safety Instrumentation Function
SIL	Safety Integrity Level
SIMOPS	Simultaneous Operations & Maintenance
SIS	Safety Instrumented System
SLD	Single Line Diagram
SMIR	Supplier Master Information Register
SoF	Statement of Fitness
TIV	Technical Integrity verification
UPS	Uninterruptible Power Supply
VHF	Very High Frequency
VooW	Van Oord Offshore Wind
VSAT	Very Small Aperture Terminal
VSAT	Very Small Aperture Terminal
WEF	Work Execution Flow Scheme

Table 4: Acronyms and Abbreviation

5. OTP TEST REQUIREMENTS – ONSHORE WORKSITE

This section refers to the activities on the Contractor worksite (construction yard).

5.1 Planning and Manpower

5.1.1 Planned Tasks with Estimated Manpower

Estimated manpower for the entire duration of the Test:

- 1 E&I commissioning superintendent from Contractor.
- 1 E&I commissioning supervisor from Contractor.
- 1 E&I commissioning technicians from Contractor.

- 1 Yokogawa Operator workstation field engineer.

5.1.2 Test Duration Estimate

The test duration is forecast as follows:

- 1 days.

If necessary, the estimated time can be extended in order to complete all required pre-commissioning and commissioning activities.

5.1.3 Vendor Assistance

Vendor PSC will provide a qualified specialist to assist with all aspects of commissioning of the Water Treatment Package.

5.1.4 Items Postponed to C&E OTP

- Not Applicable

5.1.5 Summary of Items HARDWIRED to be Tested

Signal tag:	Signal description:
50-PT-001	Sea water from pump P-50001A
50-PT-002	Sea water from pump P-50001B
50-TT-001	Sea water from lift pump P-50001A/B
50-XV-001	Sea water from pump P-50001A
50-XV-002	Sea water recirculation from pump P-50001A
50-XV-003	Sea water from pump P-50001B
50-XV-004	Sea water recirculation from pump P-50001A

Table 5: *Items HARDWIRING to be Tested*

5.1.6 Summary of Items HARDWIRED and Modbus to be Tested

Signal tag:	Signal description:
50-XS-001	SHUT-DOWN A-500003 Sea water treatment PKG
50-XA-003	A-500003 Sea water treatment PKG F&G LCP fault
50-XA-001	A-500003 Sea water treatment PKG confirmed gas alarm
50-XA-002	A-500003 Sea water treatment PKG confirmed fire alarm
83-XS-001A	SHUTDOWN SEAWATER LIFT PUMP P-50001A
83-XS-001B	SHUTDOWN SEAWATER LIFT PUMP P-50001B

Table 6 *Items HARDWIRING and PROFINET to be Tested*

5.2 OTP TEST REQUIREMENTS – ONSHORE WORKSITE

5.2.1 Pre-Commissioning Achievement

Prior the commissioning operation starts, the relevant pre-commissioning ITRs should be fully signed.

Note that Worksite testing activities will be limited due to restrictions imposed by incomplete construction that can only be finalized at Site.

5.2.2 Commissioning Achievement

The commissioning achievement will be the successful operation, functionality of, installed and put in operation during the WORKSITE phase:

- SS 50-10 Water Desalination & Distribution System
- Temporary Sea Water Pump (only manually operation)

5.2.3 Status of Required Associated Subsystems

MAIN TEST PHASE: Preparation Operations Tests
Subsystems required RFC for Commissioning of Sea Water Intake & Fresh Water Treatment Systems

- SS 50-10 Water Desalination & Distribution System
- SS 83-00 LV 400V Switchboard SG-200N1
- SS 84-10 UPS UP-200F3
- SS 88-00 Earthing System
- SS 79-00 SIS (ESD)
- SS 87-10 PCS System Cabinet

5.2.4 Special Tools & Test Equipment

The following special tools and Test Equipment are required:

- Continuity tester (Multimeter)
- Toolbox
- Hart Communicator
- Portable radios (2 pcs + 1 per Technical Room)

TESTING & MEASUREMENT INSTRUMENT USED			
Type	Serial N.	Calibration certificate	Validity

5.2.5 Consumable List

- Not applicable

5.2.6 Commissioning Spare Parts

- See reference document 1724000936-COM-LIS-00029

5.2.7 Temporary Facilities

- Functional testing and successive continuous operation of the Fresh Water Treatment Package A50000 will require the implementation of temporary yard facilities for the pumping of sea water from the quayside to temporary storage tanks, from where sea water will be pumped directly to the inlet manifold of package A50000.
- The temporary sea water storage capacity will be approximately 13 m3.
- All sea water pumping operations to the temporary storage tanks, and successively to package A50000 will be managed manually by Rosetti's Commissioning team. No automated control devices will be applied to the temporary facilities.

5.3 OTP DESCRIPTION – ONSHORE WORKSITE

5.3.1 OTP Test Preparation

Step	Description	Result	Verified by	Date
1.	System Ready for Commissioning Certificate (RFC) is issued and approved.	OK		23.04.2025
2.	No Mechanical Completion or Pre-commissioning punch list 'A' items are outstanding against the system to be commissioned.	OK		23.04.2025
3.	Factory Acceptance Test Procedure for Sea Water Lift Pumps has been carried out successfully, refer to document 1724000936-QC-PRO-00023.	OK		23.04.2025
4.	Site Acceptance Test Procedure for Fresh Water Treatment Package has been carried out successfully, refer to document (1724000448-QC-PRO-00028).	OK		23.04.2025
5.	All personnel involved in the implementation of this procedure are familiar with its content as well as with associated safety requirements (Toolbox Talk to be conducted before initiation of activities).	OK		23.04.2025
6.	A final walkdown of the system has been completed, to ensure that the system and the area are ready for commissioning.	OK		23.04.2025

7.	Check that areas are free for work and escape routes are clear of any obstructions.	OK		23-04-2025
8.	All safety barriers and warning signs have been installed.	OK		23-04-2025
9.	Ensure that proper communications have been established between parties involved in the implementation of the procedure.	OK		23-04-2025
10.	Verify availability of test equipment as per section 5.2.4.	OK		23-04-2025
11.	System(s) (de)isolations as per LOTO procedure defined within HSSE Permits to Work and Commissioning procedures duly prepared and approved	OK		23-04-2025
12.	All yard personnel have been duly notified by dedicated LUN (Livening Up Notification) that the system(s) is ready for commissioning.	OK		23-04-2025

5.3.2 Electrical Preparation

Step	Description	Result	Verified by	Date
1.	Check related punch list 'B' items and confirm acceptability for start of commissioning activities.	OK		23-04-2025
2.	Verify that all relevant associated systems / subsystems are completed.	OK		23-04-2025
3.	Verify and confirm the completion of the final connections between the LV 400V Switchboard A06/+01 & A07/+01 and the two Pumps 50001A / 50001B.	OK		23-04-2025
4.	Verify and confirm the completion of the final connections between the LV 400V Switchboard A03/+08 and package A50000.	OK		23-04-2025
5.	Verify and confirm the completion of the final connections between the UPS UP-200F3 and package A50000 (UCP).	OK		23-04-2025

5.3.3 Mechanical Preparation

Step	Description	Result	Verified by	Date
1.	Check the correct flow direction of the valves	OK		23-04-2025
2.	Confirm mechanical alignment of all package pumps & equipment.	OK		23-04-2025

3.	Visual Check.			

5.3.4 Instrument Preparation

Step	Description	Result	Verified by	Date
1.	Check related punch list 'B' items and confirm acceptability for start of commissioning activities.	OK		23-04-2025
2.	Verify that all relevant associated systems / subsystems are ready.	OK		23-04-2025
3.	Check Inhibit and Override register has been prepared and validated.	OK		23-04-2025
4.	Verify that relevant equipment/ components are available and in operation for start of commissioning activities.	OK		23-04-2025
5.	Verify availability of test equipment as per section 5.2.4.	OK		23-04-2025

5.3.5 Piping Preparation

Step	Description	Result	Verified by	Date
1.	Verify the completion of piping in conformity with system battery limit.	OK		23-04-2025
2.	Review Rosetti flange management and confirm all interface connections have been torqued and leak tested with details recorded and signed for.	OK		23-04-2025
3.	Ensure piping system allows for routing of on spec water to drain without the functionality of the Ovivo package.	OK		23-04-2025

5.3.6 Additional Discipline Preparation

- Temporary sea water pumping and storage facilities described in Section 5.2.7.

5.4 OTP TEST STEPS - ONSHORE WORKSITE

In the following steps the functionality of the Sea Water Intake & Fresh Water Treatment Systems

- 50-10 Water Desalination & Distribution System

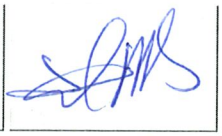
5.4.1 Test Preparation

Need to Verify:

- SS 50-10 Water Desalination & Distribution System
- SS 83-00 LV 400V Switchboard SG-200N1
- SS 84-10 UPS UP-200F3
- SS 88-00 Earthing System
- SS 86-00 Server Cabinet
- SS 86-00 Network Cabinet
- SS 79-00 SIS (ESD)
- SS 87-10 PCS System Cabinet
- Temporary Sea Water Pump (only manually operation)

All systems and subsystems involved in this procedure must be ready for commissioning and available.

5.4.2 Test Steps

Step	Description	Result	Verified by	Date
Sea Water Intake & Fresh Water Treatment Systems				
MAIN TEST PHASE: Preparation and Operations Tests				
• System 50-10 Water Desalination & Distribution System				
1	This test is performed with a temporary sea water lift pump. The commands/states will be temporarily forced by PCS. Once the test is successfully completed, all commands/states and simulations will be reset and checked.	ok		24-04-2025
2	The temporary sea water pump is positioned near the yard quayside with a draft of approximately 3 meters below sea level to ensure seawater quality will be comparable with the required project parameters.	ok		24-04-2025
3	Since this test is performed with a temporary pump, it will be connected to the insertion point boundary limit of the Water Treatment Package A50000 with a temporary hose.	ok		24-04-2025
4	The Water Treatment Package will be controlled by the local control panel 50-LP-001. All package control signals (status and commands) will be exchanged with the control system PCS. The package will be	ok		24-04-2025

Step	Description	Result	Verified by	Date
	placed in auto and allowed to start the process of producing on spec water. Temporary drainage facility will be required to drain on spec water without the need for the Ovivo water treatment package to be functional as to ensure standalone functionality of the PCS package refer to document (1724000448-QC-PRO-00028). The following values are expected: • **50-TT-021** SEAWATER TEMPERATURE 50001 TEMPERATURE TRANSMITTER ➢ **10 / 23°C** • **50-TT-022** SEAWATER TEMPERATURE 50001 TEMPERATURE TRANSMITTER ➢ **10 / 23°C** • **50-FT-020** SEAWATER FLOW 50001 MAGNETIC FLOW TRASMITTER ➢ **2.5 m3/h** • **50-FT-020** SEAWATER FLOW H-50001 MAGNETIC FLOW TRASMITTER ➢ **5 m3/h (Only Backwash)** • **50-PT-050** PRESSURE INLET S-50001 PRESSURE TRANSMITTER ➢ **1 / 2 barg** • **50-PT-051** PRESSURE OUTLET S-50001 PRESSURE TRANSMITTER ➢ **1 barg** • **50-PT-025** FILTERED SEAWATER PRESSURE FROM P-50003A PRESSURE TRANSMITTER ➢ **4 barg** • **50-PT-026** FILTERED SEAWATER PRESSURE TO P-50004A PRESSURE TRANSMITTER ➢ **3.5 barg** • **50-PT-027** FILTERED SEAWATER PRESSURE FROM P- 50003B PRESSURE TRANSMITTER ➢ **4 barg**	23°C 22.7°C 3.6 m³/h 4.6 m³/h 1 barg 0.5 barg 3.6 barg 2.45 barg 3.84 barg		24.04.2025

Step	Description	Result	Verified by	Date
	• **50-PT-028** FILTERED SEAWATER PRESSURE TO P-50003B PRESSURE TRANSMITTER ➢ 3.5 barg	3.49 barg		
	• **50-FT-022** FILTERED SEAWATER FLOW FROM P-50003A MAGNETIC FLOW TRASMITTER ➢ 2 m3/h	2.3 m³/h		
	• **50-FT-023** FILTERED SEAWATER FLOW FROM P- 50003B MAGNETIC FLOW TRASMITTER ➢ 2 m3/h	2.1 m³/h		
	• **50-AT-023** FILTERED SEAWATER CONDUCTIVITY TO P-50003A/B ANALYZER TRANSMITTER - CONDUCTIVITY ➢ 55000 mS/cm	46160 mS/cm		
	• **50-PT-030** FILTERED SEAWATER PRESSURE FROM P-50004A PRESSURE TRANSMITTER ➢ 55 / 64 barg	49.8 barg		
	• **50-PT-032** FILTERED SEAWATER PRESSURE FROM P- 50004B PRESSURE TRANSMITTER ➢ 55 / 64 barg	50.9 barg		
	• **50-AT-024** (contractual parameter) FRESH WATER CONDUCTIVITY FROM A-50007A/B ANALYZER TRANSMITTER – CONDUCTIVITY ➢ ≤ 703 mS/cm	292 mS/cm		
	• **50-FT-024** FRESH WATER FLOW FROM A-50007A/B MAGNETIC FLOW TRASMITTER ➢ 0.8 m3/h	0.8 m³/h		
	• **50-PT-047** FRESH WATER PRESSURE FROM P- 50009A/B PRESSURE TRANSMITTER ➢ 4,5 / 5 barg	4.5 barg		
	• **50-PT-041** FRESH WATER OUTLET PRESSURE PRESSURE TRANSMITTER ➢ 3,5 / 4,5 barg	4.45 barg		

Step	Description	Result	Verified by	Date
	• **50-AT-026** (contractual parameter) FRESH WATER CONDUCTIVITY FROM A-50007A ANALYZER TRANSMITTER - TOTAL HARDNESS ➢ **< 9 ppm CaCO3** • **50-TT-024** (contractual parameter) FRESH WATER OUTLET TEMPERATURE - TEMPERATURE TRANSMITTER ➢ **10 / 23 °C** • **50-FT-026** (contractual parameter) FRESH WATER FLOW FROM S-50010 MAGNETIC FLOW TRASMITTER ➢ **0.8 m3/h** • **50-AT-027** (contractual parameter) FRESH WATER OUTLET pH ANALYZER TRANSMITTER - pH ➢ **pH 7 – 7.9**	1.6 ppm 21.6 °C 0.8 m³/h 7.6 pH		24.04.2025
5	The PCS package is required to run in a standalone steady state for: The time for the PCS package to produce on spec water will be recorded: The package will then shutdown and the piping system aligned to forward feed into the Ovivo package	30 min. 1° START A SIDE 12 min. 2° START B SIDE 15 min.		24.04.2025
6	The Water Treatment Package will be controlled by the local control panel 50-LP-001. All packet control signals (status and commands) will be exchanged with the control system PCS via a Modbus TCP/IP communication. • All signals are tested with Seria Communication Test Reference Doc.:1724000448-IN-LIS-00019 To allow the automatic start of the water treatment sequence, the Local/Remote selector switch is in "Remote Position", the following serial signals between 50-LP-001 and PCS must be exchanged. PCS waits for the signal "Sea water pump start request" from panel 50-LP-001 Water Treatment Package (serial signal 50-HS-001S). The PCS sends the "Operating status of the	OK		26-Sept 2025

Step	Description	Result	Verified by	Date
	main seawater pump" to the Water Treatment Package (50-LP-001 panel). The scope of the system is to produce and provide pure water to the downstream Electrolyzer Package.			
7	Make sure there are chemicals inside the tank to allow the dosing pumps to work. Biocide:10kg Antiscalant:10kg The solution NaOH due to the variable pH value of the seawater at the entrance of the package, the solution with the correct concentration of caustic soda must be prepared.	OK	A. Lucas	26-JUNE 2025
	The parameters necessary to send water to the Electrolyzer are: • Permeate Flow Rate 50-FT-026: 0.8 m^3/h • Permeate Conductivity 50-AT-024: 703 µS/cm • Permeate Hardness 50-AT-026: 0.9 °F • pH 50-AT-027: 7-7.9 pH • Temperature 50-TT-024: 10-23 °C If the values are not reached, the PSC sends the water to the drain line.	OK (*1)	A. Lucas	26-JUNE 2025
8	Through the PCS control system, the Water Treatment Package sends the information to the Electrolyzer. The following information: • pH (50-AI-027) • Temperature (50-AI-026) • Hardness (50-AI-026) • Conductivity (50-AI-024)	OK	A. Lucas	26-JUNE 2025
9	The temporary sea water pump will be started by a Commissioning team technician when the PCS receives the water request signal from the Water Treatment Package. 50-XS-001S _____ [√]. The Running state is simulated by an Operator workstation field engineer on the PCS.	OK	A. Lucas	26-JUNE 2025
10	The temporary sea water pump will be stopped by a Commissioning team technician when the PCS receives a pump			

Step	Description	Result	Verified by	Date
	stop signal from the Water Treatment Package. 50-XS-005S _____ [✓]. The stopped state is simulated by an Operator workstation field engineer on the PCS.	Ok	A. Iveson	26-JUNE 2025

5.4.3 OTP Worksite Tests Notes and Remark

(*1) REFERENCE IS MADE TO ISSUES ENCOUNTERED DURING THE INITIAL COMMISSIONING TESTING PHASE, PARTICULARLY THE INTERFACE OF FRESH WATER BETWEEN ROS WTP AND CPI WTP (OVIVO).
RESOLUTION OF THE ISSUE IS DETAILED IN THE FOLLOWING EMAIL CORRESPONDANCE SCANNED HEREWITH FOR CONVENIENCE.
REFERENCE IS ALSO MADE TO CQ-018.

A. Lucas.

Iveson Anthony (ERM)

Da:	Iveson Anthony (ERM)
Inviato:	venerdì 25 luglio 2025 18:07
A:	'Stephen Bremner'; Martin Taylor; Gerry McCann; Philippo, Thijs P GSNL-PTX/D/H/H
Cc:	Degli Esposti Raffaele (Rosetti); Jamie McAllister; John MacKillop; Sirigu Fabio (ERM); Giunchi Claudia (Rosetti); Shamekhi Leila (EFE); Roncoroni Marco (Rosetti); Brunelli Massimiliano (Rosetti)
Oggetto:	R: Closure of CQ-018 & PL C30004394 (Interface PSC --> Ovivo)
Allegati:	20250626_final_test_chart.pdf; 20250626_final_test.pdf

Afternoon Stephen / All,

further to the agreements taken on the 17th of June to eliminate the caustic soda pH dosing cycle requiring the return to yard of PSC's software engineer between June 24-26, here follow the key implemented and tested changes:

- Elimination of caustic soda pH dosing cycle (as confirmed by vendor Ovivo and CW PMT),
- Definitive alignment between PSC package and Ovivo package (managing flowrate and pressure based on Ovivo pumps VFD operation),
- Change to the fresh water start sequence utilising nr.2 new digital inputs and n.1 new digital output directly hardwired to the Ovivo package,
    - N.2 DI: Ovivo inlet valve "1EBV1" open position feedback signal, and Ovivo pump "1ROP1" running feedback signal,
    - N.1 DO: PSC "Water On-Spec" signal to Ovivo.

The Revised Start Sequence Logic Steps are as follows:

1. OPEN PRODUCTION VALVE 50-XV-031
2. WAIT FOR OVIVO INLET VALVE "1BEV1" OPEN FEEDBACK SIGNAL (new digital input)
3. START FRESH WATER PUMP P-50009A/B
4. OPEN FRESH WATER TANK RECYCLE VALVE 50-XV-036
5. WAIT FOR OVIVO PUMP RUNNING FEEDBACK SIGNAL (new digital input)
6. 25 SECONDS DELAY
7. CLOSE FRESH WATER TANK RECYCLE VALVE 50-XV-036
8. FRESH WATER DELIVERY TO OVIVO PACKAGE
9. WAIT FOR OVIVO PUMP NOT RUNNING FEEDBACK SIGNAL (OVIVO INTERNAL TANK FULL)
10. STOP FRESH WATER PUMP P-50009A/B
11. WAIT FOR OVIVO INLET VALVE NOT OPEN FEEDBACK SIGNAL
12. SEQUENCE GOES BACK TO STEP 1

Tests performed after implementation of the revised procedure recorded freshwater pressure measured by pressure transmitters 50-PI-041/047 not exceeding 5.8 barg during freshwater pumps start/stop operations.
The average pressure recorded during normal delivery stabilised at 4.8 barg, while the pH value never dropped below 5.85 (note very warm summer ambient temperature conditions during testing).

Process value trends recorded during the testing phase are attached for your convenience.

Many thanks,

Anthony.

Anthony IVESON
Commissioning Manager

CROSSWIND BLPH PROJECT

ROSETTI MARINO SPA
Sede - Via Trieste 230
48122 Ravenna – ITALY
Mobile Italia: +39.338.5776469
email: anthony.iveson@rosetti.it
Company website: www.rosetti.it

Da: Stephen Bremner <stephen.bremner@crosswindhkn.nl>
Inviato: mercoledì 23 luglio 2025 08:31
A: Martin Taylor <martin.taylor@crosswindhkn.nl>; Gerry McCann <gerry.mccann@crosswindhkn.nl>; Philippo, Thijs P GSNL-PTX/D/H/H <t.philippo@shell.com>; Iveson Anthony (ERM) <Anthony.Iveson@rosetti.it>
Cc: Degli Esposti Raffaele (Rosetti) <Raffaele.DegliEsposti@rosetti.it>; Jamie McAllister <jamie.mcallister@crosswindhkn.nl>; John MacKillop <john.mackillop@crosswindhkn.nl>; Sirigu Fabio (ERM) <Fabio.Sirigu@rosetti.it>; Giunchi Claudia (Rosetti) <Claudia.Giunchi@rosetti.it>; Shamekhi Leila (EFE) <Leila.Shamekhi@fores.it>
Oggetto: RE: Closure of CQ-018 & PL C30004394 (Interface PSC --> Ovivo)

Agreed,

Thijs returns from leave today to capture the changes made on the Electrolyser package.

@Iveson Anthony (ERM),

Can you please summarise the final modification implemented by PSC and RM associate with the interface so we can add to the CQ? Please identify any documentation that is to be updated as a consequence of the modification?

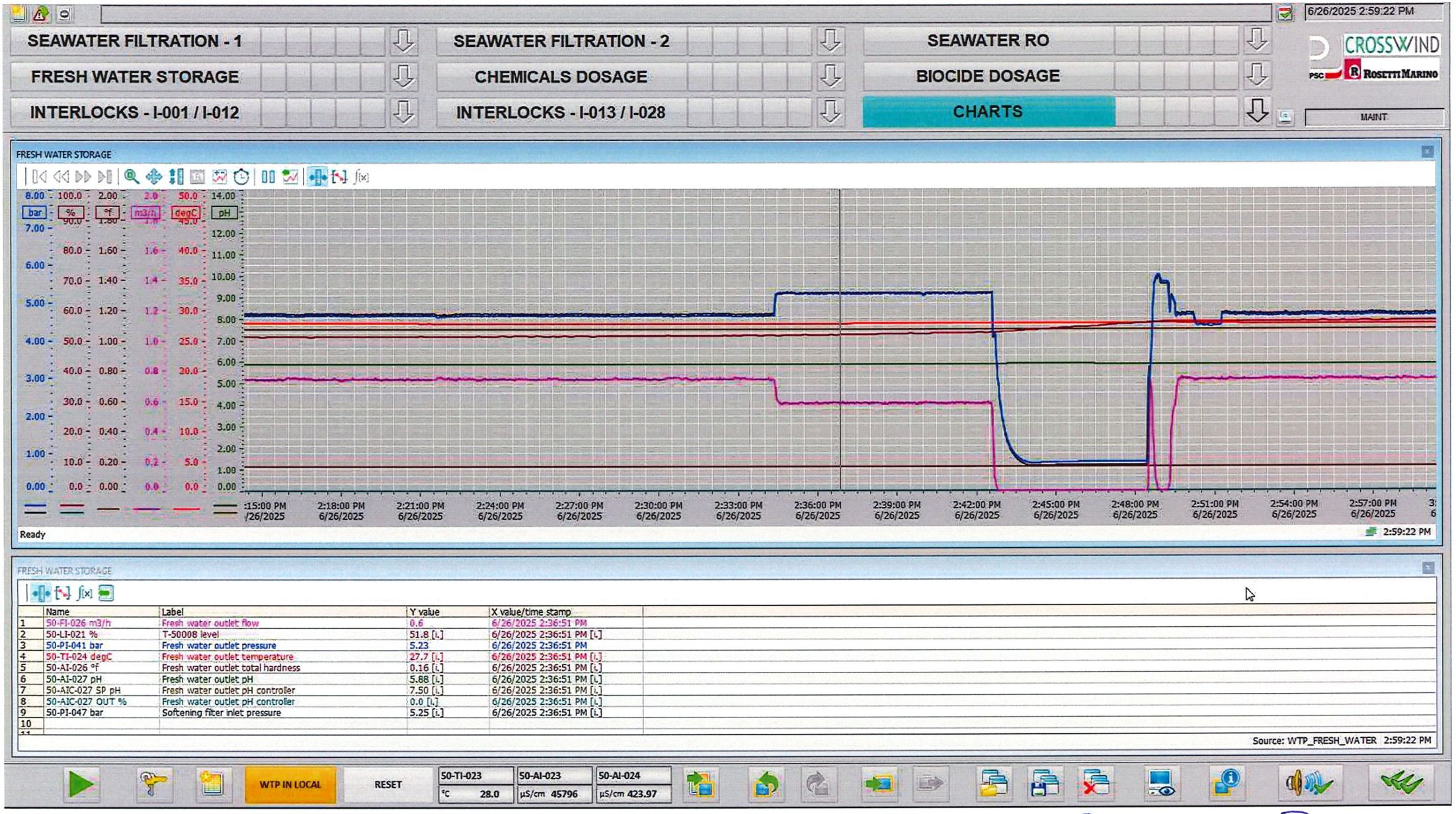
Regards
Stephen Bremner

From: Martin Taylor <martin.taylor@crosswindhkn.nl>
Sent: 23 July 2025 07:24
To: Gerry McCann <gerry.mccann@crosswindhkn.nl>; Stephen Bremner <stephen.bremner@crosswindhkn.nl>; Philippo, Thijs P GSNL-PTX/D/H/H <t.philippo@shell.com>
Cc: Degli Esposti Raffaele (Rosetti) <raffaele.degliesposti@rosetti.it>; Jamie McAllister <jamie.mcallister@crosswindhkn.nl>; John MacKillop <john.mackillop@crosswindhkn.nl>; Sirigu Fabio (ERM) <Fabio.Sirigu@rosetti.it>; Giunchi Claudia (Rosetti) <Claudia.Giunchi@rosetti.it>; Iveson Anthony (ERM) <anthony.iveson@rosetti.it>; Shamekhi Leila (EFE) <Leila.Shamekhi@fores.it>
Subject: RE: Closure of CQ-018 & PL C30004394 (Interface PSC --> Ovivo)

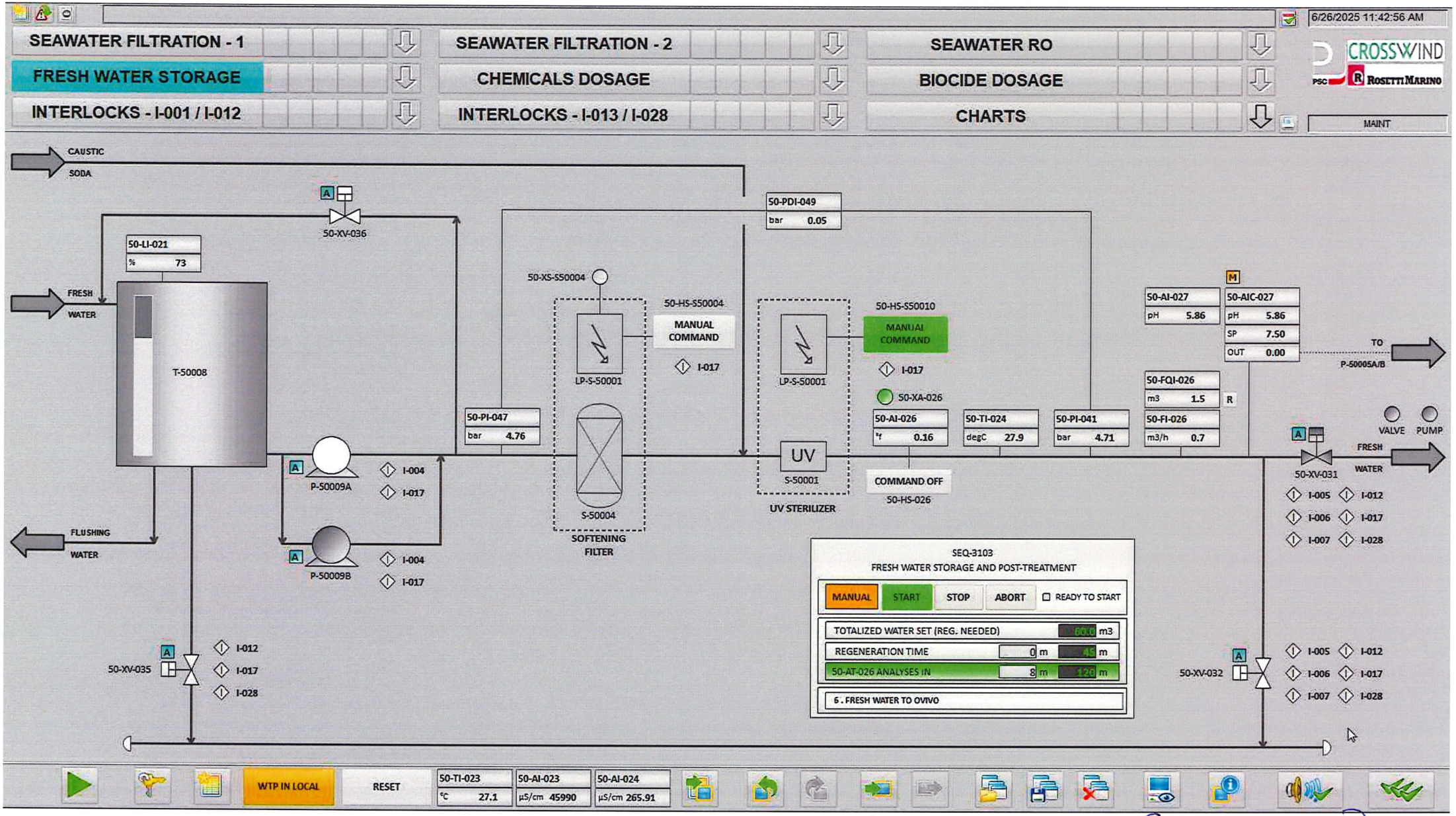
Team

Talking with Anthony yesterday he was looking to be able to close down this CQ – can we, please.

Best Regards


6/26/2025 2:59:22 PM
SEAWATER FILTRATION - 1
SEAWATER FILTRATION - 2
SEAWATER RO
FRESH WATER STORAGE
CHEMICALS DOSAGE
BIOCIDE DOSAGE
INTERLOCKS - I-001 / I-012
INTERLOCKS - I-013 / I-028
CHARTS
CROSSWIND
ROSETTI MARINO
MAINT
FRESH WATER STORAGE
bar
%
°f
m3/h
degC
pH
Ready
2:59:22 PM
FRESH WATER STORAGE
Name
Label
Y value
X value/time stamp
1 50-FI-026 m3/h Fresh water outlet flow 0.6 6/26/2025 2:36:51 PM
2 50-LI-021 % T-50008 level 51.8 [L] 6/26/2025 2:36:51 PM [L]
3 50-PI-041 bar Fresh water outlet pressure 5.23 6/26/2025 2:36:51 PM
4 50-TI-024 degC Fresh water outlet temperature 27.7 [L] 6/26/2025 2:36:51 PM [L]
5 50-AI-026 °f Fresh water outlet total hardness 0.16 [L] 6/26/2025 2:36:51 PM [L]
6 50-AI-027 pH Fresh water outlet pH 5.88 [L] 6/26/2025 2:36:51 PM [L]
7 50-AIC-027 SP pH Fresh water outlet pH controller 7.50 [L] 6/26/2025 2:36:51 PM [L]
8 50-AIC-027 OUT % Fresh water outlet pH controller 0.0 [L] 6/26/2025 2:36:51 PM [L]
9 50-PI-047 bar Softening filter inlet pressure 5.25 [L] 6/26/2025 2:36:51 PM [L]
10
Source: WTP_FRESH_WATER 2:59:22 PM
WTP IN LOCAL
RESET
50-TI-023
°C 28.0
50-AI-023
µS/cm 45796
50-AI-024
µS/cm 423.97

[26-JUNE-2025]


SEAWATER FILTRATION - 1
SEAWATER FILTRATION - 2
SEAWATER RO
FRESH WATER STORAGE
CHEMICALS DOSAGE
BIOCIDE DOSAGE
INTERLOCKS - I-001 / I-012
INTERLOCKS - I-013 / I-028
CHARTS
6/26/2025 11:42:56 AM
CROSSWIND
ROSETTI MARINO
MAINT
CAUSTIC SODA
50-XV-036
50-LI-021
% 73
FRESH WATER
T-50008
50-PDI-049
bar 0.05
50-XS-S50004
50-HS-S50004
MANUAL COMMAND
I-017
LP-S-50001
50-HS-S50010
MANUAL COMMAND
I-017
50-XA-026
50-AI-027
pH 5.86
50-AIC-027
pH 5.86
SP 7.50
OUT 0.00
TO P-50005A/B
50-FQI-026
m3 1.5 R
50-FI-026
m3/h 0.7
50-PI-047
bar 4.76
50-AI-026
0.16
50-TI-024
degC 27.9
50-PI-041
bar 4.71
VALVE
PUMP
FRESH WATER
50-XV-031
P-50009A
I-004
I-017
P-50009B
I-004
I-017
S-50004
SOFTENING FILTER
UV
S-50001
UV STERILIZER
COMMAND OFF
50-HS-026
FLUSHING WATER
I-005
I-012
I-006
I-017
I-007
I-028
SEQ-3103
FRESH WATER STORAGE AND POST-TREATMENT
MANUAL
START
STOP
ABORT
READY TO START
TOTALIZED WATER SET (REG. NEEDED)
REGENERATION TIME
50-AT-026 ANALYSES IN
6 . FRESH WATER TO OVIVO
50-XV-035
I-012
I-017
I-028
50-XV-032
I-005
I-012
I-006
I-017
I-007
I-028
WTP IN LOCAL
RESET
50-TI-023
°C 27.1
50-AI-023
µS/cm 45990
50-AI-024
µS/cm 265.91

[26-JUNE-2025]

5.4.4 OTP Worksite Tests Certifying Authority Table of Attendances

Name and Surname	Certifying Authority	Position	Signature

5.4.5 OTP Worksite Test Final Signatures and Company Acceptance

Name and Surname	Company Representative	Position	Signature
ANTHONY WILSON	ROSETTI MARINO	COMMISSIONING MGR.	
FABIO SARIGU	ROSETTI MARINO	COMMISSIONING AUTOM LEAD	
JAMIE MCALLISTER	CROSSWIND	COMMISSIONING ENG	

5.5 POST TEST CONDITION

the previous chapters are successfully performed.

- All necessary tests are performed and accepted for that system.
- All Communication Cables are tested and completed.
- All panels are in normal operation and no alarm pending.

5.6 REINSTATEMENT AND PRESERVATION TASKS

- All the electrical contacts which were disconnected for the testing purposes must be reconnected.
- After functional tests have been completed, system / sub-systems are left in safety condition and that they are operational.
- all preservation routines identified and required will be included in relevant Preservation ITR within the Proverlis Completions System.

6. OTP AT OFFSHORE SITE

6.1 PLANNING AND MANPOWER

6.1.1 Offshore Site Test Overview

The propose of this test is to recheck the good condition of all equipment and the commissioning of the Wate Treatment Package. At the end of the test the equipment will remain in operation.

6.1.2 Planned Tasks with Estimated Manpower

Estimated manpower for the entire duration of the Test:

- 1 E&I commissioning supervisor from Contractor.
- 1 E&I commissioning technicians from Contractor.
- 1 Operator workstation field engineer.

6.1.3 Test Duration Estimate

The test duration should be as follows:

- 1 day.

If necessary, the estimated time can be extended in order to complete all required pre-commissioning and commissioning activities.

6.1.4 Vendor Assistance

- Not applicable

6.1.5 Items Postponed to C&E OTP

- Not applicable

6.1.6 HOLDS

- Not applicable

6.2 OTP TEST REQUIREMENT – OFFSHORE SITE

6.2.1 Pre-Commissioning Achievement

- Not applicable

6.2.2 Commissioning Achievement

- Not applicable

6.2.3 Status of Required Associated Subsystem

Subsystems required for Commissioning of Sea Water Intake System:

- SS 50-00 Sea Water Intake System (N.B. Fully completed during Site phase)
- SS 50-10 Water Desalination & Distribution System
- SS 83-00 LV 400V Switchboard SG-200N1
- SS 84-10 UPS UP-200F3
- SS 88-00 Earthing System
- SS 86-00 Server Cabinet
- SS 86-00 Network Cabinet
- SS 79-00 SIS (ESD)
- SS 87-10 PCS System Cabinet

6.2.4 Special Tools & Test Equipment

The following special tool and Test Equipment are required:

- Continuity tester (Multimeter)
- Hart communicator
- Toolbox
- Portable radios (2 pcs + 1 per Technical Room)

TESTING & MEASUREMENT INSTRUMENT USED			
Type	Serial N.	Calibration certificate	Validity

6.2.5 Consumable List

- Not applicable

6.2.6 Commissioning Spare Parts

The commissioning spare parts are indicated in the document 1724000936-COM-LIS-00029.

6.2.7 Temporary Facilities

- Not applicable (all temporary facilities required during the Worksite testing phase will not longer be necessary).

6.3 OTP DESCRIPTION – OFFSHORE SITE

6.3.1 OTP Test Preparation

Step	Description	Result	Verified by	Date
1.	System Ready for Operation (from WORKSITE Phase) (RFO) Certificate is issued and approved.			
2.	Confirm completion of SS 50-00 Sea Water Intake System (caissons and pumps installation). ITR-As completed and signed off without any blocking punch items.			
3.	All personnel involved in the implementation of this procedure are familiar with its content as well as with associated safety requirements (Toolbox Talk to be conducted before initiation of activities).			
4.	A final walkdown of the system has been completed, to ensure that the system and the area are ready for start-up.			
5.	Verify availability of test equipment as per section 6.2.4.			
6.	All personnel have been duly notified that the system(s) is ready for start-up.			

6.3.2 Electrical Preparation

Step	Description	Result	Verified by	Date
1.	Verify that all relevant associated systems / subsystems are ready.			
2.	Verify and confirm the completion of the final connections between the LV 400V Switchboard 06/+01 & 07/+01 and the two Pumps 50001A / 50001B.			

6.3.3 Mechanical Preparation

Step	Description	Result	Verified by	Date
1.	Verify that all relevant associated systems / subsystems are ready.			
2.	Confirm completion of all offshore hook-up scope of works.			
3.	Confirm mechanical alignment of all package pumps & equipment.			

4.	Visual Check of piping, valves and process instrumentation.			

6.3.4 Instrument Preparation

Step	Description	Result	Verified by	Date
1.	Verify all Panels are available as per section 6.2.3			
2.	Verify availability of test equipment as per section 6.2.4.			

6.3.5 Piping Preparation

Step	Description	Result	Verified by	Date
1.	Verify the completion of piping in conformity with system battery limit.			
2.	Review Rosetti flange management and confirm all interface connections have been torqued and service tested with details recorded and signed for.			

6.3.6 Additional Discipline Preparation

- Not applicable

6.4 OTP TEST STEPS - OFFSHORE SITE

6.4.1 Test Preparation

Need to confirm availability of the following systems:

- SS 50-00 Sea Water Intake System has been completed and is available.
- SS 50-10 Water Desalination & Distribution System is available.
- SS 83-00 LV 400V SG-200N1 (06/+01 & 07/+01) is available.
- SS 84-10 UPS UP-200F3 is available.
- SS 86-00 NETWORK CABINET is available.
- SS 86-00 SERVER CABINET is available.
- SS 79-00 SIS SYSTEM is available.
- SS 87-10 PCS SYSTEM is available.

All systems and subsystems involved in this procedure must be ready and available.

6.4.2 Test Steps

Step	Description	Result	Verified by	Date
Energization of Sea Water Intake & Fresh Water Treatment Systems				
MAIN TESTING PHASE: Preparation and Operations Tests				
System 50-00 Sea Water Intake System is completed. System 50-10 Water Desalination & Distribution System				
1.	Check that there are no alarms present and that all instrumentation devices are powered.			
2.	Check and confirm that the A6/+01 and A7/+01 drawers on the LV 400V switchboard SG-200N1 are ready for power on.			
3.	Close and energize drawers A6/+01 and A7/+01 from LV 400V switchboard SG-200N1 and verify line voltage and phase rotation are all correct for starting.			
4.	Before starting the pump, ensure that no persons are in a hazardous position.			
5.	<u>LOCAL MODE</u> Put the selectors in Local mode SA1-A (PUMP A), in front of the drawer 06/+01 and SA1-B (PUMP B), in front of the drawer 07/+01. Check on HMI the signals are set in Remote mode. 50-HS-002A _____[ ] 50-HS-002B _____[ ]			
6.	In the Local Mode all Valves by-pass isolation (50-XV-002 for P-50001A and 50-XV-004 for P-50001B) and discharging isolation valves (50-XV-001 for P-50001A and 50-XV-003 for P-50001B) will be manually managed by operator.			
7.	Before starting the pump in Local mode, make sure that the by-pass valves are closed, and the discharging valve are open.			

Step	Description	Result	Verified by	Date
8.	Start the pushbutton PM1-A (PUMP A), in front of the drawer 06/+01 or PM1-B (PUMP B), in front of the drawer 07/+01to start the selected pump.			
9.	To stop the selected pump pushes pushbutton PA1-A (PUMP A), in front of the drawer 06/+01 or PA1-B (PUMP B), in front of the drawer 07/+01.			
10.	The shutdown pumps are given by the: • Emergency push button 50-XA-006A PM-50001A • Emergency push button 50-XA-006B PM-50001B in • Trip alarm from SIS 83-XS-001A _____ [ ]. • Trip alarm from SIS 83-XS-001B _____ [ ].			
11.	<u>REMOTE MODE</u> Put the selectors in Remote mode SA1-A (PUMP A), in front of the drawer 06/+01 and SA1-B (PUMP B), in front of the drawer 07/+01. Check on HMI the signals are set in Remote mode. 50-HS-002A _____[ ] 50-HS-002B _____[ ] 50-HS-003 is set to select pump A or B in Standby mode.			
12.	The main seawater lift pump is automatically started/stopped by the PCS according to the water demand of the Water Treatment Package. The Water treatment package sends a water request signal to the PCS. The PCS sends the pump started/stop status to the Water Treatment Package.			

Step	Description	Result	Verified by	Date
13.	The PCS requires automatic opening/closing of the (on/off) discharging isolation valves (50-XV-001 for P-50001A and 50-XV-003 for P-50001B).			
14.	A software interlock is provided to prevent the pump from starting if the valve XV is closed. • If the valve 50-XV-001 is closed (50-ZSL-001 closed valve status active), the software interlock prevents pump "A" to start. • If the valve 50-XV-003 is closed (50-ZSL-003 closed valve status active), the software interlock prevents pump "B" to start.			
15.	Auto start of designed stand-by pump will be activated on: • Loss of running status of duty pump. • low pressure alarm (50-PAL-001/002) of duty pump.			
16.	The pumps stop in case of: • Pressure transmitter on duty discharge line in High Pressure Alarm (50-PAH-001 or 50-PAH-002), duty pump will be stopped. • Pressure transmitter on duty discharge line in Low Pressure Alarm (50-PAL-001 or 50-PAL-002) when the main pump is already started, duty pump will be stopped and stand-by pump started. • Running Status (50-XL-001A or 50-XL-001B) of duty pump missing during pump operation, duty pump will be stopped and stand-by pump started.			

Step	Description	Result	Verified by	Date
	If after the selected pump is started, the relevant PT doesn't reach the min set value, within 2 minutes (Adjustable time), the stand-by pump shall be started.			
17.	The temperature transmitter 50-TT-001 with remote indication (50-TI-001) is required just at inlet of water treatment system.			
18.	Confirm correct interface and operation with Fresh Water Treatment package A50000.			
19.	Confirm absence of water leaks and absence of pumps and piping vibrations.			

6.4.3 OTP Site Tests Notes and Remarks

6.4.4 OTP Site Tests Certifying Authority Table of Attendances

Name and Surname	Certifying Authority	Position	Signature

6.4.5 OTP Site Tests Final Signatures and Company Acceptance

Name and Surname	Company Representative	Position	Signature

6.5 POST TEST CONDITIONS

- The previous chapters are successfully performed.
- All panels are in normal operation and no alarm pending.

6.6 REINSTATEMENT AND PRESERVATION TASKS

After the test are completed, the system is left in a safe condition and that it is operational.

7. APPENDICES

7.1 Vendor SAT Procedure (where applicable)

7.2 Proverlis Summary System Reports

7.3 Equipment Related Technical Queries (where applicable)

7.4 As Built Documentation (where applicable)

ITEM	Tag	123A90-PML-COM-PRO-03042 : OTP - Sea Water Intake and Fresh Water Treatment Systems				Dwg	123A90-PML-COM-PRO-03042
	S/Sys	50-10 : Water Desalination Package & Distribution				Module	
TASK	code	C10004938		Location	Offshore Activities	User	Rosetti Marino Quality Control
FORM	Process	COMM	Activity OTS	Discipline	Miscellaneous	Form	5300 Operational Test Procedure

OTP - OPERATIONAL TEST PROCEDURE

Attached procedure number:

Associated subsystems:

Completion date:

Comments/Remarks:

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
	COMMISSIONING DISCIPLINE LEAD	RM COMMISSIONING MANAGER	CPY COMMISSIONING MANAGER
Name			
Date			
Signature			

Section 6 PIPING AND VESSEL PREPARATION

Section 6.1 Final Mechanical / Vessel Inspection Checks Index

NOT APPLICABLE

Section 6.2 Leak Test / Drying / Inerting Test Sheets Index

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM

Electrical	50-10 Water Desalination Package & Distribution						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
A3/+08-QF1	WATER DESALINATION PACKAGE - UCP - A3/+08-QF1	ONSHORE	C10002938	FP00	100	2024-12-07	RFO 2
		ONSHORE	C10002939	FTR-2	100	2024-10-02	RFO 2
		ONSHORE	C10002940	FTR-6	100	2024-10-03	RFO 2
		ONSHORE	C10003021	FTR-5	100	2025-04-29	RFO 2
UP-200F3-QF36	WATER DESALINATION PACKAGE - UCP	ONSHORE	C10004575	FTR-2	100	2024-12-07	RFO 2

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM

Instrumental	50-10 Water Desalination Package & Distribution

ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
50-XA-003	A-500003 (A-50000) Sea water treatment PKG F&G LCP fault	ONSHORE	C10003759	FJ01D	100	2025-02-11	RFO 2
50-XS-001	SHUT-DOWN A-500003 (A50000) Sea water treatment PKG	ONSHORE	C10003760	FJ01D	100	2025-02-11	RFO 2
A-50000	Water Treatment Package	ONSHORE	C10004885	FJ05	100	2025-02-14	RFO 2

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM

Piping	50-10 Water Desalination Package & Distribution						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
50-10	Service Test Water Desalination & Distribution System	ONSHORE	C10004908	4245	100	2025-03-28	RFO 2

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 50-10 & process: COMM

Miscellaneous	50-10 Water Desalination Package & Distribution						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03042	OTP - Sea Water Intake and Fresh Water Treatment Systems	ONSHORE	C10004614	5300	100	2025-07-28	RFO 2
		OFFSHORE	C10004938	5300	0	-	-

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	50-10	: Service Test Water Desalination & Distribution System			Dwg	-
	S/Sys	50-10	: Water Desalination Package & Distribution			Module	
TASK	code	C10004908		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	COMM	Activity PVP	Discipline	Piping	Form	4245 Service Test

CONDITIONS

Operating pressure: 2,5 bar g

Test Pressure 2,5 bar g

Test Fluid				
Air	X	Nitrogen		
Water		Other		

TIGHTNESS CRITERION

Pressure variation tolerance: 0,1

Test Duration: 30 MIN

Pressure Recording Means: TEXS

Adhesive Tape:	No
Soap Solution:	Yes
He Tracing:	No

Rotating equipment isolated

ATTACHMENTS

Procedure:	No
Sketches & Drawings:	No
Pressure Records:	No

Comments: TEST WAS PERFORMED TO VALIDATE THE INTEGRITY OF THE SYSTEM

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ROSETTI MARINO SPA		CPY NOT PRESENT
Name	Ignacio Vago	Anthony Iveson	Witness waived
Date	2025-03-28	2025-03-28	2025-03-28
Signature	PROVERLIS Digitaly signed by Ignacio Vago 2025-03-28T16:55:36.156Z	PROVERLIS Digitaly signed by Anthony Iveson 2025-03-28T17:18:05.920Z	PROVERLIS Digitaly signed by Witness waived 2025-03-28T17:22:16.497Z

Section 6.3 Chemical Loading & First Fill records Index

NOT APPLICABLE

Section 6.4 Chemical Cleaning Reports and Records Index

NOT APPLICABLE

Section 6.5 Lubrication Schedule

NOT APPLICABLE

Section 7 VENDOR

Section 7.1 Vendor Package Summary Index

NOT APPLICABLE

Section 7.2 SAT Procedure with associated punch list and reference (Front Page)

Base Load Power Hub (BLPH)

SITE ACCEPTANCE TEST PROCEDURE
WATER TREATMENT PACKAGE (A-50000)

Document Number: 1724000448-QC-PRO-00028

Document Class: 2

01	15/02/2025	Accepted for Construction (AFC)	PSC	WR	RM
00	12/11/2024	Issue for Review (IFR)	PSC	WR	RM
Rev.	Date	Description	Prepared	Reviewed	Approved

PSC DOC. REF.: PK2885-Q-005

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

Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1	
2	
3	
4	

Table of contents

1 INTRODUCTION 5

1.1 PROJECT OVERVIEW 5

1.1.1 Project Location 5

1.1.2 Project Concept 6

2 DOCUMENT PURPOSE AND SCOPE 7

2.1 REFERENCES 7

2.2 DEFINITIONS AND ABBREVIATIONS 8

2.3 RESPONSIBILITIES 8

3 TEST UTILITIES AND CHEMICALS 9

3.1 ELECTRIC POWER 9

3.2 COMPRESSED AIR 9

3.3 SERVICE WATER 9

3.4 SEA WATER 9

3.5 CHEMICALS 10

4 EQUIPMENTS 11

4.1 FEEDING PUMP 11

4.2 TERMINAL POINTS 11

4.2.1 Hydraulic Terminal Points 11

4.2.2 Sampling Points 11

4.2.3 Electrical Terminal Points 12

5 TEST PROCEDURE 12

5.1 PRE-REQUIREMENT AND BASIC INSTRUCTION 12

5.2 TEST SEQUENCE 12

5.3 DURATION 14

5.4 TEST PARAMETERS 14

5.5 ACCEPTANCE CRITERIA 14

5.6 SYSTEM PERFORMANCE GUARANTEES 15

6 CLEANING 15

7 TEST REPORT 15

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

7.1 PHOTO REPORTAGE 15
7.2 TECHNICAL ATTACHMENTS 16
8 Reference list 17
8.1 MODBUS LIST 17

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 18.5 km off the coast of the Netherlands near the town of Egmond aan Zee.

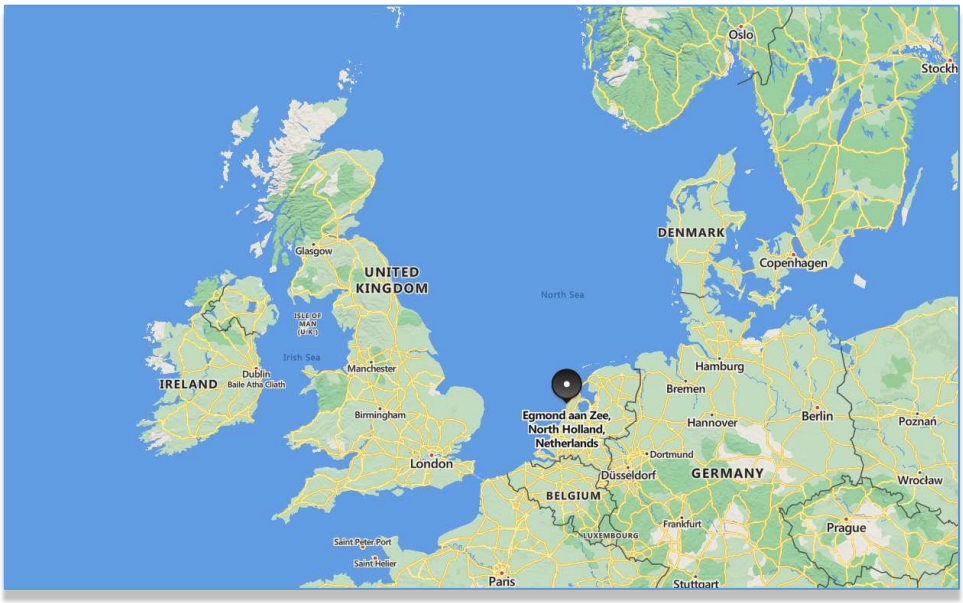


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map

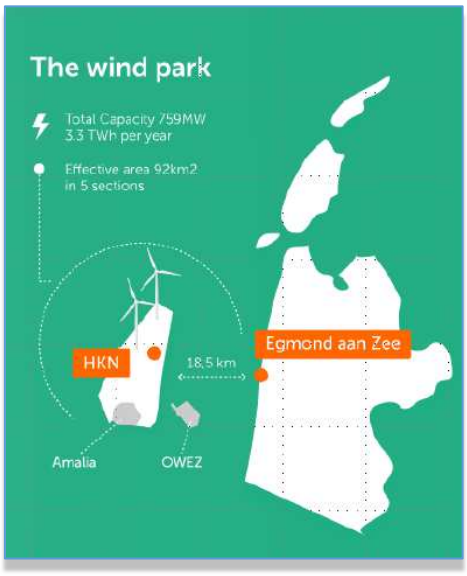


Figure 2 - Wind Park Details

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.

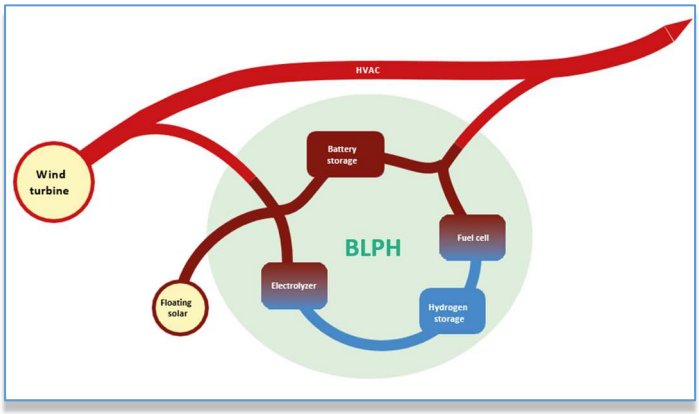


Figure 3 – BLPH Concept

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 PURPOSE AND SCOPE

The purpose of this document is to define the procedure of the functional test to be held at Rosetti Marino's yard (Marina di Ravenna) of the Water Treatment Package built by PSC Engineering & Contracting for the Hollandsee Kust Noord Wind Park Project.

The Site Acceptance Test is verified by multidisciplinary engineers to check the following aspects:

- Compliance of the installed equipment with all client's project specification and with PSC's documentations.
- Operation and functionality of entire Water Treatment Package.
- Check of the contractual parameters at the outlet of the Water Treatment Package, please refer to paragraph 5.6 of this document.

2.1 REFERENCES

Last revision of the following document as minimum shall be used as reference to perform the SAT test:

Doc. No.	Description
1724000448-PR-PID-00013	P&ID
1724000448-MAC-DA-00005	GENERAL ARRANGEMENT DRAWINGS
1724000448-MAC-MAN-00032	OPERATION & MAINTENANCE MANUAL
1724000448-IN-LIS-00021	INSTRUMENT LIST
1724000448-MAC-SP-00003	SYSTEM FUNCTIONAL DESCRIPTION
	As built technical drawings (electrical, mechanical & process schemes)
MSDS Antiscalant MSDS Non oxidant biocide MSDS Caustic soda	EVERBLUE 600 - Everblue EB BIOCIDE PLUS - Everblue Caustic soda 6 mol/l - Merck

Table 1 - Reference Documents

2.2 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY)	Crosswind
CONTRACTOR (CTR)	ROSETTI MARINO S.p.A.
PROJECT	HOLLANDSE KUST NOORD WIND PARK Project
CA	Certification Agency
DCS	Distributed Control System
DS	Surveyor
EXP	Expediting dept.
LOG	Logistic Dept.
NDE	Non Destructive Examination
NTU	Nephelometric Turbidity Unit
PLC	Programmable Logic Controller
PQR	Procedure Qualification Record
QC	Quality Control Dept.
QCI	Quality Control Inspector
SC	PSC Engineering S.p.A.
SWRO	Sea Water Reverse Osmosis
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
TSS	Total Suspended Solids
UPS	Uninterruptible Power Supply
WI	Welding Inspector
WLD	Welding Dept.
WQR	Welder Qualification Record
WPS	Welding Procedure Specification

Table 2 - Definitions and Abbreviations

2.3 RESPONSIBILITIES

Good construction safety practices must be in place and followed all times during site acceptance test to reduce possibility of injury.

PSC shall not be liable for physical injury, damage or delays caused by a failure to observe the instruction contained in the operating and installation manuals.

PSC will conduct the site acceptance test with client Rosetti Marino as witness and based on the following procedure.

All commissioning teams and maintenance staff shall be available to attend the present test.

All portable instruments and common mechanical and electrical tools shall be available on site and provided by Client.

3 TEST UTILITIES AND CHEMICALS

The following utilities and chemicals will be available at yard during the Water Treatment Package Functional Test:

3.1 ELECTRIC POWER

The following Electric Energy supply will be made available by Rosetti Marino to feed the Water Treatment Plant:

- 2 kW – 230V / 50Hz
- 65 kW – 400V / 50Hz

Cables, cable glands and switch as required to connect and power up the package.

3.2 COMPRESSED AIR

A compressed dried and filtered air pipeline, from workshop internal air distribution system, will be made available by Rosetti Marino only for cleaning and drying purposes.

3.3 SERVICE WATER

Cleaned service water at 3-5 barg, from workshop internal water distribution system, will be made available by Rosetti Marino for cleaning and flushing purposes.

3.4 SEA WATER

Sea water, supplied by Rosetti Marino, will have the following inlet characteristics:

COMPOSITION	CONCENTRATION (mg/l)
Sodium, Na	11150
Potassium, K	420
Calcium, Ca	432
Magnesium, Mg	1410
Barium, Ba	0.1
Strontium, Sr	6.6
Chloride, Cl	20310
Sulphate, SO_4	2800
Bicarbonate, HCO_3	150

TDS	36682
Silica, Si	1
Iron, Fe	<0.02
Manganese, Mn	<0.01
Oil	<0.1
TSS	<10
TOC	<10
Temperature	10-23°C

Table 3 – Sea water composition

Before starting the Site Acceptance Test at yard it is mandatory to reach the above parameters, or at least: TSS, Oil, Iron, Silica, Calcium, Magnesium, TOC, Turbidity < 10 NTU, temperature.

Please note that the laboratory analysis of the samples are out of PSC scope and will be performed by Rosetti Marino.

3.5 CHEMICALS

The partial first filling of chemicals will be provided by PSC to allow the dosing pumps operation and test:

Biocide: 10 kg

Antiscalant: 10 kg

NaOH solution: due to the variable value of the pH of the sea water at the package inlet, the solution with the proper Caustic soda concentration shall be prepared according to the following table:

Sea water pH	Caustic soda concentration	Caustic soda available at 20%	Demi water	Dosing pump flowrate
8.2	2%	1 liter	10.8 liters	0.04 l/h
7.8	5%	1 liter	3.5 liters	0.04 l/h

Table 4 – Caustic soda dosage

Please contact PSC SpA for sea water pH evaluation and caustic soda concentration value in case the detected sea water pH values turn out to be different from those indicated in the above table

4 EQUIPMENTS

The following equipment and machinery will be available at yard during the test:

4.1 FEEDING PUMP

Sea water will be supplied by Rosetti Marino at inlet battery limit at constant flow rate 2.5 m^3/h and at feed pressure up to 4 barg – 5 barg max by N.1 package feed pump.

Inlet/outlet flexible pipes, valves and dedicated feed incoming powers will be available by Rosetti Marino.

4.2 TERMINAL POINTS

Flexible pipes to be provided by Rosetti Marino:

4.2.1 Hydraulic Terminal Points

TERMINAL POINT	NPS	FINISH	RATING	FACE	MATERIAL	DESCRIPTION
TP-017	1 ½"	FLG	150#	RF	PVC	Sea water from intake pumps
TP-002	1"	FLG	150#	RF	PVC	Fresh water
TP-003	3"	FLG	150#	RF	PVC	Sea water drain
TP-005	1"	FLG	150#	RF	PP	Biocide to sea water intake
TP-006	1"	FLG	150#	RF	PP	Biocide to wastewater tank
TP-007	1 ½"	FLG	150#	RF	PVC	Chemical drain
TP-008	½"	FLG	150#	RF	PVC	Container open drain

4.2.2 Sampling Points

Intermediate sampling points have been provided inside container suitable to get specimen for analysis in case water characteristics do not cope with expected results, in order to find the origin of the fault:

SAMPLING POINT NUMBER	SAMPLING POINT VALVE	DESCRIPTION
1	MV-501 ½"	Sea water inlet
2	MV-510 ½"	Filtered sea water downstream S-50001
3	MV-644 ½"	SWRO permeate
4	MV-572 ½"	Fresh water outlet

Please note that the laboratory analysis of the samples is out of PSC scope and will be performed by Rosetti Marino.

4.2.3 Electrical Terminal Points

TERMINAL POINT	DESCRIPTION
Terminal strips	For Main power feeding, analog, digital, motors
Junction Box 1	Panel Feeding 400 V, 50 Hz
Junction Box 2	UPS Feeding 230 V, 50Hz
Communication Card	Signals from/to ICCS
Communication Card	Signals from/to Fire & Gas Panel

5 TEST PROCEDURE

5.1 PRE-REQUIREMENT AND BASIC INSTRUCTION

The purchaser shall comply with the instructions and information given in this document, and all personnel associated with the equipment of this plant shall be made familiar with the information contained herein.

All people involved in the erection, tests, start-up and service of the plant should be fully qualified, skilled and totally informed about the correct service and the relevant hazard, fluids and raw materials of plant.

Installation, pre-commissioning and commissioning activities shall be successfully carried out, before starting any test described in the present procedure.

All relevant defects, failures and damages shall be listed and recorded during pre-commissioning and commissioning to be agreed and resolved by action plan, especially for the critical part or component required to the start-up and plant operation.

Documents and Manuals supplied by the equipment manufacturers may supplement and complete the information given in this procedure.

The working space required for the execution of the tests shall be accessible and not be used for storage but shall be clean and free of debris. Any tools or test instruments must not be left unattended.

Before and during test executions, all safety requirements shall be strictly followed and suitable PPE used.

5.2 TEST SEQUENCE

Completed the commissioning and start-up periods, the plant shall be started and operated within design parameters as per PSC's operation manual and relevant sub-vendor's manuals.

The sea water will feed the plant as per Section 3.4.

All required utilities shall be always supplied as per Section 3.

Check that the plant is controlled automatically.

All stand-by items (pumps, fans, heater, SWRO etc.) will be checked in operation.

The package start-up will follow the normal procedure.

The following subsystem has been already tested during the pre-commissioning and commissioning activities.

- Self cleaning coarse filter A-50003 operation and backwash
- Operation of electric heater H-50001
- Sand filter S-50001 operation and backwash
- SWRO system operation A-50007A/B
- SWRO system flushing
- Fresh water pumps P-50009A/B
- Softening filter S-50004 operation and regeneration
- Biocide dosing
- Antiscalant dosing
- NaOH dosing
- Automatic draining systems

Please refer to SAT REPORT - ATTACHMENT A – EQUIPMENT and SAT REPORT - ATTACHMENT C – SEQUENCES for the acceptance criteria

The scope of the SAT test is to verify that the freshwater parameters reported at the paragraph 5.6 are met.

The water treatment package A-50000 is equipped with nr.4 sample points.

Sample point nr.1 shall be used to verify the chemical characteristic of the feed water

Sample point nr.2 is used to verify the water quality after the sand filter filtration

Sample point nr. 3 is used to verify the RO water quality

Sample point nr. 4 shall be used to verify the freshwater parameters reported at paragraph 5.6

It is suggested to sample the water every 4 hours during the system operation.

The samplings shall be marked at least with sample point nr. (as for the table shown at paragraph 4.2.2) and with the time of sampling.

It is suggested that all the 4 samples taken will be analyzed each time to have constant monitoring of all the main water chemical characteristics at the inlet and after the treatment points. However, if that is not possible it is strictly necessary to analyze at least sampling nr.1 e nr.4 (water parameters at the system inlet and outlet)

It is also important to record the parameters reported by the instruments installed in the package. The parameters must be reported using the tables (process data and contractual data) in the annexes to this document. At the end of the day, final tables will then be filled in showing the average of the values obtained in the three daily inspections as the measured values.

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

5.3 DURATION

Test duration will be 4 consecutive days for 12 hours/day switching on line A to Line B every 12 h

5.4 TEST PARAMETERS

The following parameters will be monitored and recorded during the test:

- Pressure, Temperature, Level and Flow as per package instruments
- Filtered sea water conductivity (50-AT-023)
- SWRO outlet fresh water conductivity (50-AT-024)
- Fresh water outlet pH (50-AT-027)
- Fresh water outlet total hardness (50-AT-026)

5.5 ACCEPTANCE CRITERIA

The Site Acceptance Test will be successfully passed according to the following acceptance criteria:

- Water Treatment Package shall be started and operated continuously and in steady conditions with the following requirements:
  - a) No visible damage, deformation, hydraulic leakage and corrosion for main components (piping, valves, pumps, tanks, filter, SWRO, pressure vessel, softener, electric heater, UV sterilizer, instrument)
  - b) No interruption in production
  - c) Absence of malfunction and failure (mechanical, electrical)
  - d) No visual alarm or fault
  - e) No excessive vibrations
  - f) No overheating of the power equipment (electrical heaters, motors, local panels, local control and power panels)
  - g) Reliable instrument measurement (calibration and within operating measurement range), checking by portable instruments where they are available
  - h) Correct automatic sequence as per system description and operation of the automatic valves (no valve misalignment)
  - i) Correct interlocks activation as per C&E
  - j) All measured values and equipment status are monitored properly and recorded by the local control panel
  - k) Operating parameters shall be within design values
  - l) All set points values shall be as per instrument list and can be adjustable
  - m) Checking all transmission signals to/from DCS.

- Other requirements to be successfully tested:

a) Correct start-up sequence of the plant (especially the high pressurization step of the HP Pressure Pumps)

b) Normal shutdown sequence of the plant

c) Emergency shutdown of the plant, power failure and fire gas failure

d) F&G detection system by positive simulation.

5.6 SYSTEM PERFORMANCE GUARANTEES

Fresh water quality shall be as per Spec. K559-2254-PM-PLN-003, par. 8.3.2.

• SWRO permeate flow rate	:	0.8 m^3/h	50-FT-026
• SWRO permeate conductivity	:	703 µS/cm	50-AT-024
• SWRO permeate hardness	:	0.9 °F	50-AT-026
• pH	:	7-7.9	50-AT-027
• Temperature	:	10-23	50-TT-024

The Test will be considered successful if the above acceptance criteria are met and the quality of fresh water and its flow rate meet the contractual guarantees. Immediately after a test report shall be signed by the parties.

6 CLEANING

At the end of the test the package will be emptied and rinsed with fresh water to remove all the seawater inside equipment and pipes.

Where possible the pipes will be cleaned and dried with compressed air.

Chemicals will be removed from their storage tanks, tanks and pumps will be cleaned, rinsed with fresh water and dried with compressed air. The chemicals solution will be correctly disposed.

7 TEST REPORT

A Site Acceptance Test Report will be issued after test, complete with all following reference documentation:

7.1 PHOTO REPORTAGE

A photo reportage will be done at site, including the following sections:

- Photo of external view of container with relevant installation, hydraulic and electrical connection
- Photo of internal view of the container with all installed equipment
- Photo of Video page HMI, with all operating process parameters of the tested items and operating SWRO line A and SWRO Line B
- Photo of any displayed alarm and failure
- Photo of Seawater, Permeate water and Freshwater samples.

7.2 TECHNICAL ATTACHMENTS

The following attachment shall be filled and signed by PSC's staff and Client:

- SAT REPORT - ATTACHMENT A – EQUIPMENT
- SAT REPORT - ATTACHMENT B - PROCESS PARAMETERS

Process parameters to be reported for the three reading prior to declaring the mean value

- SAT REPORT - ATTACHMENT C - SEQUENCES
- Laboratory analysis certificated of the water samples.

Once the test will be completed, a Site Acceptance Test certification shall be signed by Customer within 48 hours from successful test.

In case of fail of the Site Acceptance Test, the first step is to identify which parameter does not comply with requirements. Then, check the correct operation and calibration of instruments.

Finally, if the instruments work properly, through sampling points listed in Section 4.2.2., water analysis will be taken and values recorded to identify where the issue occurs.

PARAMETER	CONTRACTUAL VALUE	WATER SAMPLE
SWRO permeate conductivity	703 µS/cm	Sea water inlet, SWRO permeate (to check salt rejection of membranes), Fresh water outlet
Fresh water hardness	0.9 °F	Sea water inlet, SWRO permeate (to check membranes rejection of Ca and Mg), Fresh water outlet (to check operation of Softener)
pH	7-7.9	Sea water inlet, SWRO permeate (to check rejection of membranes and check the set dosage of caustic soda), Fresh water outlet (to check dosage of caustic soda)

In case of fail of the Site Acceptance Test, PSC will submit a dedicated report with actions to identify and resolve any deficiency, failure.

The test will be rescheduled after revision and implementation applied to the tested plant.

8 REFERENCE LIST

8.1 MODBUS LIST

For complete information please refer to document number: 1724000448-IN-LIS-00019

	ROSETTI MARINO	PSC	
	DOCUMENT TITLE: PERFORMANCE TEST	**Doc. No.:** PK2885-Q-005	
	DOCUMENT No: 1724000448-QC-PRO-00028		**Page: 1 of 6**
ATTACHMENT: 05	**Modbus List**		

FIELD TAG/DEVICE	SERVICE	ICSS I/O TYPE	FORMAT	MODBUS REGISTER	REGISTER BIT
50-AT-020A	H2 gas detection in container	SAI	FLOATING	40001	-
50-AT-020B	H2 gas detection in container	SAI	FLOATING	40003	-
50-AT-020C	H2 gas detection in container	SAI	FLOATING	40005	-
50-AT-023	Filtered seawater conductivity to P-50003A/B	SAI	FLOATING	40007	-
50-AT-024	Fresh water conductivity from A-50007A/B	SAI	FLOATING	40009	-
50-AT-026	Fresh water outlet total hardness	SAI	FLOATING	40011	-
50-AT-027	Fresh water outlet pH	SAI	FLOATING	40013	-
50-FT-020	Seawater flow to S-50001	SAI	FLOATING	40015	-
50-FT-022	Filtered seawater flow from P-50003A	SAI	FLOATING	40019	-
50-FT-023	Filtered seawater flow from P-50003B	SAI	FLOATING	40021	-
50-FT-024	Fresh water flow from A-50007A/B	SAI	FLOATING	40023	-
50-FT-026	Fresh water outlet flow	SAI	FLOATING	40017	-
50-LT-020	T-50006 level	SAI	FLOATING	40025	-
50-LT-021	T-50008 level	SAI	FLOATING	40027	-
50-LT-022	T-50002 level	SAI	FLOATING	40029	-
50-LT-023	T-50003 level	SAI	FLOATING	40031	-
50-LT-024	T-50004 level	SAI	FLOATING	40033	-
50-PDT-023	dP across S-50001	SAI	FLOATING	40035	-
50-PT-020	Seawater inlet pressure	SAI	FLOATING	40037	-

FIELD TAG/DEVICE	SERVICE	ICSS I/O TYPE	FORMAT	MODBUS REGISTER	REGISTER BIT
50-PT-025	Filtered seawater pressure from P-50003A	SAI	FLOATING	40039	-
50-PT-026	Filtered seawater pressure to P-50004A	SAI	FLOATING	40041	-
50-PT-027	Filtered seawater pressure from P-50003B	SAI	FLOATING	40043	-
50-PT-028	Filtered seawater pressure to P-50004B	SAI	FLOATING	40045	-
50-PT-030	Filtered seawater pressure from P-50004A	SAI	FLOATING	40047	-
50-PT-032	Filtered seawater pressure from P-50004B	SAI	FLOATING	40049	-
50-PT-041	Fresh water outlet pressure	SAI	FLOATING	40051	-
50-PT-047	Softening filter inlet pressure	SAI	FLOATING	40053	-
50-SI-P50004A	HP pump speed feedback	SAI	FLOATING	40055	-
50-SI-P50004B	HP pump speed feedback	SAI	FLOATING	40057	-
50-TT-021	Seawater temperature from H-50001	SAI	FLOATING	40059	-
50-TT-022	Seawater temperature from H-50001	SAI	FLOATING	40061	-
50-TT-023	Ambient air temperature inside container	SAI	FLOATING	40063	-
50-TT-024	Fresh water outlet temperature	SAI	FLOATING	40065	-
50-AT-023	Filtered seawater conductivity to P-50003A/B high	SDI	BOOLEAN	40101	0
50-AT-024	Fresh water conductivity from A-50007A/B high	SDI	BOOLEAN	40101	1
50-AT-024	Fresh water conductivity from A-50007A/B very high	SDI	BOOLEAN	40101	2
50-AT-026	Fresh water outlet total hardness high	SDI	BOOLEAN	40101	3
50-AT-026	Fresh water outlet total hardness very high	SDI	BOOLEAN	40101	4
50-AT-027	Fresh water outlet pH very low	SDI	BOOLEAN	40101	5
50-AT-027	Fresh water outlet pH low	SDI	BOOLEAN	40101	6
50-AT-027	Fresh water outlet pH high	SDI	BOOLEAN	40101	7
50-AT-027	Fresh water outlet pH very high	SDI	BOOLEAN	40101	8
50-FT-020	Seawater flow to S-50001 low	SDI	BOOLEAN	40101	9
50-FT-020	Seawater flow to S-50001 high	SDI	BOOLEAN	40101	10
50-FT-022	Filtered seawater flow from P-50003A low	SDI	BOOLEAN	40101	11
50-FT-022	Filtered seawater flow from P-50003A high	SDI	BOOLEAN	40101	12
50-FT-023	Filtered seawater flow from P-50003B low	SDI	BOOLEAN	40101	13
50-FT-023	Filtered seawater flow from P-50003B high	SDI	BOOLEAN	40101	14

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

FIELD TAG/DEVICE	SERVICE	ICSS I/O TYPE	FORMAT	MODBUS REGISTER	REGISTER BIT
50-FT-024	Fresh water flow from A-50007A/B low	SDI	BOOLEAN	40101	15
50-FT-026	Fresh water outlet flow low	SDI	BOOLEAN	40102	0
50-LT-020	T-50006 level very low	SDI	BOOLEAN	40102	1
50-LT-020	T-50006 level low	SDI	BOOLEAN	40102	2
50-LT-020	T-50006 level high	SDI	BOOLEAN	40102	3
50-LT-021	T-50008 level very low	SDI	BOOLEAN	40102	4
50-LT-021	T-50008 level low	SDI	BOOLEAN	40102	5
50-LT-021	T-50008 level high	SDI	BOOLEAN	40102	6
50-LT-022	T-50002 level very low	SDI	BOOLEAN	40102	7
50-LT-022	T-50002 level low	SDI	BOOLEAN	40102	8
50-LT-023	T-50003 level very low	SDI	BOOLEAN	40102	9
50-LT-023	T-50003 level low	SDI	BOOLEAN	40102	10
50-LT-024	T-50004 level very low	SDI	BOOLEAN	40102	11
50-LT-024	T-50004 level low	SDI	BOOLEAN	40102	12
50-PDT-023	dP across S-50001 high	SDI	BOOLEAN	40102	13
50-PT-020	Seawater inlet pressure low	SDI	BOOLEAN	40102	14
50-PT-025	Filtered seawater pressure from P-50003A low	SDI	BOOLEAN	40102	15
50-PT-026	Filtered seawater pressure to P-50004A low	SDI	BOOLEAN	40103	0
50-PT-027	Filtered seawater pressure from P-50003B low	SDI	BOOLEAN	40103	1
50-PT-028	Filtered seawater pressure to P-50004B low	SDI	BOOLEAN	40103	2
50-PT-030	Filtered seawater pressure from P-50004A low	SDI	BOOLEAN	40103	3
50-PT-030	Filtered seawater pressure from P-50004A high	SDI	BOOLEAN	40103	4
50-PT-032	Filtered seawater pressure from P-50004B low	SDI	BOOLEAN	40103	5
50-PT-032	Filtered seawater pressure from P-50004B high	SDI	BOOLEAN	40103	6
50-PT-041	Fresh water outlet pressure low	SDI	BOOLEAN	40103	7
50-PT-041	Fresh water outlet pressure high	SDI	BOOLEAN	40103	8
50-PT-047	Softening filter inlet pressure low	SDI	BOOLEAN	40103	9
50-PT-047	Softening filter inlet pressure high	SDI	BOOLEAN	40103	10
50-TT-022	Seawater temperature from H-50001 low	SDI	BOOLEAN	40103	11
50-TT-022	Seawater temperature from H-50001 high	SDI	BOOLEAN	40103	12

FIELD TAG/DEVICE	SERVICE	ICSS I/O TYPE	FORMAT	MODBUS REGISTER	REGISTER BIT
50-TT-022	Seawater temperature from H-50001 very high	SDI	BOOLEAN	40103	13
50-XV-020	Seawater inlet valve open	SDI	BOOLEAN	40111	0
50-XV-020	Seawater inlet valve closed	SDI	BOOLEAN	40111	1
50-XV-020	Seawater inlet valve failure	SDI	BOOLEAN	40111	2
50-XV-021	P-50003A suction valve open	SDI	BOOLEAN	40111	3
50-XV-021	P-50003A suction valve closed	SDI	BOOLEAN	40111	4
50-XV-021	P-50003A suction valve failure	SDI	BOOLEAN	40111	5
50-XV-022	P-50003B suction valve open	SDI	BOOLEAN	40111	6
50-XV-022	P-50003B suction valve closed	SDI	BOOLEAN	40111	7
50-XV-022	P-50003B suction valve failure	SDI	BOOLEAN	40111	8
50-XV-023	P-50003A flushing valve open	SDI	BOOLEAN	40111	9
50-XV-023	P-50003A flushing valve closed	SDI	BOOLEAN	40111	10
50-XV-023	P-50003A flushing valve failure	SDI	BOOLEAN	40111	11
50-XV-024	P-50003B flushing valve open	SDI	BOOLEAN	40111	12
50-XV-024	P-50003B flushing valve closed	SDI	BOOLEAN	40111	13
50-XV-024	P-50003B flushing valve failure	SDI	BOOLEAN	40111	14
50-XV-025	Fresh water from A-50007A/B valve open	SDI	BOOLEAN	40111	15
50-XV-025	Fresh water from A-50007A/B valve closed	SDI	BOOLEAN	40112	0
50-XV-025	Fresh water from A-50007A/B valve failure	SDI	BOOLEAN	40112	1
50-XV-026	Fresh water drain from A-50007A/B valve open	SDI	BOOLEAN	40112	2
50-XV-026	Fresh water drain from A-50007A/B valve closed	SDI	BOOLEAN	40112	3
50-XV-026	Fresh water drain from A-50007A/B valve failure	SDI	BOOLEAN	40112	4
50-XV-027	Brine from A-50007A valve open	SDI	BOOLEAN	40112	5
50-XV-027	Brine from A-50007A valve closed	SDI	BOOLEAN	40112	6
50-XV-027	Brine from A-50007A valve failure	SDI	BOOLEAN	40112	7
50-XV-028	Fresh water from A-50007B valve open	SDI	BOOLEAN	40112	8
50-XV-028	Fresh water from A-50007B valve closed	SDI	BOOLEAN	40112	9
50-XV-028	Fresh water from A-50007B valve failure	SDI	BOOLEAN	40112	10
50-XV-029	Fresh water drain from A-50007B valve open	SDI	BOOLEAN	40112	11
50-XV-029	Fresh water drain from A-50007B valve closed	SDI	BOOLEAN	40112	12

FIELD TAG/DEVICE	SERVICE	ICSS I/O TYPE	FORMAT	MODBUS REGISTER	REGISTER BIT
50-XV-029	Fresh water drain from A-50007B valve failure	SDI	BOOLEAN	40112	13
50-XV-030	Brine from A-50007B valve open	SDI	BOOLEAN	40112	14
50-XV-030	Brine from A-50007B valve closed	SDI	BOOLEAN	40112	15
50-XV-030	Brine from A-50007B valve failure	SDI	BOOLEAN	40113	0
50-XV-031	Fresh water outlet valve open	SDI	BOOLEAN	40113	1
50-XV-031	Fresh water outlet valve closed	SDI	BOOLEAN	40113	2
50-XV-031	Fresh water outlet valve failure	SDI	BOOLEAN	40113	3
50-XV-032	Fresh water off-spec valve open	SDI	BOOLEAN	40113	4
50-XV-032	Fresh water off-spec valve closed	SDI	BOOLEAN	40113	5
50-XV-032	Fresh water off-spec valve failure	SDI	BOOLEAN	40113	6
50-P-50002A	Backwash pump running	SDI	BOOLEAN	40121	0
50-P-50002A	Backwash pump failure	SDI	BOOLEAN	40121	1
50-P-50002B	Backwash pump running	SDI	BOOLEAN	40121	2
50-P-50002B	Backwash pump failure	SDI	BOOLEAN	40121	3
50-P-50003A	SW booster pump running	SDI	BOOLEAN	40121	4
50-P-50003A	SW booster pump failure	SDI	BOOLEAN	40121	5
50-P-50003B	SW booster pump running	SDI	BOOLEAN	40121	6
50-P-50003B	SW booster pump failure	SDI	BOOLEAN	40121	7
50-P-50004A	HP pump running	SDI	BOOLEAN	40121	8
50-P-50004A	HP pump failure	SDI	BOOLEAN	40121	9
50-P-50004B	HP pump running	SDI	BOOLEAN	40121	10
50-P-50004B	HP pump failure	SDI	BOOLEAN	40121	11
50-P-50005A	Caustic soda dosing pump running	SDI	BOOLEAN	40121	12
50-P-50005A	Caustic soda dosing pump failure	SDI	BOOLEAN	40121	13
50-P-50005B	Caustic soda dosing pump running	SDI	BOOLEAN	40121	14
50-P-50005B	Caustic soda dosing pump failure	SDI	BOOLEAN	40121	15
50-P-50006A	Antiscalant dosing pump running	SDI	BOOLEAN	40122	0
50-P-50006A	Antiscalant dosing pump failure	SDI	BOOLEAN	40122	1
50-P-50006B	Antiscalant dosing pump running	SDI	BOOLEAN	40122	2
50-P-50006B	Antiscalant dosing pump failure	SDI	BOOLEAN	40122	3
50-P-50007A	Non-oxidant biocide dosing pump - container inlet running	SDI	BOOLEAN	40122	4
50-P-50007A	Non-oxidant biocide dosing pump - container inlet failure	SDI	BOOLEAN	40122	5

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

FIELD TAG/DEVICE	SERVICE	ICSS I/O TYPE	FORMAT	MODBUS REGISTER	REGISTER BIT
50-P-50007B	Non-oxidant biocide dosing pump - container inlet running	SDI	BOOLEAN	40122	6
50-P-50007B	Non-oxidant biocide dosing pump - container inlet failure	SDI	BOOLEAN	40122	7
50-P-50008A	Non-oxidant biocide dosing pump - sea water intake running	SDI	BOOLEAN	40122	8
50-P-50008A	Non-oxidant biocide dosing pump - sea water intake failure	SDI	BOOLEAN	40122	9
50-P-50008B	Non-oxidant biocide dosing pump - sea water intake running	SDI	BOOLEAN	40122	10
50-P-50008B	Non-oxidant biocide dosing pump - sea water intake failure	SDI	BOOLEAN	40122	11
50-P-50009A	Fresh water pump running	SDI	BOOLEAN	40122	12
50-P-50009A	Fresh water pump failure	SDI	BOOLEAN	40122	13
50-P-50009B	Fresh water pump running	SDI	BOOLEAN	40122	14
50-P-50009B	Fresh water pump failure	SDI	BOOLEAN	40122	15
50-P-50010A	Non-oxidant biocide dosing pump - waste water tank running	SDI	BOOLEAN	40123	0
50-P-50010A	Non-oxidant biocide dosing pump - waste water tank failure	SDI	BOOLEAN	40123	1
50-P-50010B	Non-oxidant biocide dosing pump - waste water tank running	SDI	BOOLEAN	40123	2
50-P-50010B	Non-oxidant biocide dosing pump - waste water tank failure	SDI	BOOLEAN	40123	3
50-H-50003A	Container electrical heater start/stop command	SDI	BOOLEAN	40131	0
50-H-50003B	Container electrical heater start/stop command	SDI	BOOLEAN	40131	1
50-H-50003A	Container air fan start/stop command	SDI	BOOLEAN	40131	2
50-H-50003B	Container air fan start/stop command	SDI	BOOLEAN	40131	3
50-A-50003	Seawater coarse filter regeneration command	SDI	BOOLEAN	40131	4
50-S-50001	Sand filter regeneration command	SDI	BOOLEAN	40131	5
50-S-50004	Softening Filter regeneration command	SDI	BOOLEAN	40131	6
50-S-50010	UV sterilizer start/stop command	SDI	BOOLEAN	40131	7

PSC	**SAT REPORT** **Attachment A - Equipment**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	1 of 6

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**SEA WATER CORSE FILTER A-50003**

Filter in operation parameters:

- Valve 50-XV-020 — Status OPEN
- Flow transmitter 50-FT-020 — Flowrate value 2,5 m^3/h
- Pressure transmitter 50-PT-020 — Pressure value 2,0 barg minimum (out of PSC scope)
- Pressure Gauge 50-PI-048 — Pressure Value > 1.5 barg
- Number of backwash per day — < 4 (depend on the inlet water quality)

Filter in backwash operation:
(Note: if required backwash sequence will be simulated managing the set parameters)

- Backwash duration — nearly 20 seconds
- Flow transmitter 50-FT-020 — Flowrate value 0,4 / 0,5 m^3/h

TEST RESULTS		
☒ Pass	☐ Pass with comments	☐ Fail

COMMENTS	

DATE	PSC	CUSTOMER	END CUSTOMER
21/02/25		21-Feb-2025	WITNESSED BY

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**SAND FILTER S-50001 – BACKWASH PUMPS P-50002A/B**

Filter in operation parameters:

- Flow transmitter 50-FT-020 — Flowrate value 2,5 m^3/h
- Differential pressure 50-PDI-052 — < 1 bar
- Pressure Gauge 50-PI-048 — Pressure Value > 1.5 barg
- Number of backwash per day — 1 (depend on the inlet water quality)

Filter in backwash operation:
(Note: if required backwash sequence will be simulated managing the set parameters)

- Valve 50-XV-020 — Status: closed
- Backwash duration — nearly 20 minutes
- Backwash Pumps P-50002A/B — Status: in operation
- Flow transmitter 50-FT-020 — Flowrate value 5 m^3/h
- Level transmitter 50-LV-020 — 100% full before backwash start

TEST RESULTS		
☒ Pass	☐ Pass with comments	☐ Fail

COMMENTS	

DATE	PSC	CUSTOMER	END CUSTOMER
21/02/25		21-Feb-2025	WITNESSED BY

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**ELECTRIC HEATER H-50001**

Heater in operation parameters:

- Valve 50-XV-033 — Status CLOSED
- Heater status — In operation (not fault signal)
- Temperature Transmitter 50-TT-021 — Temperature min 10°C (set point value)

(Note: if required in case the temperature value of water inlet will be above the set point, the set point only for the test will be increased in order verify the heater operation Tmax < 25°C)

TEST RESULTS		
☒ Pass	☐ Pass with comments	☐ Fail

COMMENTS	

DATE	PSC	CUSTOMER	END CUSTOMER
21/02/25		Anthony Lucas 21-Feb-2025	WITNESSED BY

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**SOFTENING FILTER S-50004 – FRESH WATER PUMPS P-50009A/B**

Filter in operation parameters:

- Flow transmitter 50-FT-025 — Flowrate value 0,8 m^3/h
- Fresh Water Pumps P-50009A/B — Status on
- Pressure 50-PT-047 — ≤ 5barg
- TH transmitter 50-AT-026 — < 0.9 °F
- Number of regeneration per day — 1 (depend on the inlet water quality)

Filter in regeneration operation:
(Note: if required regeneration sequence will be simulated managing the set parameters)

- S-50004 — Status: Regeneration
- Regeneration duration — nearly 60 minutes

TEST RESULTS		
☒ Pass	☐ Pass with comments	☐ Fail

COMMENTS	

DATE	PSC	CUSTOMER	END CUSTOMER
21/02/25		21-Feb-2025	Witnessed By

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**SEA WATER REVERSE OSMOSIS UNITS: A-50007A/B** **HIGH PRESSURE PUMPS:P-50004A/B** **BOOSTER PUMPS: P-50003A/B**

Sea water reverse osmosis unit parameters:

- Conductivity transmitter 50-AT-023 — < 55000 mS/cm [@ 25°C]
- Booster pumps P-50003A/B — Status On
- High pressure pumps P-50004A/B — Status On
- Valve 50-XV-021 — Open (line A in operation) / Close (line B in operation)
- Valve 50-XV-022 — Open (line B in operation) / Close (line A in operation)
- Valve 50-XV-023 — Closed
- Valve 50-XV-024 — Closed
- Valve 50-XV-027 — Closed
- Valve 50-XV-030 — Closed
- Valve 50-XV-026 — Closed
- Valve 50-XV-025 — Open
- Flow transmitter 50-FT-024 — ≥ 0.8 m^3/h
- Conductivity transmitter 50-AT-024 — < 703 mS/cm [@ 25°C]

NOTE: Line A and Line B will be tested one at a time.

TEST RESULTS		
☒ Pass	☐ Pass with comments	☐ Fail

COMMENTS	

DATE	PSC	CUSTOMER	END CUSTOMER
21/05/25		21-Feb-2025	WITNESSED BY

PSC	**SAT REPORT** **Attachment A - Equipment**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	6 of 6

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**CAUSTIC SODA DOSING PUMPS: P-50005A/B** **ANTISCALANT DOSING PUMPS: P-50006A/B** **BIOCIDE DOSING PUMPS: P-50007A/B; P-50008A/B; P-50010A/B**

Sea water reverse osmosis unit parameters:

- Caustic Soda P-50005A/B — Status On
- pH transmitter 50-AT-027 — pH 7 – 7,9 (according to the set point value)
- Antiscalant dosing pumps P-50005A/B — Status On (0,01 l/h dosage)
- Biocide dosing pumps P-50007A/B — Status On (0,03 l/h dosage)
- Biocide dosing pumps P-50008A/B — Status On (0,85 l/h dosage)
- Biocide dosing pumps P-50010A/B — Status On (0,33 l/h dosage)

TEST RESULTS		
☒ Pass	☐ Pass with comments	☐ Fail

COMMENTS	

DATE	PSC	CUSTOMER	END CUSTOMER
21/02/25		21-Feb-2025	WITNESSED BY

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	1 of 8

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**PROCESS PARAMETERS**
Line Used	:	..... LINEA B
Date / hour	:	25/02/25 / 11:20
Operator Name	:	A. LAGO / A. SASIA

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:20	MEASURED VALUE hr: 16:00	MEASURED VALUE hr: 20:00	MEAN VALUE
50-PT-020	SEAWATER INLET PRESSURE	PRESSURE TRANSMITTER	4 barg	3,20	2,9	3,2	

DATE	PSC	CUSTOMER	END CUSTOMER
25/2 11:20	A. [signature]	[signature]	
25/2 16:00	A. [signature]		
25/2	A. [signature]		

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:20	MEASURED VALUE hr: 16:00	MEASURED VALUE hr: 20:00	MEAN VALUE
50-TT-021	SEAWATER TEMPERATURE FROM H-50001	TEMPERATURE TRANSMITTER	10 / 23°C	12,0°	12,5°	12,1°	
50-TT-022	SEAWATER TEMPERATURE FROM H-50001	TEMPERATURE TRANSMITTER	10 / 23°C	11,8°	12,4°	12,0°	
50-FT-020	SEAWATER FLOW FROM H-50001	MAGNETIC FLOW TRASMITTER	2.5 m^3/h	2,44	2,3	2,3	
50-FT-020	SEAWATER FLOW FROM H-50001	MAGNETIC FLOW TRASMITTER	5 m^3/h (Only Backwash)	NA	NA	NA	

DATE	PSC	CUSTOMER	END CUSTOMER
25/2 11:20			
25/2 16:00			
25/2 20:00			

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	3 of 8

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:20	MEASURED VALUE hr: 16:00	MEASURED VALUE hr: 20:00	MEAN VALUE
50-PT-050	PRESSURE INLET S-50001	PRESSURE TRANSMITTER	1 / 2 barg	2.2	1,9	1,9	
50-PT-051	PRESSURE OUTLET S-50001	PRESSURE TRANSMITTER	1 barg	1.9	1,6	1,6	
50-PT-025	FILTERED SEAWATER PRESSURE FROM P-50003A	PRESSURE TRANSMITTER	4 barg	NA	NA	NA	
50-PT-026	FILTERED SEAWATER PRESSURE TO P-50004A	PRESSURE TRANSMITTER	3.5 barg	NA	NA	NA	

DATE	PSC	CUSTOMER	END CUSTOMER
25/2/25			
25/2 16:00			
25/2			

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:20	MEASURED VALUE hr: 16:00	MEASURED VALUE hr: 20:00	MEAN VALUE
50-PT-027	FILTERED SEAWATER PRESSURE FROM P-50003B	PRESSURE TRANSMITTER	4 barg	4,0	4,1	4,2	
50-PT-028	FILTERED SEAWATER PRESSURE TO P-50003B	PRESSURE TRANSMITTER	3.5 barg	3,9	4,0	4,1	
50-FT-022	FILTERED SEAWATER FLOW FROM P-50003A	MAGNETIC FLOW TRASMITTER	2 m^3/h	~~[illegible]~~	NA	NA	
50-FT-023	FILTERED SEAWATER FLOW FROM P-50003B	MAGNETIC FLOW TRASMITTER	2 m^3/h	2,26	2,27	2,27	

DATE	PSC	CUSTOMER	END CUSTOMER
25/2 11:20	[signature]	[signature]	
25/2 16:00	[signature]	[signature]	
25/2	[signature]	[signature]	

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:20	MEASURED VALUE hr: 16:00	MEASURED VALUE hr: 20:00	MEAN VALUE
50-AT-023	FILTERED SEAWATER CONDUCTIVITY TO P-50003A/B	ANALYZER TRANSMITTER - CONDUCTIVITY	55000 mS/cm	45450	45980	46200	
50-PT-030	FILTERED SEAWATER PRESSURE FROM P-50004A	PRESSURE TRANSMITTER	55 / 64 barg	NA	NA	NA.	
50-PT-032	FILTERED SEAWATER PRESSURE FROM P-50004B	PRESSURE TRANSMITTER	55 / 64 barg	53,84	53,25	52,29	
50-AT-024 (contractual parameter)	**FRESH WATER CONDUCTIVITY FROM A-50007A/B**	**ANALYZER TRANSMITTER - CONDUCTIVITY**	≤ 703 mS/cm	146,9	153,6	148,0	

DATE	PSC	CUSTOMER	END CUSTOMER
25/2 11:20			
25/2 16:00			
25/2			

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr:	MEASURED VALUE hr:	MEASURED VALUE hr:	MEAN VALUE
50-FT-024	FRESH WATER FLOW FROM A-50007A/B	MAGNETIC FLOW TRASMITTER	0.8 m^3/h	0,83	0,80	0,79	
50-PT-047	FRESH WATER PRESSURE FROM P-50009A/B	PRESSURE TRANSMITTER	4,5 / 5 barg	4,7	6,2	4,7	
50-PT-041	FRESH WATER OUTLET PRESSURE	PRESSURE TRANSMITTER	3,5 / 4,5 barg	4,6	0,1	4,6	
50-AT-026 (contractual parameter)	**FRESH WATER CONDUCTIVITY FROM A-50007A**	**ANALYZER TRANSMITTER - TOTAL HARDNESS**	< 9 ppm $CaCO_3$	< 0,16 °F	> 1,61	< 0,16 °F	

DATE	PSC	CUSTOMER	END CUSTOMER
25/2 11:20			
25/2 16:00			
25/2			

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	7 of 8

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:20	MEASURED VALUE hr: 16:00	MEASURED VALUE hr: 20:00	MEAN VALUE
50-TT-024 (contractual parameter)	FRESH WATER OUTLET TEMPERATURE	TEMPERATURE TRANSMITTER	10 / 23 °C	14,7°	15,2°	14,8°	
50-FT-026 (contractual parameter)	FRESH WATER FLOW FROM S-50010	MAGNETIC FLOW TRASMITTER	0.8 m^3/h	0,89	N.A	0,9	
50-AT-027 (contractual parameter)	FRESH WATER OUTLET pH	ANALYZER TRANSMITTER - pH	7 – 7.9	6,65	N.A	7,56	

Note: Test results applicable only for "contractual parameters"

TEST RESULTS		
☐ Pass	☐ Pass with comments	☐ Fail

DATE	PSC	CUSTOMER	END CUSTOMER
25/2 11:20			
25/2 16:00			
25/2			

	SAT REPORT Attachment B – Process Parameters	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	8 of 8

COMMENTS	
01	CAMPIONAMENTO AD IMPIANTO APPENA PARTITO (SW e Permeato)
02	CAMPIONAMENTO ORE 11:20 (SW E PERMEATO OUT)
03	CAMPIONAMENTO ORE 16:00 (SW E PERMEATO OUT)
04	DURANTE IL CAMPIONAMENTO ERA ATTIVA LA RIGENERA-
	-ZIONE DELL'ADDOLCITORE S50004
05	DURANTE LA RIGENERAZIONE DELL'S50004, LA
	LINEA DI SCARICO HA EVIDENZIATO UNA PERDITA
	CONSISTENTE.
06	PRESI I N°4 CAMPIONI (SW – AFTER S50001 – RO PERM. – FRESHWATER
	H 20:00

DATE	PSC	CUSTOMER	END CUSTOMER
25/2			

	SAT REPORT Attachment B – Process Parameters	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	1 of 8

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**PROCESS PARAMETERS**
Line Used	:	PARTENZA ORE 07:45 LINEA A
Date / hour	:	26/02/25 / 07:45
Operator Name	:	ALESSANDRO LAGO

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-PT-020	SEAWATER INLET PRESSURE	PRESSURE TRANSMITTER	4 barg	3,1	3,2	3,2	

DATE	PSC	CUSTOMER	END CUSTOMER
26/2 11:30			
26/2 15:30			
26/2 19:30			

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	2 of 8

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-TT-021	SEAWATER TEMPERATURE FROM H-50001	TEMPERATURE TRANSMITTER	10 / 23°C	11,9°	12,0°	12,0°	
50-TT-022	SEAWATER TEMPERATURE FROM H-50001	TEMPERATURE TRANSMITTER	10 / 23°C	11,8°	11,9°	11,9°	
50-FT-020	SEAWATER FLOW FROM H-50001	MAGNETIC FLOW TRASMITTER	2.5 m^3/h	2,15 mc/h	2,15 mc/h	2,25 mc/h	
50-FT-020	SEAWATER FLOW FROM H-50001	MAGNETIC FLOW TRASMITTER	5 m^3/h (Only Backwash)	N.A	N.A	N.A.	

DATE	PSC	CUSTOMER	END CUSTOMER
26/2 11:30			
26/2 15:30			
26/2 19:30			

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	3 of 8

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-PT-050	PRESSURE INLET S-50001	PRESSURE TRANSMITTER	1 / 2 barg	1,8	1,9	1,9	
50-PT-051	PRESSURE OUTLET S-50001	PRESSURE TRANSMITTER	1 barg	1,5	1,5	1,5	
50-PT-025	FILTERED SEAWATER PRESSURE FROM P-50003A	PRESSURE TRANSMITTER	4 barg	4,6	4,6	4,7	
50-PT-026	FILTERED SEAWATER PRESSURE TO P-50004A	PRESSURE TRANSMITTER	3.5 barg	3,7	3,6	3,7	

DATE	PSC	CUSTOMER	END CUSTOMER
26/2 11:30	A		
26/2 15:30	A		
26/2 19:30	A		

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	4 of 8

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-PT-027	FILTERED SEAWATER PRESSURE FROM P-50003B	PRESSURE TRANSMITTER	4 barg	N.A.	N.A.	N.A	
50-PT-028	FILTERED SEAWATER PRESSURE TO P-50003B	PRESSURE TRANSMITTER	3.5 barg	N.A	N.A.	N.A	
50-FT-022	FILTERED SEAWATER FLOW FROM P-50003A	MAGNETIC FLOW TRASMITTER	2 m^3/h	2,0	2,0	2,0	
50-FT-023	FILTERED SEAWATER FLOW FROM P-50003B	MAGNETIC FLOW TRASMITTER	2 m^3/h	N.A.	N.A.	N.A	

DATE	PSC	CUSTOMER	END CUSTOMER
26/2 11:30			
26/2 15:30			
26/2 19:30			

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-AT-023	FILTERED SEAWATER CONDUCTIVITY TO P-50003A/B	ANALYZER TRANSMITTER - CONDUCTIVITY	55000 mS/cm	46200	46550	45850	
50-PT-030	FILTERED SEAWATER PRESSURE FROM P-50004A	PRESSURE TRANSMITTER	55 / 64 barg	55,84	55,90	55,34	
50-PT-032	FILTERED SEAWATER PRESSURE FROM P-50004B	PRESSURE TRANSMITTER	55 / 64 barg	N.A.	N.A.	N.A.	
50-AT-024 (contractual parameter)	**FRESH WATER CONDUCTIVITY FROM A-50007A/B**	**ANALYZER TRANSMITTER - CONDUCTIVITY**	≤ 703 mS/cm	161	157	147	

DATE	PSC	CUSTOMER	END CUSTOMER
26/2 11:30			
26/2 15:30			
26/2 19:30			

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-FT-024	FRESH WATER FLOW FROM A-50007A/B	MAGNETIC FLOW TRASMITTER	0.8 m^3/h	0,8	0,8	0,8	
50-PT-047	FRESH WATER PRESSURE FROM P-50009A/B	PRESSURE TRANSMITTER	4,5 / 5 barg	4,2	4,2	4,2	
50-PT-041	FRESH WATER OUTLET PRESSURE	PRESSURE TRANSMITTER	3,5 / 4,5 barg	4,2	4,1	4,1	
50-AT-026 (contractual parameter)	**FRESH WATER CONDUCTIVITY FROM A-50007A**	**ANALYZER TRANSMITTER - TOTAL HARDNESS**	< 9 ppm $CaCO_3$	< 0,16°F	< 0,16°F	0,79°F	

DATE	PSC	CUSTOMER	END CUSTOMER
26/2 11:30			
26/2 15:30			
26/2 19:30			

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-TT-024 (contractual parameter)	FRESH WATER OUTLET TEMPERATURE	TEMPERATURE TRANSMITTER	10 / 23 °C	15,2°C	15,0°	15,0°	
50-FT-026 (contractual parameter)	FRESH WATER FLOW FROM S-50010	MAGNETIC FLOW TRASMITTER	0.8 m^3/h	0,87 m^3/h	0,86 m^3/h	0,86 m^3/h	
50-AT-027 (contractual parameter)	FRESH WATER OUTLET pH	ANALYZER TRANSMITTER - pH	7 – 7.9	6,95	6,46	6,54	

Note: Test results applicable only for "contractual parameters"

TEST RESULTS					
☑	Pass	☐	Pass with comments	☐	Fail

DATE	PSC	CUSTOMER	END CUSTOMER
26/2 11:30			
26/2 15:30			
26/2 19:30			

	SAT REPORT Attachment B – Process Parameters	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	8 of 8

COMMENTS	
01	CAMPIONAMENTO 11:30 : SW e FRESH WATER
02	CAMPIONAMENTO 15:30 : SW e FRESH WATER

DATE	PSC	CUSTOMER	END CUSTOMER
26/2			

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	1 of 8

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**PROCESS PARAMETERS**
Line Used	:	..... LINE A B
Date / hour	:	27/2/25 / START 026 07:60
Operator Name	:	ALESSANDRO LAGO

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-PT-020	SEAWATER INLET PRESSURE	PRESSURE TRANSMITTER	4 barg	3,1	3,1	3,1	

DATE	PSC	CUSTOMER	END CUSTOMER
27/2 11:30			
27/2 15:30			
27/2 19:30			

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project: 123A90A- Base Load Power Hub Platform Doc. No.: 1724000448-QC-PRO-00028 PSC Doc No.: PK2885-Q-005 Page: 2 of 8

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-TT-021	SEAWATER TEMPERATURE FROM H-50001	TEMPERATURE TRANSMITTER	10 / 23°C	12,0°	12,0°	12,2°	
50-TT-022	SEAWATER TEMPERATURE FROM H-50001	TEMPERATURE TRANSMITTER	10 / 23°C	11,9°	11,9°	12,0°	
50-FT-020	SEAWATER FLOW FROM H-50001	MAGNETIC FLOW TRASMITTER	2.5 m^3/h	2,37 m^3/h	2,37 m^3/h	2,32 m^3/h	
50-FT-020	SEAWATER FLOW FROM H-50001	MAGNETIC FLOW TRASMITTER	5 m^3/h (Only Backwash)	N.A	N.A	N.A.	

DATE	PSC	CUSTOMER	END CUSTOMER
27/2 11:30			
27/2 15:30			
27/2 19:30			

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-PT-050	PRESSURE INLET S-50001	PRESSURE TRANSMITTER	1 / 2 barg	2,1	2,1	2,1	
50-PT-051	PRESSURE OUTLET S-50001	PRESSURE TRANSMITTER	1 barg	1,7	1,7	1,7	
50-PT-025	FILTERED SEAWATER PRESSURE FROM P-50003A	PRESSURE TRANSMITTER	4 barg	N.A	N.A	N.A	
50-PT-026	FILTERED SEAWATER PRESSURE TO P-50004A	PRESSURE TRANSMITTER	3.5 barg	N. A	N. A	N. A.	

DATE	PSC	CUSTOMER	END CUSTOMER
27/2 11:30			
27/2 15:30			
27/2 19:30			

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	4 of 8

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-PT-027	FILTERED SEAWATER PRESSURE FROM P-50003B	PRESSURE TRANSMITTER	4 barg	4,0	4,1	4,2	
50-PT-028	FILTERED SEAWATER PRESSURE TO P-50003B	PRESSURE TRANSMITTER	3.5 barg	3,9	4,1	4,1	
50-FT-022	FILTERED SEAWATER FLOW FROM P-50003A	MAGNETIC FLOW TRASMITTER	2 m^3/h	N.A.	N.A	N.A.	
50-FT-023	FILTERED SEAWATER FLOW FROM P-50003B	MAGNETIC FLOW TRASMITTER	2 m^3/h	2,26 m^3/h	2,26 m^3/h	2,26 m^3/h	

DATE	PSC	CUSTOMER	END CUSTOMER
26/2 11:30			
27/2 15:30			
27/2 19:30			

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	5 of 8

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-AT-023	FILTERED SEAWATER CONDUCTIVITY TO P-50003A/B	ANALYZER TRANSMITTER - CONDUCTIVITY	55000 mS/cm	46250	46170	46240	
50-PT-030	FILTERED SEAWATER PRESSURE FROM P-50004A	PRESSURE TRANSMITTER	55 / 64 barg	N.A.	N.A.	N.A.	
50-PT-032	FILTERED SEAWATER PRESSURE FROM P-50004B	PRESSURE TRANSMITTER	55 / 64 barg	54,42	54,60	53,95	
50-AT-024 (contractual parameter)	**FRESH WATER CONDUCTIVITY FROM A-50007A/B**	**ANALYZER TRANSMITTER - CONDUCTIVITY**	≤ 703 mS/cm	150	147	148	

DATE	PSC	CUSTOMER	END CUSTOMER
25/2 11:30			
25/2 15:30			
25/2 19:30			

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	6 of 8

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-FT-024	FRESH WATER FLOW FROM A-50007A/B	MAGNETIC FLOW TRASMITTER	0.8 m^3/h	0,83	0,82	0,82	
50-PT-047	FRESH WATER PRESSURE FROM P-50009A/B	PRESSURE TRANSMITTER	4,5 / 5 barg	4,3	5,0	5,0	
50-PT-041	FRESH WATER OUTLET PRESSURE	PRESSURE TRANSMITTER	3,5 / 4,5 barg	4,2	4,9	4,9	
50-AT-026 (contractual parameter)	**FRESH WATER CONDUCTIVITY FROM A-50007A**	**ANALYZER TRANSMITTER - TOTAL HARDNESS**	< 9 ppm $CaCO_3$	0,79°F	<0,16°F	<0,16°F	

DATE	PSC	CUSTOMER	END CUSTOMER
11:30 27/2			
15:30 27/2			
19:30 27/2			

	SAT REPORT Attachment B – Process Parameters	Project	123A90A- Base Load Power Hub Platform
PSC		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	7 of 8

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-TT-024 (contractual parameter)	FRESH WATER OUTLET TEMPERATURE	TEMPERATURE TRANSMITTER	10 / 23 °C	14,7°C	14,6°C	14,8°C	
50-FT-026 (contractual parameter)	FRESH WATER FLOW FROM S-50010	MAGNETIC FLOW TRASMITTER	0.8 m^3/h	0,92	0,84	0,84	
50-AT-027 (contractual parameter)	FRESH WATER OUTLET pH	ANALYZER TRANSMITTER - pH	7 – 7.9	7,76	7,02	7,89	

Note: Test results applicable only for "contractual parameters"

TEST RESULTS					
☑	Pass	☐	Pass with comments	☐	Fail

DATE	PSC	CUSTOMER	END CUSTOMER
26/2 11:30	A. [signature]	[signature]	
26/2 15:30	A [signature]	[signature]	
26/2 19:30	A [signature]	[signature]	

	SAT REPORT Attachment B – Process Parameters	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	8 of 8

COMMENTS	
01	CAMPIONAMENTO DELLE 11:30 : SEA WATER E FRESH WATER
02	CAMPIONAMENTO DELLE 15:30 : SEA WATER E FRESH WATER
03	CAMPIONAMENTO COMPLETO ALLE 19:30
	- SEA WATER INLET
	- FILTERED SEA WATER DOWNSTREAM S5000L
	- SWRO PERMEATE
	- FRESH WATER OUTLET

DATE	PSC	CUSTOMER	END CUSTOMER
26/2			

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	1 of 8

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**PROCESS PARAMETERS**
Line Used	:	LINEA A
Date / hour	:	28/2/27 / START 08:40
Operator Name	:	ALESSANDRO LAGO

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-PT-020	SEAWATER INLET PRESSURE	PRESSURE TRANSMITTER	4 barg	3,5	3,5	3,5	

DATE	PSC	CUSTOMER	END CUSTOMER
28/2 11:30	A		
28/2 15:30	A		
28/2 19:20	A		

PSC	**SAT REPORT** **Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	2 of 8

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-TT-021	SEAWATER TEMPERATURE FROM H-50001	TEMPERATURE TRANSMITTER	10 / 23°C	11,5°	12,1°C	12,2°C	
50-TT-022	SEAWATER TEMPERATURE FROM H-50001	TEMPERATURE TRANSMITTER	10 / 23°C	12,4°C	12,0°C	12,1°C	
50-FT-020	SEAWATER FLOW FROM H-50001	MAGNETIC FLOW TRASMITTER	2.5 m³/h	2,5 mc/h	2,52 mc/h	2,48 mc/h	
50-FT-020	SEAWATER FLOW FROM H-50001	MAGNETIC FLOW TRASMITTER	5 m³/h (Only Backwash)	N.A	N.A.	N.A	

DATE	PSC	CUSTOMER	END CUSTOMER
28/2 11:30			
28/2 15:30			
28/2 19:30			

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-PT-050	PRESSURE INLET S-50001	PRESSURE TRANSMITTER	1 / 2 barg	2,4	2,3	2,3	
50-PT-051	PRESSURE OUTLET S-50001	PRESSURE TRANSMITTER	1 barg	2,0	1,9	1,9	
50-PT-025	FILTERED SEAWATER PRESSURE FROM P-50003A	PRESSURE TRANSMITTER	4 barg	4,8	4,8	5,0	
50-PT-026	FILTERED SEAWATER PRESSURE TO P-50004A	PRESSURE TRANSMITTER	3.5 barg	3,7	3,6	3,7	

DATE	PSC	CUSTOMER	END CUSTOMER
28/2 11:30			
28/2 15:30			
28/2 19:30			

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 18:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-PT-027	FILTERED SEAWATER PRESSURE FROM P-50003B	PRESSURE TRANSMITTER	4 barg	N.A	N.A.	N.A	
50-PT-028	FILTERED SEAWATER PRESSURE TO P-50003B	PRESSURE TRANSMITTER	3.5 barg	N.A	N.A.	N.A.	
50-FT-022	FILTERED SEAWATER FLOW FROM P-50003A	MAGNETIC FLOW TRASMITTER	2 m^3/h	1,64 m³/h	1,64 m³/h	1,64 m³/h	
50-FT-023	FILTERED SEAWATER FLOW FROM P-50003B	MAGNETIC FLOW TRASMITTER	2 m^3/h	N.A	N.A.	N.A	

DATE	PSC	CUSTOMER	END CUSTOMER
28/2 11:30			
28/2 15:30			
28/2 19:30			

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-AT-023	FILTERED SEAWATER CONDUCTIVITY TO P-50003A/B	ANALYZER TRANSMITTER - CONDUCTIVITY	55000 mS/cm	46460	46570	46450	
50-PT-030	FILTERED SEAWATER PRESSURE FROM P-50004A	PRESSURE TRANSMITTER	55 / 64 barg	55,60	55,10	55,0	
50-PT-032	FILTERED SEAWATER PRESSURE FROM P-50004B	PRESSURE TRANSMITTER	55 / 64 barg	N.A.	N.A.	N.A	
50-AT-024 (contractual parameter)	**FRESH WATER CONDUCTIVITY FROM A-50007A/B**	**ANALYZER TRANSMITTER - CONDUCTIVITY**	**≤ 703 mS/cm**	159	166	164	

DATE	PSC	CUSTOMER	END CUSTOMER
28/2 11:30			
28/2 15:30			
28/2 19:30			

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-FT-024	FRESH WATER FLOW FROM A-50007A/B	MAGNETIC FLOW TRASMITTER	0.8 m^3/h	0,87	0,80	0,86	
50-PT-047	FRESH WATER PRESSURE FROM P-50009A/B	PRESSURE TRANSMITTER	4,5 / 5 barg	4,9	4,9	4,9	
50-PT-041	FRESH WATER OUTLET PRESSURE	PRESSURE TRANSMITTER	3,5 / 4,5 barg	4,9	4,8	4,8	
50-AT-026 (contractual parameter)	**FRESH WATER CONDUCTIVITY FROM A-50007A**	**ANALYZER TRANSMITTER - TOTAL HARDNESS**	< 9 ppm $CaCO_3$	0,22 °F	0,22°F	0,22°F	

DATE	PSC	CUSTOMER	END CUSTOMER
28/2 11:30			
28/2 15:30			
28/2 19:30			

PSC	**SAT REPORT Attachment B – Process Parameters**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	7 of 8

TAG NUMBER	SERVICE	INSTRUMENT TYPE	EXPECTED VALUE	MEASURED VALUE hr: 11:30	MEASURED VALUE hr: 15:30	MEASURED VALUE hr: 19:30	MEAN VALUE
50-TT-024 (contractual parameter)	FRESH WATER OUTLET TEMPERATURE	TEMPERATURE TRANSMITTER	10 / 23 °C	14,3°C	15,0°C	15,3°C	
50-FT-026 (contractual parameter)	FRESH WATER FLOW FROM S-50010	MAGNETIC FLOW TRASMITTER	0.8 m^3/h	0,82 m³/h	0,80 m³/h	0,82	
50-AT-027 (contractual parameter)	FRESH WATER OUTLET pH	ANALYZER TRANSMITTER - pH	7 – 7.9	6,1	6,2	6,02	

Note: Test results applicable only for "contractual parameters"

TEST RESULTS					
☑	Pass	☐	Pass with comments	☐	Fail

DATE	PSC	CUSTOMER	END CUSTOMER
28/2 11:30			
28/2 15:30			
28/2 19:30			

	SAT REPORT Attachment B – Process Parameters	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	8 of 8

COMMENTS	
01	h 11:30 PRELIEVO SEA WATER INLET E FRESH WATER OUTLET
02	h 15:30 PRELIEVO SEA WATER INLET E FRESH WATER OUTLET
03	h 19:30 PRELIEVO – SEA WATER INLET – FRESH WATER OUTLET – PERMEATE RO – SEA WATER – DOWNSTREAM

DATE	PSC	CUSTOMER	END CUSTOMER
28/2			

PSC	**SAT REPORT** **Attachment C - Sequences**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	1 of 6

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**SAND FILTER S-50001 – BACKWASH**

1.	Valve 50-XV-020	Status from Open to close
2.	Sea water pump stop request	Signal 50-XS-005S
3.	Stop sea water feeding pump	By Rosetti Marino
4.	Start backwash pumps P-50002A/B	Status On
5.	Flow Transmitter 50-FT-020	5 m^3/h
6.	Level Transmitter 50-LT-020 enough to complete the backwash.	100% full before backwash start, liquid is
7.	Duration time	20 min

After the backwash time

8.	Stop backwash pumps P-50002A/B	Status Off
9.	Valve 50-XV-020	Status from Close to Open
10.	Sea water pump start request	Signal 50-HS-001S

TEST RESULTS		
☒ Pass	☐ Pass with comments	☐ Fail

COMMENTS	

DATE	PSC	CUSTOMER	END CUSTOMER
21/02/25		27-Feb-2025	WITNESSED BY

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**SWRO SYSTEM START UP LINE A**

1.	Valve 50-XV-021	Status from Close to Open
2.	Valve 50-XV-022	Status Close
3.	Valve 50-XV-026	Status from Close to Open
4.	Valve 50-XV-027	Status from Close to Open
5.	Valve 50-XV-023	Status Close
6.	Valve 50-XV-025	Status Close
7.	Level transmitter 50-LT-020	Above low level set point
8.	Start Pump P-50003A	Status in operation
9.	Start Pump P-50004A	Status in operation
10.	Valve 50-XV-027	Status from Open to close
11.	Flow Transmitter 50-FT-024	Flowrate ≥ 0.8 m^3/h
12.	Conductivity Transmitter 50-AT-024	Cond. Value ≤ set point value
13.	Valve 50-XV-025	Status from Close to Open
14.	Valve 50-XV-026	Status from Open to Close

Note: If line A is in operation Line B is in standby

TEST RESULTS		
☒ Pass	☐ Pass with comments	☐ Fail

COMMENTS	

DATE	PSC	CUSTOMER	END CUSTOMER
21/02/25		21-FEB-2025	WITNESSED BY

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**SWRO SYSTEM START UP LINE B**

1.	Valve 50-XV-021	Status Close
2.	Valve 50-XV-022	Status from Close to Open
3.	Valve 50-XV-026	Status from Close to Open
4.	Valve 50-XV-030	Status from Close to Open
5.	Valve 50-XV-024	Status Close
6.	Valve 50-XV-025	Status Close
7.	Level transmitter 50-LT-020	Above low level set point
8.	Start Pump P-50003B	Status in operation
9.	Start Pump P-50004B	Status in operation
10.	Valve 50-XV-030	Status from Open to close
11.	Flow Transmitter 50-FT-024	Flowrate ≥ 0.8 m^3/h
12.	Conductivity Transmitter 50-AT-024	Cond. Value ≤ set point value
13.	Valve 50-XV-025	Status from Close to Open
14.	Valve 50-XV-026	Status from Open to Close

Note: If line B is in operation Line A is in standby

TEST RESULTS		
☒ Pass	☐ Pass with comments	☐ Fail

COMMENTS	

DATE	PSC	CUSTOMER	END CUSTOMER
21/02/25		21-Feb-2025	WITNESSED BY

PSC	**SAT REPORT** **Attachment C - Sequences**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	4 of 6

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**FLUSHING LINE A**

1.	Stop Pump P-50003A	Status Off
2.	Stop Pump P-50004A	Status Off
3.	Level transmitter 50-LT-021	100%
4.	Valve 50-XV-027	Status from Close to Open
5.	Valve 50-XV-023	Status from Close to Open
6.	Valve 50-XV-021	Status Close
7.	Start Pump P-50003A	Status On
8.	Start Pump P-50004A	Status On
9.	Duration time	10 – 15 minutes
10.	Stop Pump P-50004A	Status off
11.	Stop Pump P-50003A	Status off
12.	Valve 50-XV-023	Status from ~~Close~~ OPEN to ~~Open~~ CLOSE

WAITING TIME TO RESTART

TEST RESULTS		
☒ Pass	☐ Pass with comments	☐ Fail

COMMENTS	

DATE	PSC	CUSTOMER	END CUSTOMER
21/02/25		21-Feb-2025	WITNESSED BY

PSC	**SAT REPORT** **Attachment C - Sequences**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	5 of 6

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**FLUSHING LINE B**

1.	Stop Pump P-50003B	Status Off
2.	Stop Pump P-50004B	Status Off
3.	Level transmitter 50-LT-021	100%
4.	Valve 50-XV-030	Status from Close to Open
5.	Valve 50-XV-024	Status from Close to Open
6.	Valve 50-XV-022	Status Close
7.	Start Pump P-50003B	Status On
8.	Start Pump P-50004B	Status On
9.	Duration time	10 – 15 minutes
10.	Stop Pump P-50004B	Status off
11.	Stop Pump P-50003B	Status off
12.	Valve 50-XV-024	Status from Close to Open

WAITING TIME TO RESTART

OPEN CLOSE

TEST RESULTS		
☒ Pass	☐ Pass with comments	☐ Fail

COMMENTS	

DATE	PSC	CUSTOMER	END CUSTOMER
21/02/25		Anthony Lucas 21-Feb-2025	WITNESSED BY Amanda

PSC	**SAT REPORT** **Attachment C - Sequences**	Project	123A90A- Base Load Power Hub Platform
		Doc. No.	1724000448-QC-PRO-00028
		PSC Doc No.	PK2885-Q-005
		Page	6 of 6

End Customer	:	**CROSSWIND C.V.**
Customer	:	**Rosetti Marino S.p.A**
Equipment tested	:	**INTERLOCK SEQUENCES**

Please refer to document nr. 1724000448-MAC-CE-00004_Rev.3_Package Cause Effect matrix to check the correct interlock sequences activation

TEST RESULTS		
☒ Pass	☐ Pass with comments	☐ Fail

COMMENTS	
1)	SEE THE ATTACHED CAUSE/EFFECT MATRIX OF THE TESTED INTERLOCK

DATE	PSC	CUSTOMER	END CUSTOMER
21/02/25		21-Feb-2025	WITNESSED BY

ENGLISH TRANSLATION OF ITALIAN NOTES SHOWN IN DOC. 1724000448-QC-PRO-00028

COMMENTS page 376/452 of RFO

01 Sampling at plant start-up (SW and Brine)
02 Sampling at 14:30 (SW and Permeate out)
03 Sampling at 16:00 (SW and Permeate out)
04 During sampling, the regeneration of softener S50004 was in progress
05 During the regeneration of S50004, the discharge line showed a significant leak
06 4 samples taken (SW – after S50004 – RO Permeate – Freshwater) at 20:00

COMMENTS page 384/452 of RFO

01 Sampling at 11:30: SW and Fresh Water
02 Sampling at 15:30: SW and Fresh Water

COMMENTS page 392/452 of RFO

04 Sampling at 11:30: *Sea Water* and *Fresh Water*
02 Sampling at 15:30: *Sea Water* and *Fresh Water*
03 Complete sampling at 19:30
- *Sea Water Inlet*
- *Filtered Sea Water downstream S50001*
- *SWRO Permeate*
- *Fresh Water Outlet*

COMMENTS page 400/452 of RFO

01 11:30 – Sample taken: *Sea Water Inlet* and *Fresh Water Outlet*
02 15:30 – Sample taken: *Sea Water Inlet* and *Fresh Water Outlet*
03 19:30 – Sample taken:
- *Sea Water Inlet*
- *Fresh Water Outlet*
- *RO Permeate*
- *Sea Water – Downstream*

Section 7.3 Vendor Spares & Special Tools lists references

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	Commissioning and 2 years spare parts list				
The document relates to	HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)			Contract: CW-I-WP4-2023-05	
Project ID: 123A90	Doc. n°: 1724000448-COM-LIS-00034	Rev.: Issued for Information	Rev. Date: 15-Feb-25	Status: IFI	Class: 2

The equipment consists of the following units/components

1	Tag no.	P-50003A/B	P-50002A/B			
2	Tag description	SW BOOSTER PUMPS	BACKWASH PUMPS			
3	Manufacturer model/type no.	HTT 12000 PP	HTM 15 PP			
4	Manufacturer serial no.					
5	No. of units	2	2			

Supplier: GEMMECOTTI srl

Address: Via Po, 23-25-27
20031 Cesate (MI)
ITALY

PO Number: No. 2885/07/24/1

PO description: CENTRIFUGAL PUMPS

Supplier telephone no: +39 02 96460406

E-mail: marco.rocchegiani@gemmecotti.com

Contact name: Marco Rocchegiani

Contact mobile no:

WEBSITE www.gemmecotti.com

General Information:

6 Quantity of parts FITTED / INSTALLED per unit/component

Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref.			Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares	2 Years spares	Remarks
			Project Datasheet no.	Project Detail dwg. no.	Item ref.															MATERIALS DATA		
7	8		9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	2	O-RING	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		EPDM											SP-2885-001	SP-2885-001		2		
2	2	O-RING	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		EPDM											SP-2885-002	SP-2885-002			2	
3	2	FRONT AND REAR DISC	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		PP											SP-2885-003	SP-2885-003			2	
4	2	SHAFT + RING	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		Al2O3											SP-2885-004	SP-2885-004			2	
5	2	IMPELLER	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		PVDF											SP-2885-005	SP-2885-005			2	
6	2	INT. MAGNET	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		PP											SP-2885-006	SP-2885-006			2	
7	2	REAR CASING	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		PP											SP-2885-007	SP-2885-007			2	
8	2	O-RING	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		EPDM											SP-2885-008	SP-2885-008		2		
9	2	O-RING	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		EPDM											SP-2885-009	SP-2885-009			2	
10	2	CASING THRUST BRUSH	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008													SP-2885-010	SP-2885-010			2	
11	2	SHAFT + RING	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		Al2O3											SP-2885-011	SP-2885-011			2	
12	2	IMPELLER	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		PP											SP-2885-012	SP-2885-012			2	
13	2	INT. MAGNET	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		PP											SP-2885-013	SP-2885-013			2	
14	2	REAR CASING	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		PP											SP-2885-014	SP-2885-014			2	
15	2	IMPELLER THRUST BRUSH	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		PTFEC											SP-2885-015	SP-2885-015			2	
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	Commissioning and 2 years spare parts list				
The document relates to	HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)			Contract	CW-I-WP4-2023-05
Project ID	123A90	Doc. n°	1724000448-COM-LIS-00034	Rev. Issued for Information	Rev. Date 15-Feb-25 / Status IFI / Class 2

The equipment consists of the following units/components

1 Tag no.: P-5000A/B

2 Tag description: HIGH PRESSURE PUMPS

3 Manufacturer model/type no.: APP2.2

4 Manufacturer serial no.: 18083045

5 No. of units: 2

6 Quantity of parts FITTED / INSTALLED per unit/component: 2

Supplier: DANFOSS srl

Address: Corso E. Tazzoli, 221
10137 TORINO
ITALY

PO Number: No. 2885/08/24/0

PO description: HIGH PRESSURE PUMPS

Supplier telephone no:

E-mail: stefano.frega@danfoss.com

Contact name: Stefano Frega

Contact mobile no: +39 366 6167946

WEBSITE https://www.danfoss.com/it-it/

General Information:

		MATERIALS DATA																			Commissioning spares	2 Years spares	
Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref.			Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Quantity ordered	Quantity ordered	Remarks
			Project Datasheet no.	Project Detail dwg. no.	Item ref.																	
7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	0	APP1.5-3.5 SET OF TOOLS EAN Number 5715162668511	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008						0,07						Denmark	SP-2885-016	SP-2885-016		1		
2	2	APP 1.5-2.5 SET OF GASKET EAN Number 5715162668474	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008						0,31						Denmark	SP-2885-017	SP-2885-017		2		
3	2	APP 1.5-2.5 SET OF PISTON EAN Number 5715162668221	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008						0,72						Denmark	SP-2885-018	SP-2885-018			2	
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	Commissioning and 2 years spare parts list					
The document relates to	HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)				Contract	CW-I-WP4-2023-05
Project ID	123A90	Doc. n°	1724000448-COM-LIS-00034	Rev. Issued for Information	Rev. Date 15-Feb-25	Status IFI / Class 2

The equipment consists of the following units/components

1	Tag no.	P-S0009A/B	P-S0005A/B	P-S0006A/B	P-S0007A/B	P-S0008A/B	P-S0010A/B	
2	Tag description	FRESH WATER PUMPS	CAUSTIC SODA DOSING PUMPS	ANTISCALANT DOSING PUMPS	BIOCIDE DOSING PUMPS TO CONTAINER INLET	BIOCIDE DOSING PUMPS TO SEA WATER INTAKE	BIOCIDE DOSING PUMPS TO WASTE WATER TANK	
3	Manufacturer mode/type no.	CRN15-12 E-FSJ-A-E-HQQE	DDC 6-10 AR-PVC/E/C-F-311211GG3	DDC 6-10 AR-PVC/V/C-F-311211GG3	DDC 6-10 AR-PVC/V/C-F-311211GG3	DDC 6-10 AR-PVC/V/C-F-311211GG3	DDC 6-10 AR-PVC/V/C-F-311211GG3	
4	Manufacturer serial no.	99866825	98173728	98451667	98451667	98451667	98451667	
5	No. of units	2	2	2	2	2	2	

Supplier: GRUNDFOS POMPE ITALIA srl

Address: Via Gran Sasso, 4
20060 Truccazzano (MI)
ITALY

PO Number: No. 2885/12/24/0

PO description: DOSING PUMPS and FRESH WATER PUMPS

Supplier telephone no:

E-mail: ffederico@grundfos.com

Contact name: Fabio Federico

Contact mobile no: +39 3355947391

WEBSITE www.grundfos.com

General Information:

6 Quantity of parts FITTED / INSTALLED per unit/component

MATERIALS DATA

Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref. Project Datasheet no.	Parts/drawing ref. Project Detail dwg. no.	Parts/drawing ref. Item ref.	Material	Certificate Type (if applicable)	Certificate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares: Quantity ordered	2 Years spares: Quantity ordered	Remarks
7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	2	Kit shaft seal QQEGG KB012S1 25bar	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008												DK	SP-2885-019	SP-2885-019			1	
2	2	Kit gasket EPDM CR/I/N 1s/1/3/5	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		EPDM										DK	SP-2885-020	SP-2885-020			1	
3	2	Kit valve/diaph. SD-S-PVC/E/C-1 (diaphragm+valves)	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008												FR	SP-2885-021	SP-2885-021			1	
4	2	Kit valve/diaph. SD-S-PVC/V/C-1 (diaphragm+valves)	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008												FR	SP-2885-022	SP-2885-022			1	
5	2	kit valve/diaph. SD-S-PVC/V/C-1 (diaphragm+valves)	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008												FR	SP-2885-023	SP-2885-023			1	
6	2	kit valve/diaph. SD-S-PVC/V/C-1 (diaphragm+valves)	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008												FR	SP-2885-024	SP-2885-024			1	
7	2	kit valve/diaph. SD-S-PVC/V/C-1 (diaphragm+valves)	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008												FR	SP-2885-025	SP-2885-025			1	
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	**Commissioning and 2 years spare parts list**					
The document relates to	**HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)**				Contract **CW-I-WP4-2023-05**	
Project ID	**123A90**	Doc. n°	**1724000448-COM-LIS-00034**	Rev. **Issued for Information**	Rev. Date **15-Feb-25**	Status **IFI** / Class **2**

The equipment consists of the following units/components

1	Tag no.	S-50010						
2	Tag description	UV sterilizer						
3	Manufacturer model/type no.	1S						
4	Manufacturer serial no.							
5	No. of units	1						

Supplier: NOBEL srl

PO Number: No.2885/11/24/0

PO description: UV sterilizer

Contact name: Carlo Strino

Address: Via Galilei, 5
20054 Segrate (MI)
ITALY

Supplier telephone no: +39 02 2827968

Contact mobile no:

E-mail: nobel@nobel.srl

WEBSITE www.nobel.srl

General Information:

6 Quantity of parts FITTED / INSTALLED per unit/component: 1

Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref.			Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares	2 Years spares	Remarks
			Project Datasheet no.	Project Detail dwg. no.	Item ref.															Quantity ordered	Quantity ordered	
7	8		9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	1	UV lamp 40W	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008													SP-2885-026	SP-2885-026		1	1	
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	Commissioning and 2 years spare parts list					
The document relates to	HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)				Contract: CW-I-WP4-2023-05	
Project ID	123A90	Doc. n°	1724000448-COM-LIS-00034	Rev.: Issued for Information	Rev. Date: 15-Feb-25	Status: IFI / Class: 2

The equipment consists of the following units/components

1 Tag no.: A-50003

2 Tag description: SEA WATER COARSE FILTER

3 Manufacturer model/type no.: MSCR PP 1"1/2-7

4 Manufacturer serial no.:

5 No. of units: 1

6 Quantity of parts FITTED / INSTALLED per unit/component: 1

Supplier: ELFI srl

Address: Via Scodoncello 41/E
43044 Collecchio (PR)
ITALY

PO Number: No. 2885/28/24/0

PO description: Self cleaning filter

Supplier telephone no: +39 0521 806846

E-mail: omar.colonna@elfifiltration.com

Contact name: Omar Colonna

Contact mobile no:

WEBSITE: www.elfifiltration.com

General Information:

Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref.			Material	Certificate Type (if applicable)	Certificate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares: Quantity ordered	2 Years spares: Quantity ordered	Remarks
			Project Datasheet no.	Project Detail dwg. no.	Item ref.																	
7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	1	Filtering cartridge, d.114 L=225 filtration 120 micron	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008		PVC											SP-2885-027	SP-2885-027			1	
2	1	Complete kit of gasket	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008													SP-2885-028	SP-2885-028			1	
3	1	Complete kit of nozzle	1724000448-MAC-DA-00008	1724000448-MAC-DA-00008													SP-2885-029	SP-2885-029			1	
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	**Commissioning and 2 years spare parts list**					
The document relates to	**HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)**				Contract **CW-I-WP4-2023-05**	
Project ID	**123A90**	Doc. n°	**1724000448-COM-LIS-00034**	Rev. **Issued for Information**	Rev. Date **15-Feb-25**	Status **IFI** / Class **2**

The equipment consists of the following units/components

1	Tag no.	50-LP-002
2	Tag description	F&G PANEL
3	Manufacturer model/type no.	SIA-5319
4	Manufacturer serial no.	
5	No. of units	1

Supplier: S.I.A. srl

Address: Via Aldo Moro, 6
20010 Pogliano Mil.se (MI)
ITALY

PO Number: No. 2885/19/24/0

PO description: Fire & Gas Detection System

Supplier telephone no: +39 02.35969813

E-mail: l.rizzo@sia-italia.com

Contact name: Luca Rizzo

Contact mobile no: +39 335 5208987

WEBSITE www.sia-italia.com

General Information:

6 Quantity of parts FITTED / INSTALLED per unit/component

	Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref. Project Datasheet no.	Project Detail dwg. no.	Item ref.	Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares Quantity ordered	2 Years spares Quantity ordered	Remarks
	7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	1		Commissioning Kit composed by Fuses and Resistors															SP-2885-030	SP-2885-030		1		
	2		DIG Card - Six Input Line Digital															SP-2885-031	SP-2885-031			1	
	3		OUT Card - Six Controlled Output															SP-2885-032	SP-2885-032			1	
	4		ANA Card – Two Analog Input Line with individual display															SP-2885-033	SP-2885-033			1	
	5		REL Card – Six Output Relay															SP-2885-034	SP-2885-034			1	
	6		CPU Card – EN 54-2															SP-2885-035	SP-2885-035			1	
	7		PSU Card for Power Supply - EN 54-4															SP-2885-036	SP-2885-036			1	
	8		Modbus TCP/IP card															SP-2885-037	SP-2885-037			1	
	9		Replace Display															SP-2885-038	SP-2885-038			1	
	10		System Card															SP-2885-039	SP-2885-039			1	
	11		Power Supply Unit															SP-2885-040	SP-2885-040			1	
	12		GAS Detector Catalytic for H2															SP-2885-041	SP-2885-041			1	
	13		IS Smoke Detector															SP-2885-042	SP-2885-042			1	
	14		Fire Beacon				Alloy material											SP-2885-043	SP-2885-043			1	
	15		GAS Beacon				Alloy material											SP-2885-044	SP-2885-044			1	
	16		Fire & GAS Sounder				Alloy material											SP-2885-045	SP-2885-045			1	
	17		Manual Alarm Call Point				Alloy material											SP-2885-046	SP-2885-046			1	
	18																						
	19																						
	20																						
	21																						
	22																						
	23																						
	24																						
	25																						
	26																						
	27																						
	28																						
	29																						
	30																						
	31																						
	32																						
	33																						
	34																						
	35																						
	36																						
	37																						
	38																						
	39																						
	40																						
	41																						
	42																						
	43																						
	44																						
	45																						
	46																						
	47																						
	48																						
	49																						
	50																						
	51																						
	52																						
	53																						
	54																						
	55																						
	56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	**Commissioning and 2 years spare parts list**					
The document relates to	**HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)**				Contract **CW-I-WP4-2023-05**	
Project ID	**123A90**	Doc. n°	**1724000448-COM-LIS-00034**	Rev. **Issued for Information**	Rev. Date **15-Feb-25**	Status **IFI** / Class **2**

The equipment consists of the following units/components

1	Tag no.	50-LP-001						
2	Tag description	PLC PANEL						
3	Manufacturer model/type no.							
4	Manufacturer serial no.							
5	No. of units	1						
6	Quantity of parts FITTED / INSTALLED per unit/component	1						

Supplier: PHOENIX CONTACT S.p.A.

Address: Via Bellini 39/41
20095 Cusano Milanino (MI)
ITALY

PO Number: No. 2885/20/24/0

PO description: PLC panel

Supplier telephone no: +39 02 66 05 91

E-mail: csc_it@phoenixcontact.com

Contact name:

Contact mobile no:

WEBSITE www.phoenixcontact.it

General Information:

								MATERIALS DATA																			Commissioning spares	2 Years spares	
									Parts/drawing ref.																			
							Item Number	Total number of identical spares installed	Description of recommended spare parts	Project Datasheet no.	Project Detail dwg. no.	Item ref.	Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Quantity ordered	Quantity ordered	Remarks
							7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
1							1	2	Relays														SP-2885-047	SP-2885-047			1	
1							2	1	Relays														SP-2885-048	SP-2885-048			1	
1							3	50	Relays box														SP-2885-049	SP-2885-049			10	
							4																						
							5																						
							6																						
							7																						
							8																						
							9																						
							10																						
							11																						
							12																						
							13																						
							14																						
							15																						
							16																						
							17																						
							18																						
							19																						
							20																						
							21																						
							22																						
							23																						
							24																						
							25																						
							26																						
							27																						
							28																						
							29																						
							30																						
							31																						
							32																						
							33																						
							34																						
							35																						
							36																						
							37																						
							38																						
							39																						
							40																						
							41																						
							42																						
							43																						
							44																						
							45																						
							46																						
							47																						
							48																						
							49																						
							50																						
							51																						
							52																						
							53																						
							54																						
							55																						
							56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	**Commissioning and 2 years spare parts list**					
The document relates to	**HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)**				Contract **CW-I-WP4-2023-05**	
Project ID	**123A90**	Doc. n°	**1724000448-COM-LIS-00034**	Rev. **Issued for Information**	Rev. Date **15-Feb-25**	Status **IFI** / Class **2**

The equipment consists of the following units/components

1 Tag no.: 50-LP-001

2 Tag description: PLC PANEL

Supplier: SIEMENS S.p.A.
Address: Via Vipiteno 4, 20128 MILANO, ITALY
PO Number: No. 2885/05/24/0
PO description: PLC panel
Supplier telephone no: +39 02 243 62000
E-mail: portale.rc-it@siemens.com
Contact name: Stefano Raimondo
Contact mobile no:
WEBSITE:
General Information:

3 Manufacturer mode//type no.

4 Manufacturer serial no.

5 No. of units: 1

6 Quantity of parts FITTED / INSTALLED per unit/component: 1

Item Number	Total number of identical spares installed	MATERIALS DATA: Description of recommended spare parts	Parts/drawing ref.: Project Datasheet no.	Project Detail dwg. no.	Item ref.	Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares: Quantity ordered	2 Years spares: Quantity ordered	Remarks
7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	2	SIMATIC ET 200SP, output analogic module, AQ 4XU/I Standard								0,04						DE	SP-2885-050	SP-2885-050		1	1	
2	5	SIMATIC ET 200SP, inlet analogic module, AI 8XI 2-/4-Wire Basic								0,04						DE	SP-2885-051	SP-2885-051		1	1	
3	3	SIMATIC ET 200SP, output digital module, DQ 16x 24V DC/0,5A Standard								0,04						DE	SP-2885-052	SP-2885-052		1	1	
4	6	SIMATIC ET 200SP, inlet digital module, DI 16x 24V DC Standard								0,03						DE	SP-2885-053	SP-2885-053		1	1	
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	**Commissioning and 2 years spare parts list**					
The document relates to	**HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)**				Contract **CW-I-WP4-2023-05**	
Project ID	**123A90**	Doc. n°	**1724000448-COM-LIS-00034**	Rev. **Issued for Information**	Rev. Date **15-Feb-25**	Status **IFI** / Class **2**

The equipment consists of the following units/components

1	Tag no.	50-LP-001						
2	Tag description	MCC PANEL						
3	Manufacturer model/type no.							
4	Manufacturer serial no.							
5	No. of units	1						
6	Quantity of parts FITTED / INSTALLED per unit/component	1						

Supplier: SCHNEIDER ELECTRIC S.p.A.

PO Number: No. 2885/21/24

PO description: MCC panel

Contact name:

Address: via Circonvallazione Est,1
24040 Stezzano (BG)
ITALY

Supplier telephone no:

Contact mobile no:

E-mail: it-ordini@se.com

WEBSITE:

General Information:

									MATERIALS DATA																		Commissioning spares	2 Years spares	Remarks
										Parts/drawing ref.																		
									Description of recommended spare parts	Project Datasheet no.	Project Detail dwg. no.	Item ref.	Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Quantity ordered	Quantity ordered	
									Item Number	Total number of identical spares installed																			
									7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1								1	10	Base potenza 12A														SP-2885-054	SP-2885-054			1	
1								2	4	Unità standard 3-12A 24V DC														SP-2885-055	SP-2885-055			1	
1								3	6	Unità standard 0,35-1,4A 24V DC														SP-2885-056	SP-2885-056			1	
1								4	10	AUX CONTACT MOD 2NO														SP-2885-057	SP-2885-057			2	
1								5	10	CONTATTO AUX DIF+DISP														SP-2885-058	SP-2885-058			2	
								6																					
								7																					
								8																					
								9																					
								10																					
								11																					
								12																					
								13																					
								14																					
								15																					
								16																					
								17																					
								18																					
								19																					
								20																					
								21																					
								22																					
								23																					
								24																					
								25																					
								26																					
								27																					
								28																					
								29																					
								30																					
								31																					
								32																					
								33																					
								34																					
								35																					
								36																					
								37																					
								38																					
								39																					
								40																					
								41																					
								42																					
								43																					
								44																					
								45																					
								46																					
								47																					
								48																					
								49																					
								50																					
								51																					
								52																					
								53																					
								54																					
								55																					
								56																					

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	**Commissioning and 2 years spare parts list**					
The document relates to	**HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)**				Contract **CW-I-WP4-2023-05**	
Project ID	**123A90**	Doc. n°	**1724000448-COM-LIS-00034**	Rev. **Issued for Information**	Rev. Date **15-Feb-25**	Status **IFI** / Class **2**

The equipment consists of the following units/components

1 Tag no.	Supplier: NUOVA FIMA STORE S.r.l.	PO Number: No. 2885/59/24/0
2 Tag description: Pressure gauge	Address: via Barro, 56/58 28045 Invorio (NO) ITALY	PO description: Pressure gauge Supplier telephone no: E-mail: upigozzi@nuovafimastore.com
	General Information:	

Contact name: Ugo Pigozzi		
Contact mobile no:		
WEBSITE:		

6 Quantity of parts FITTED / INSTALLED per unit/component: 1

3 Manufacturer mode//type no. / 4 Manufacturer serial no. / 5 No. of units	Item Number	Total number of identical spares installed	MATERIALS DATA: Description of recommended spare parts	Parts/drawing ref.: Project Datasheet no.	Project Detail dwg. no.	Item ref.	Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares: Quantity ordered	2 Years spares: Quantity ordered	Remarks
	7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	1		Pressure gauge, solid front, 0-6 bar, dia DN100 mm, inox 316L, IP67, connection 1/2" gas F/F				inox 316L											SP-2885-059	SP-2885-059			1	
	2																						
	3																						
	4																						
	5																						
	6																						
	7																						
	8																						
	9																						
	10																						
	11																						
	12																						
	13																						
	14																						
	15																						
	16																						
	17																						
	18																						
	19																						
	20																						
	21																						
	22																						
	23																						
	24																						
	25																						
	26																						
	27																						
	28																						
	29																						
	30																						
	31																						
	32																						
	33																						
	34																						
	35																						
	36																						
	37																						
	38																						
	39																						
	40																						
	41																						
	42																						
	43																						
	44																						
	45																						
	46																						
	47																						
	48																						
	49																						
	50																						
	51																						
	52																						
	53																						
	54																						
	55																						
	56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	**Commissioning and 2 years spare parts list**
The document relates to	**HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)**
Contract	**CW-I-WP4-2023-05**

Project ID	Doc. n°	Rev.	Rev. Date	Status	Class
123A90	**1724000448-COM-LIS-00034**	**Issued for Information**	**15-Feb-25**	**IFI**	**2**

The equipment consists of the following units/components

1	Tag no.	50-XV-025 , 032, 033	50-XV-021, 022, 023, 031, 034, 035	50-XV-020					
2	Tag description	On-off ball valves	On-off ball valves	On-off ball valves					
3	Manufacturer mode//type no.	546 PRO D.20	546 PRO D.32	546 PRO D.50					
4	Manufacturer serial no.								
5	No. of units	3	7	1					

Supplier: I.S.I. S.r.l.

PO Number: No. 2885/56/24/0

PO description: On-off ball valves

Contact name: Davide Borgonovo

Address: via Donatori di Organi, 3
29010 Castelvetro P.no (PC)
ITALY

Supplier telephone no:

Contact mobile no:

E-mail: davide.borgonovo@isi-flex.it

WEBSITE:

General Information:

6 Quantity of parts FITTED / INSTALLED per unit/component

Item Number	Total number of identical spares installed	MATERIALS DATA: Description of recommended spare parts	Parts/drawing ref.: Project Datasheet no.	Project Detail dwg. no.	Item ref.	Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares: Quantity ordered	2 Years spares: Quantity ordered	Remarks
7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	3	Set of gasket															SP-2885-060	SP-2885-060			1	
2	7	Set of gasket															SP-2885-061	SP-2885-061			1	
3	1	Set of gasket															SP-2885-062	SP-2885-062			1	
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	**Commissioning and 2 years spare parts list**				
The document relates to	**HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)**				Contract **CW-I-WP4-2023-05**
Project ID	**123A90**	Doc. n°	**1724000448-COM-LIS-00034**	Rev. **Issued for Information**	Rev. Date **15-Feb-25**	Status **IFI**	Class **2**

The equipment consists of the following units/components

1 Tag no.	Supplier: MEF S.r.l.	PO Number: No. 2885/82/24/0 and 2885/84/24/0
2 Tag description	Address:	
3 Manufacturer model/type no.	General Information:	
4 Manufacturer serial no.		
5 No. of units		

PO description:

Supplier telephone no: 0362-1739900

E-mail: giuseppe.mandaglio@mefsrl.it

Contact name: Giuseppe Mandaglio

Contact mobile no: 345-6176791

WEBSITE:

6 Quantity of parts FITTED / INSTALLED per unit/component

Item Number	Total number of identical spares installed	MATERIALS DATA: Description of recommended spare parts	Parts/drawing ref.: Project Datasheet no.	Project Detail dwg. no.	Item ref.	Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares: Quantity ordered	2 Years spares: Quantity ordered	Remarks
7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1		Cable gland M50*1.5, IP68															SP-2885-063	SP-2885-063	Cembre		1	
2		Cable gland M32*1.5, IP68															SP-2885-064	SP-2885-064	Cembre		1	
3		Cable gland M25*1.5, IP68															SP-2885-065	SP-2885-065	Cembre		1	
4		Cable gland M20*1.5, IP68															SP-2885-066	SP-2885-066	Cembre		2	
5		Cable gland M16*1.5, IP68															SP-2885-067	SP-2885-067	Cembre		2	
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	**Commissioning and 2 years spare parts list**					
The document relates to	**HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)**				Contract **CW-I-WP4-2023-05**	
Project ID	**123A90**	Doc. n°	**1724000448-COM-LIS-00034**	Rev. **Issued for Information**	Rev. Date **15-Feb-25**	Status **IFI** / Class **2**

The equipment consists of the following units/components

1 Tag no.	Supplier: Plastic-Glass srl	PO Number: No. 2885/03/24/0	PO description: Erection of Water Treatment Plant in container	Contact name: Paolo Toselli
2 Tag description	Address: Via Miles, 8 20873 Cavenago B.za (MB) ITALY		Supplier telephone no: +39 02 95 06 445 E-mail: paolo.toselli@plastic-glass.com	Contact mobile no: WEBSITE: www.plastic-glass.com
	General Information:			

3 Manufacturer mode/type no. — 4 Manufacturer serial no. — 5 No. of units

6 Quantity of parts FITTED / INSTALLED per unit/component

Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref.			Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares	2 Years spares	Remarks
		MATERIALS DATA																				
			Project Datasheet no.	Project Detail dwg. no.	Item ref.															Quantity ordered	Quantity ordered	
7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1		Ball valve PN16 1/2"		1724000448-PR-PID-00013		PVC-U											SP-2885-068	SP-2885-068			1	
1		Ball valve PN16 1"		1724000448-PR-PID-00013		PVC-U											SP-2885-069	SP-2885-069			1	
2		Ball valve PN16 1 1/4"		1724000448-PR-PID-00013		PVC-U											SP-2885-070	SP-2885-070			1	
3		Ball valve PN16 1 1/2"		1724000448-PR-PID-00013		PVC-U											SP-2885-071	SP-2885-071			1	
4		Check valve 1/2"		1724000448-PR-PID-00013		PVC-U											SP-2885-072	SP-2885-072			1	
5		Check valve 1"		1724000448-PR-PID-00013		PVC-U											SP-2885-073	SP-2885-073			1	
6		Diaphragm valve PN10 1"		1724000448-PR-PID-00013		PVC-U											SP-2885-074	SP-2885-074			1	
7		Sediment Strainer PN16 1/2"		1724000448-PR-PID-00013		PVC-U											SP-2885-075	SP-2885-075			1	
8		Ball valve PN10 1/2"		1724000448-PR-PID-00013		PP-H											SP-2885-076	SP-2885-076			1	
9		Check valve 1/2"		1724000448-PR-PID-00013		PP-H											SP-2885-077	SP-2885-077			1	
10		"Y" Strainer PN10 1/2"		1724000448-PR-PID-00013		PP-H											SP-2885-078	SP-2885-078			1	
11		Air release valve 1/2"		1724000448-PR-PID-00013		PVC-U											SP-2885-079	SP-2885-079			1	
12		Spring check valve 1/2"		1724000448-PR-PID-00013		PP-H											SP-2885-080	SP-2885-080			1	
13		Ball check valve 1/2"		1724000448-PR-PID-00013		PVC-U											SP-2885-081	SP-2885-081			1	
14		Ball check valve 1/2"		1724000448-PR-PID-00013		PP-H											SP-2885-082	SP-2885-082			1	
15		Flat gasket thk. 3 mm 1/2"		1724000448-PR-PID-00013		EPDM											SP-2885-083	SP-2885-083			20	
16		Flat gasket thk. 3 mm 1"		1724000448-PR-PID-00013		EPDM											SP-2885-084	SP-2885-084			10	
17		Flat gasket thk. 3 mm 1 1/2"		1724000448-PR-PID-00013		EPDM											SP-2885-085	SP-2885-085			6	
18		Flat gasket thk. 3 mm 2"		1724000448-PR-PID-00013		EPDM											SP-2885-086	SP-2885-086			6	
19		Screw M16x70 with 1 nut and 2 washer		1724000448-PR-PID-00013		A4											SP-2885-087	SP-2885-087			20	
20		Screw M12x60 with 1 nut and 2 washer		1724000448-PR-PID-00013		A4											SP-2885-088	SP-2885-088			40	
21		Screw M12x70 with 1 nut and 2 washer		1724000448-PR-PID-00013		A4											SP-2885-089	SP-2885-089			60	
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	Commissioning and 2 years spare parts list							
The document relates to	HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)						Contract CW-I-WP4-2023-05	
Project ID	123A90	Doc. n°	1724000448-COM-LIS-00034	Rev. Issued for Information	Rev. Date 15-Feb-25		Status IFI	Class 2

The equipment consists of the following units/components

1	Tag no.						
2	Tag description						
3	Manufacturer model/type no.						
4	Manufacturer serial no.						
5	No. of units						
6	Quantity of parts FITTED / INSTALLED per unit/component						

Supplier: Plastic-Glass srl	PO Number: No. 2885/03/24/0	PO description: Erection of Water Treatment Plant in container	Contact name: Paolo Toselli
Address: Via Miles, 8 20873 Cavenago B.za (MB) ITALY		Supplier telephone no: +39 02 95 06 445	Contact mobile no:
		E-mail: paolo.toselli@plastic-glass.com	WEBSITE: www.plastic-glass.com

General Information:

Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref. Project Datasheet no.	Parts/drawing ref. Project Detail dwg. no.	Parts/drawing ref. Item ref.	Material	Certiciate Type (if applicable)	Certiciate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares Quantity ordered	2 Years spares Quantity ordered	Remarks
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1		Set of gasket		1724000448-PR-PID-00013		EPDM											SP-2885-090	SP-2885-090			2 set	
1		Set of bolt		1724000448-PR-PID-00013		8.8											SP-2885-091	SP-2885-091			2 set	
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	**Commissioning and 2 years spare parts list**					
The document relates to	**HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)**				Contract **CW-I-WP4-2023-05**	
Project ID	**123A90**	Doc. n°	**1724000448-COM-LIS-00034**	Rev. **Issued for Information**	Rev. Date **15-Feb-25**	Status **IFI** / Class **2**

The equipment consists of the following units/components

1	Tag no.							
2	Tag description							
3	Manufacturer model/type no.	LG SW 4040 R						
4	Manufacturer serial no.							
5	No. of units							

Supplier: SG Project Srl

Address: Strada Folciona, 5/bis
27058 Voghera (PV)
ITALY

PO Number: No. 2885/06/24/0

PO description: SWRO membranes

Supplier telephone no:

E-mail: nicolo.dilascio@sgprojects.it

Contact name: Nicolò Di Lascio

Contact mobile no: 0039 327 8113714

WEBSITE: https://sgprojects.it

General Information:

6 Quantity of parts FITTED / INSTALLED per unit/component

Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref.			Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturer name	Commissioning spares: Quantity ordered	2 Years spares: Quantity ordered	Remarks
			Project Datasheet no.	Project Detail dwg. no.	Item ref.																	
		MATERIALS DATA																		Commissioning spares	2 Years spares	
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
1	12	LG SW 4040 R, diameter 4", lenght 40"				Polyamide thin-film composite											SP-2885-092	SP-2885-092		2	36	
1																						
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	**Commissioning and 2 years spare parts list**					
The document relates to	**HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)**				Contract **CW-I-WP4-2023-05**	
Project ID	**123A90**	Doc. n°	**1724000448-COM-LIS-00034**	Rev. **Issued for Information**	Rev. Date **15-Feb-25**	Status **IFI** / Class **2**

The equipment consists of the following units/components

1 Tag no.

2 Tag description

3 Manufacturer mode//type no.

4 Manufacturer serial no.

5 No. of units

6 Quantity of parts FITTED / INSTALLED per unit/component

Supplier: Everblue srl

PO Number: No. 2885/40/24/0 No. 2885/71/24/0

PO description: Cartridge filters and Chemicals

Contact name: Gianpaolo Spagnoli

Address: Via Alberto Zanrè, 16
43051 Loc. Gotra, Albareto (PR)
ITALY

Supplier telephone no: +39 05251920100 int.15

Contact mobile no:

E-mail: spagnoli@everblue.it

WEBSITE: http://www.everblue.it

General Information:

Item Number	Total number of identical spares installed	Description of recommended spare parts	Parts/drawing ref. Project Datasheet no.	Project Detail dwg. no.	Item ref.	Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares Quantity ordered	2 Years spares Quantity ordered	Remarks
		MATERIALS DATA																				
7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	2	Cartridge 20 micron				PP spiral wound											SP-2885-093	SP-2885-093	Everblue			CONSUMABLES: quantity ordered n.6
2	2	Cartridge 5 micron				PP spiral wound											SP-2885-094	SP-2885-094	Everblue			CONSUMABLES: quantity ordered n.6
3																						
4		Antiscalant Everblue 600															SP-2885-095	SP-2885-095	Everblue			CONSUMABLES: quantity ordered 20 kg for 6 months
5		Biocide EB Plus EBBPL															SP-2885-096	SP-2885-096	Everblue			CONSUMABLES: quantity ordered 60 kg for 6 months
6		Biocide EB Plus EBBPL															SP-2885-097	SP-2885-097	Everblue			CONSUMABLES: quantity ordered 10 kg for 6 months
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	**Commissioning and 2 years spare parts list**					
The document relates to	**HOLLANDSE KUST NOORD WIND PARK Project - Base Load Power Hub (BLPH)**				Contract **CW-I-WP4-2023-05**	
Project ID	**123A90**	Doc. n°	**1724000448-COM-LIS-00034**	Rev. **Issued for Information**	Rev. Date **15-Feb-25**	Status **IFI** / Class **2**

The equipment consists of the following units/components

1 Tag no.	Supplier: Merk Life Science Srl	PO Number: No. 2885/88/24/0	PO description: Caustic soda / Contact name:
2 Tag description	Address: Via Monte Rosa, 93 20149 Milano ITALY		Supplier telephone no: 0039 02 33417310 / Contact mobile no:
			E-mail: itcustomerrelations@merkgroup.com / WEBSITE:
	General Information:		

3 Manufacturer mode//type no. — 4 Manufacturer serial no. — 5 No. of units — 6 Quantity of parts FITTED / INSTALLED per unit/component

Item Number	Total number of identical spares installed	MATERIALS DATA: Description of recommended spare parts	Parts/drawing ref.: Project Datasheet no.	Project Detail dwg. no.	Item ref.	Material	Certicate Type (if applicable)	Certicate Reference (if applicable)	Shelf life (years)	Weight (net)	Weight (gross)	Volume	HS Code	ECCN Code	% US Content	Country of origin	Supplier part no.	Manufacturer part no.	Manufacturername	Commissioning spares: Quantity ordered	2 Years spares: Quantity ordered	Remarks
7		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1		Sodium hydroxide solution 6 mol/l															SP-2885-098	SP-2885-098	Merk			CONSUMABLES: quantity ordered 1 l for 6 months
2		Sodium hydroxide solution 6 mol/l															SP-2885-099	SP-2885-099	Merk			CONSUMABLES: quantity ordered 2,5 l for 6 months
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						
34																						
35																						
36																						
37																						
38																						
39																						
40																						
41																						
42																						
43																						
44																						
45																						
46																						
47																						
48																						
49																						
50																						
51																						
52																						
53																						
54																						
55																						
56																						

Section 7.4 Vendor Data / Operations / Maintenance Manuals References

BASE LOAD POWER HUB (BLPH)

A-50000 PACKAGE INTERCONNECTING DIAGRAM

(ELE/INSTR)

NO MARK UP

AS COMMISSIONED: MATTIA GIUSTI / LAURENTIU GROZAVU

24/3/25

PSC

DOC. REF: PK2885-I-001

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	10/02/25	PSC	AZ	RM	REVISED WHERE INDICATED
02	21/10/24	PSC	AZ	RM	ACCEPTED FOR CONSTRUCTION
01	17/07/24	PSC	AZ	RM	REVISED AFTER CLIENT COMMENTS
00	14/05/24	PSC	AZ	RM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
A-50000 PACKAGE INTERCONNECTING DIAGRAM
COVER PAGE

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3	DRAWING NO.	SHEET	REV.
	1724000448-EL-DG-00015	001	03

F.to UNI A3: 420mmx297mm

File Name : 1724000448-EL-DG-00015 Rev. 03

REV.	SHEET NUMBER	DESCRIPTION	REF. CODE
01	001	FRONT PAGE	
01	002	SUMMARY and GENERAL NOTES	
01	003	FIRE & GAS ALARM	
01	004	SHUTDOWN/FAULT ALARM	
01	005	400/230V POWER SUPPLY	
01	006	CONTROL SYSTEM	

GENERAL NOTES

1: .
2: .
3: .
4: .

NO MARK UP

AS COMMISSIONED: MATTIA GIROTTO / LAURENȚIU GROZAVU

24/3/25

PSC DOC. REF: PK2885-I-001

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	10/02/25	PSC	AZ	RM	REVISED WHERE INDICATED
02	21/10/24	PSC	AZ	RM	ACCEPTED FOR CONSTRUCTION
01	17/07/24	PSC	AZ	RM	REVISED AFTER CLIENT COMMENTS
00	14/05/24	PSC	AZ	RM	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
A-50000 PACKAGE INTERCONNECTING DIAGRAM
SUMMARY and GENERAL NOTES

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724000448-EL-DG-00015

SHEET 002

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1724000448-EL-DG-00015 Rev. 03

FIELD - PACKAGE A-50000

INSIDE CONTAINER

OUTSIDE CONTAINER

I&T EQUIPMENT ROOM (ITER)

MARSHALLING CABINET
B400-FGS-002

JUNCTION BOX
950-JE-05104

PSC ◀▷ Customer

TB-1

SOUNDER	950-XZ-05201	+	1 — 1BK
		−	2 — 2BK
AMBER	950-XL-05201	+	3 — 3BK
		−	4 — 4BK
RED	950-XL-05202	+	5 — 5BK
		−	6 — 6BK
			7 — 7BK
			8 — 8BK
			9 — 9BK
			10 — 10BK
			11 — 11BK
			12 — 12BK
			SH

PSC ◀▷ Customer

950-JE-05104/B400-FGS-002
12x2,5mmq
(By Others)

TB-950-JE-051004

1BK	1
2BK	2
3BK	3
4BK	4
5BK	5
6BK	6
7BK	7
8BK	8
9BK	9
10BK	10
11BK	11
12BK	12

F&G PANEL
50-LP-002

PSC ◀▷ Customer

TB-RLY

GAS CONFIRMED 50-XA-001		5	1WH
		6	1BK
SMOKE CONFIRMED 50-XA-002		1	2WH
		2	2BK

50-LP-002/B400-FGS-003
2x2x0,75mmq
(By Others)

△3

△3

TB-50-LP-002

1WH	1
1BK	2
2WH	3
2BK	4

PSC ◀▷ Customer

MANUAL FIRE ALARM — 950-MFA-05201 (+ WH, − BK)

C-950-MFA-05201/B400-FGS-003
2x0,75mmq
(By Others)

TB-B400-FGS-002-1

WH	09
BK	10

Shield Bar — I.E.

NO MARK UP
AS COMMISSIONED: MATIA GIROTI / LAURENTIU GROZAVU
24/3/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	10/02/25	PSC	AZ	RM	REVISED WHERE INDICATED
02	21/10/24	PSC	AZ	RM	ACCEPTED FOR CONSTRUCTION
01	17/07/24	PSC	AZ	RM	REVISED AFTER CLIENT COMMENTS
00	14/05/24	PSC	AZ	RM	ISSUE FOR REVIEW (IFR)

PSC

DOC. REF: PK2885-I-001

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
A-50000 PACKAGE INTERCONNECTING DIAGRAM
FIRE & GAS ALARM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : 1:X

A3

DRAWING NO. 1724000448-EL-DG-00015

SHEET 003

REV. 03

File Name : 1724000448-EL-DG-00015 Rev. 03

F.to UNI A3: 420mmx297mm

FIELD - PACKAGE A-50000

INSIDE CONTAINER

OUTSIDE CONTAINER

I&T EQUIPMENT ROOM (ITER)

MARSHALLING CABINET
B400-SIS-001

CP-500E1
UCP PANEL
50-LP-001

XEXT

SHUTDOWN
50-XS-001

1	WH	
2	BK	

C-50-XS-001/B400-SIS-001
2x2,5mmq
(By Others)

TB-XS-000

WH	15	
BK	16	

3

F&G PANEL
50-LP-002

PSC ◇ Customer

TB-RLY

FAULT
50-XA-003

9	WH	
15	BK	

C-50-XA-003/B400-SIS-001
1x2x0,75mmq
(By Others)

TB-XA-000

WH	5	
BK	6	

3

Shield Bar

I.E.

NO MARK UP

AS COMMISSIONED: PAOLA GIRON / LAURENTIU GROZAVU

24/3/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	10/02/25	PSC	AZ	RM	REVISED WHERE INDICATED
02	21/10/24	PSC	AZ	RM	ACCEPTED FOR CONSTRUCTION
01	17/07/24	PSC	AZ	RM	REVISED AFTER CLIENT COMMENTS
00	14/05/24	PSC	AZ	RM	ISSUE FOR REVIEW (IFR)

PSC

DOC. REF: PK2885-I-001

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
A-50000 PACKAGE INTERCONNECTING DIAGRAM
SHUTDOWN/FAULT ALARM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : 1:X

A3

DRAWING NO. 1724000448-EL-DG-00015

SHEET 004

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1724000448-EL-DG-00015 Rev. 03

FIELD - PACKAGE A-50000

INSIDE CONTAINER

OUTSIDE CONTAINER

B-200 CONTAINER LV ROOM

SG-200N1
CLA3/+08 COLUMN CUBICLE

MCC PANEL
CP-500E1

400/230Vac
POWER SUPPLY

XMAIN
1
2
3
4
PE

50001-CEL-L1
1x70mmq

50001-CEL-L2
1x70mmq

50001-CEL-L3
1x70mmq

50001-CEL-N
1x70mmq

50001-CEL-PE
1x70mmq

JUNCTION BOX
JB-500E8

PSC ◀▷ Customer

TB-1
L1
L2
L3
N
PE

83016-CEL
5G70mmq
(By Others)

B-300 CONTAINER UPS ROOM

DP-200F3
AC DISTRIBUTION BOARD-PAS Q14

230Vac
UPS
POWER SUPPLY

XUPS
1
2
PE

50002-CEL-LN
3G2,5mmq
(By Others)

JUNCTION BOX
JB-500F8

PSC ◀▷ Customer

TB-1
L
N
PE

84313-CEL
3G2,5mmq
(By Others)

NO MARK UP

AS COMMISSIONED: MATWA GIROTI / LAURENTIU GROZAVU

24/3/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	10/02/25	PSC	AZ	RM	REVISED WHERE INDICATED
02	21/10/24	PSC	AZ	RM	ACCEPTED FOR CONSTRUCTION
01	17/07/24	PSC	AZ	RM	REVISED AFTER CLIENT COMMENTS
00	14/05/24	PSC	AZ	RM	ISSUE FOR REVIEW (IFR)

PSC

DOC. REF: PK2885-I-001

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
A-50000 PACKAGE INTERCONNECTING DIAGRAM
400/230V POWER SUPPLY

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : 1:X

A3

DRAWING NO. 1724000448-EL-DG-00015

SHEET 005

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1724000448-EL-DG-00015 Rev. 03

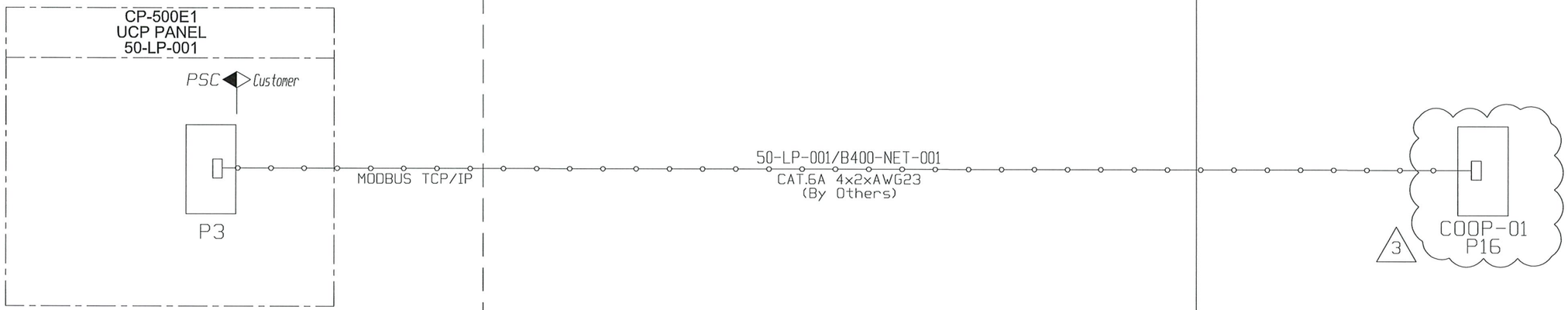
FIELD - PACKAGE A-50000

INSIDE CONTAINER

OUTSIDE CONTAINER

I&T EQUIPMENT ROOM (ITER)

B400-NET-001



NO MARK UP

AS COMMISSIONED: MATTIA GIBILI / LAURENTIU GROZAVU

24/3/25

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
03	10/02/25	PSC	AZ	RM	REVISED WHERE INDICATED
02	21/10/24	PSC	AZ	RM	ACCEPTED FOR CONSTRUCTION
01	17/07/24	PSC	AZ	RM	REVISED AFTER CLIENT COMMENTS
00	14/05/24	PSC	AZ	RM	ISSUE FOR REVIEW (IFR)

PSC

DOC. REF: PK2885-I-001

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
A-50000 PACKAGE INTERCONNECTING DIAGRAM
CONTROL SYSTEM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : 1:X

A3

DRAWING NO. 1724000448-EL-DG-00015

SHEET 006

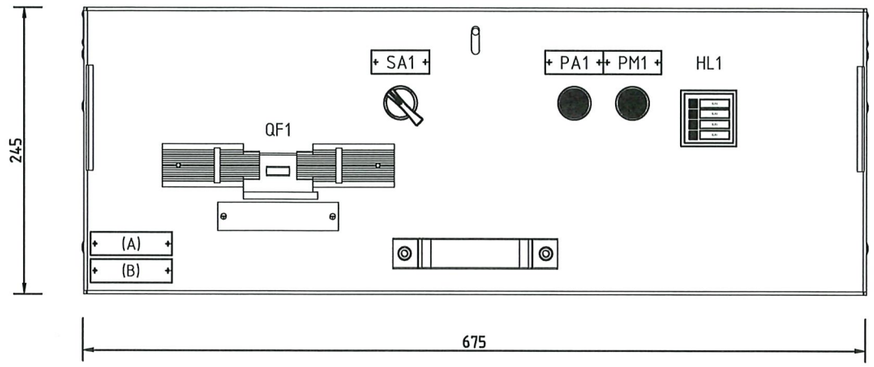
REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1724000448-EL-DG-00015 Rev. 03

DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK1-n"

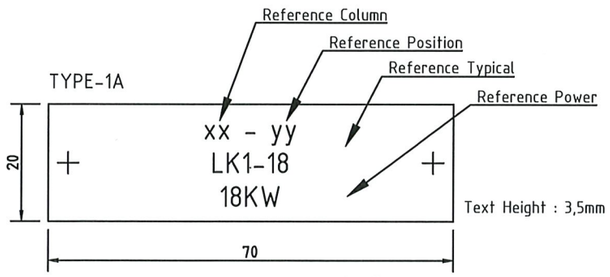


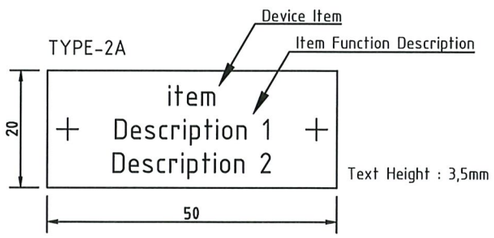
NOTE :

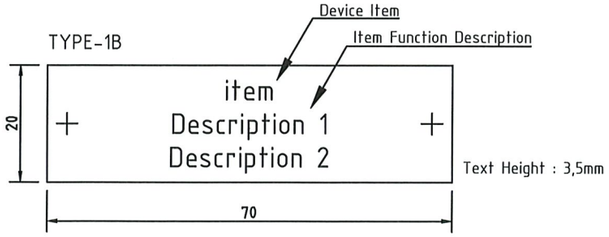
A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

B) USER name plate (type-1B), with :
- Item User [to see SLD diagrams]
- User Description [to see SLD diagrams]

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	MOTOR	Type-2A
PM1	RUN	MOTOR	Type-2A
HL1	Multiled	Signalling	NO plate







AS COMMISSIONED : NAOWA GIROW
26/3/25
NO MARK UP

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LK-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

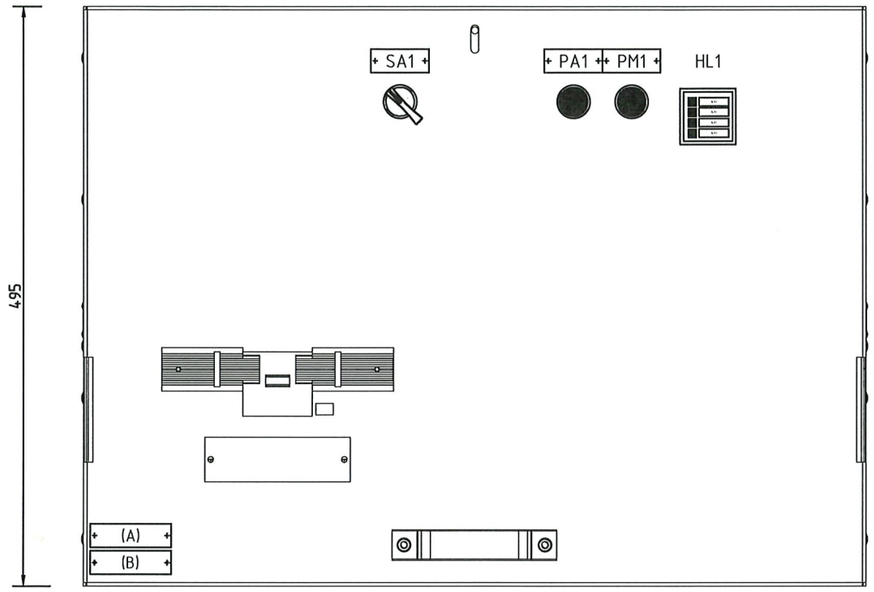
A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 034 | REV. 02

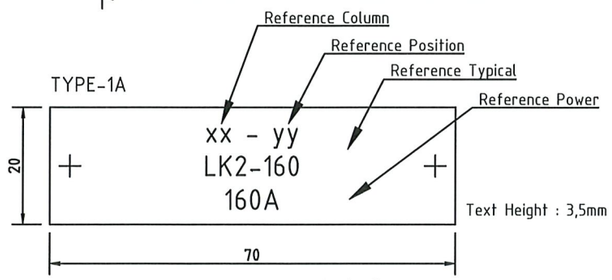
F.to UNI A3: 420mmx297mm

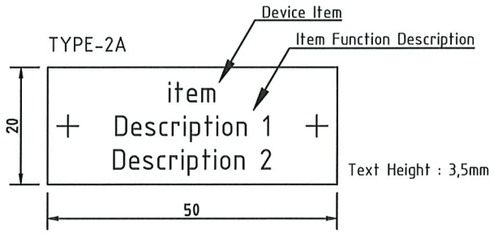
File Name : 1723002197-EL-DG-00031 Rev. 02

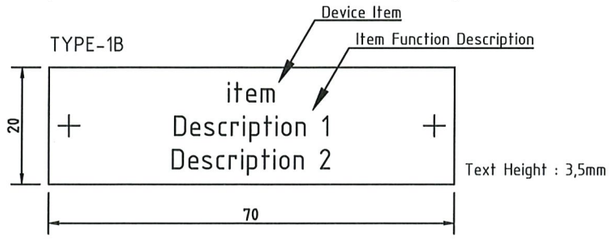
DOOR FRONT LAY-OUT

TYPICAL : LINE FEEDER "LK2-n"









NOTE :

A) IDENTIFICATION name plate (type-1A) , with :
- Drawer position [Column / Position inside SWB]
- Typical name [reference applicability typical used]
- Power [reference applicability typical used]

B) USER name plate (type-1B), with :
- Item User [to see SLD diagrams]
- User Description [to see SLD diagrams]

DEVICES name plate			
ITEM	DESCRIPTION 1	DESCRIPTION 2	NOTE
QF1	Circuit Breaker		NO plate
SA1	LOC-REM	SELECTOR	Type-2A
PA1	STOP	MOTOR	Type-2A
PM1	RUN	MOTOR	Type-2A
HL1	Multiled	Signalling	NO plate

AS COMMISSIONED: MARCIA GIROTTI
24/3/25
NO MARK UP

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LK-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Door Front Lay-Out - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 035 | REV. 02

File Name : 1723002197-EL-DG-00031 Rev. 02

F.to UNI A3: 420mmx297mm

USERS LEGEND

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

TYPICAL APPLICABILITY					
ITEM	ITEM TAG	DESCRIPTION TAG	REFERENCE POSITION (written on name name plate "type-1A)	REFERENCE NOMINAL CURRENT C.B. TRIP UNIT (written on name name plate "type-1A)	REFERENCE TYPICAL (written on name name plate "type-1A)
1	SPARE	SPARE	A2 / +05	40A	LK1-40
2	SPARE	SPARE	A3 / +02	40A	LK1-40
3	DP-200N1	DB-LIGHTING & SMALL POWER BoP	A3 / +03	100A	LK1-100
4	JB-200E3	CRANE	A3 / +04	63A	LK1-63
5	SPARE	SPARE	A3 / +05	40A	LK1-40
6	JB-500E8	WATER PACKAGE	A3 / +08	160A	LK2-160
7	B100-HSB-001	HVAC PANELS HV ROOM	A4 / +02	40A	LK1-40
8	A-80000	FUELL CELL AUXIALIRY LOAD	A4 / +03	63A	LK1-63
9	CP-850F03	BESS PCS CABINET	A4 / +04	40A	LK1-40
10	SPARE	SPARE	A4 / +05	40A	LK1-40
11	SPARE	SPARE	A4 / +06	40A	LK1-40
12	K-63001-A	INSTRUMENTS AIR PACKAGE 01A	A4 / +08	160A	LK2-160
13	SPARE	SPARE	A5 / +01	40A	LK1-40
14	B200-HSB-001	HVAC PANELS - LV ROOM	A5 / +02	40A	LK1-40
15	B300-HSB-001	HVAC PANELS - UPS ROOM	A5 / +03	63A	LK1-63
16	B400-HSB-001	HVAC PANELS - ITER	A5 / +04	63A	LK1-63
17	CN-200N1	IMPRESSED CURR. CATHODIC PROTECTION (ICCP) SYSTEM	A5 / +05	40A	LK1-40
18	SPARE	SPARE	A5 / +06	40A	LK1-40
19	K-63001-B	INSTRUMENTS AIR PACKAGE 01B	A5 / +08	160A	LK2-160
20	CP-850E1	BESS LV1 CABINAT (+DISTR 1)	A6 / +02	40A	LK1-40
21	CP-850E2	BESS LV2 CABINAT (+DISTR 2)	A6 / +03	40A	LK1-40
22	SPARE	SPARE	A6 / +04	40A	LK1-40

AS COMMISSIONED: NATALIA GINOLI
24/3/25
NO MARK UP

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LK-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Users Legend - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 036 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

ITEMS ACRONYM

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

Composition of Typical :

LK-x = Common Parts
LK1-"nn" or LK2-"nn"= Specific Parts

Example for Composition of LK1-63:
- to take "LK-x" plus "LK1-63"

Example for Composition of LK2-160:
- to take "LK-x" plus "LK2-160"

	ACRONYM ITEMS (Comun parts)	ACRONYM ITEMS (Specific parts)					
	LK-x	LK1-40 (In=40A) (Current Trip Unit)	LK1-63 (In=63A) (Current Trip Unit)	LK1-100 (In=100A) (Current Trip Unit)	LK2-160 (In=160A) (Current Trip Unit)		
ASSOCIATED TYPICAL	This Item include all devices that are comun for both "Specific Parts" Items	This Items include only devices that are detail for "Specific Parts" Items					
LK1-40	X	X					
LK1-63	X		X				
LK1-100	X			X			
LK2-160	X				X		
-							

AS COMMISSIONED: NATWA GIRGIN
24/3/25
NO MARK UP

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LK-x

DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

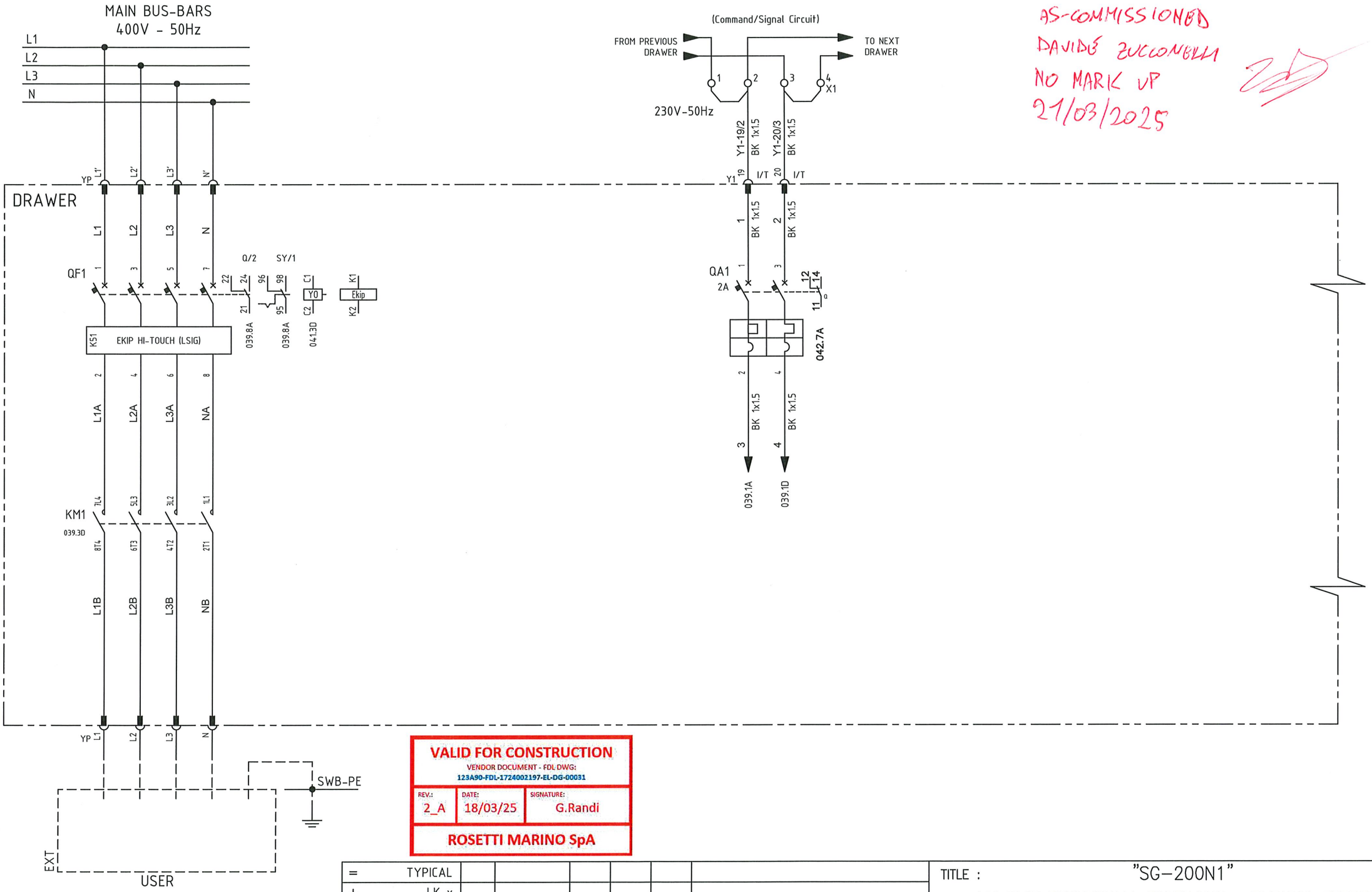
TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Items Acronym - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 037 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



AS-COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

=	TYPICAL
+	LK-x

DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

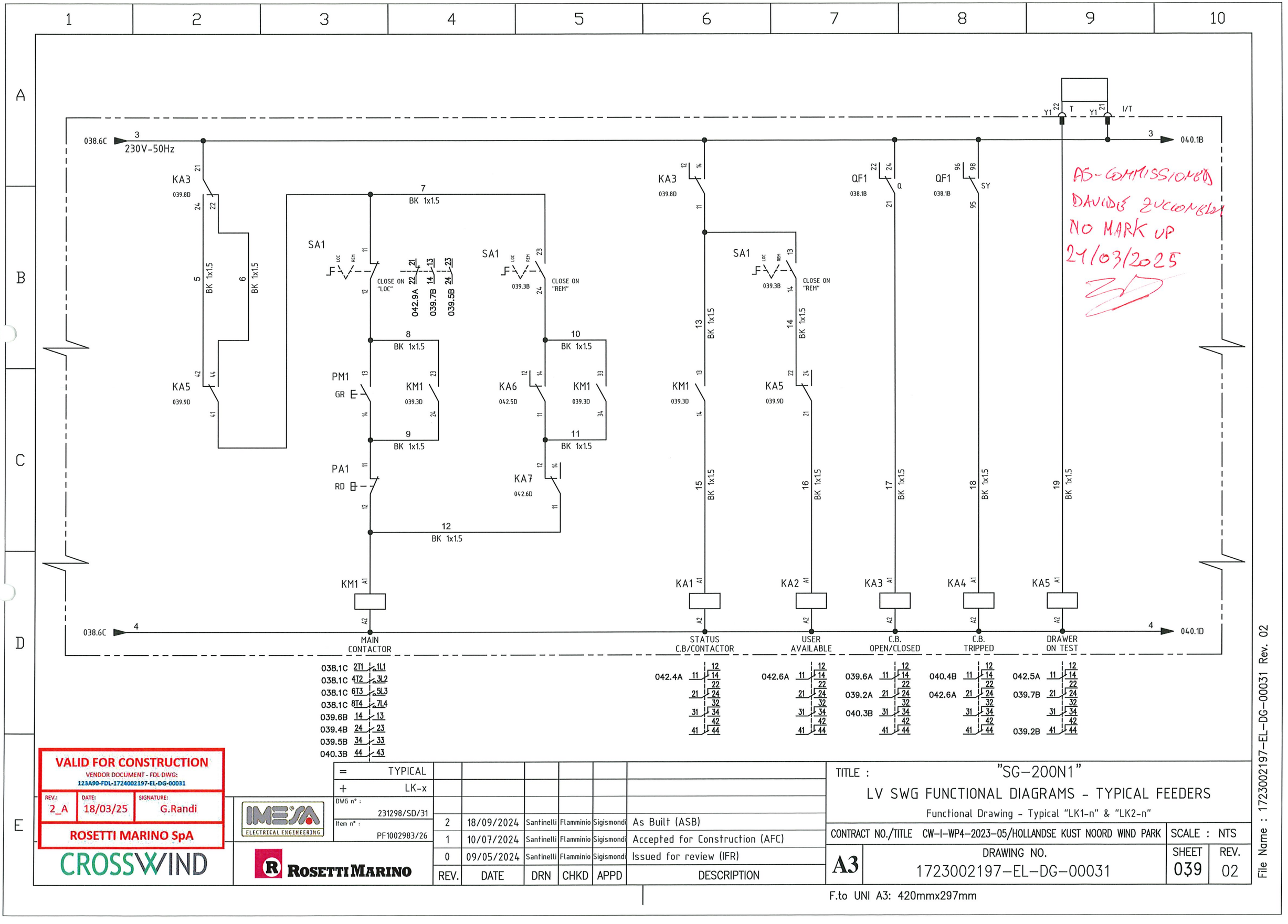
DRAWING NO. 1723002197-EL-DG-00031

SHEET 038

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LK-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

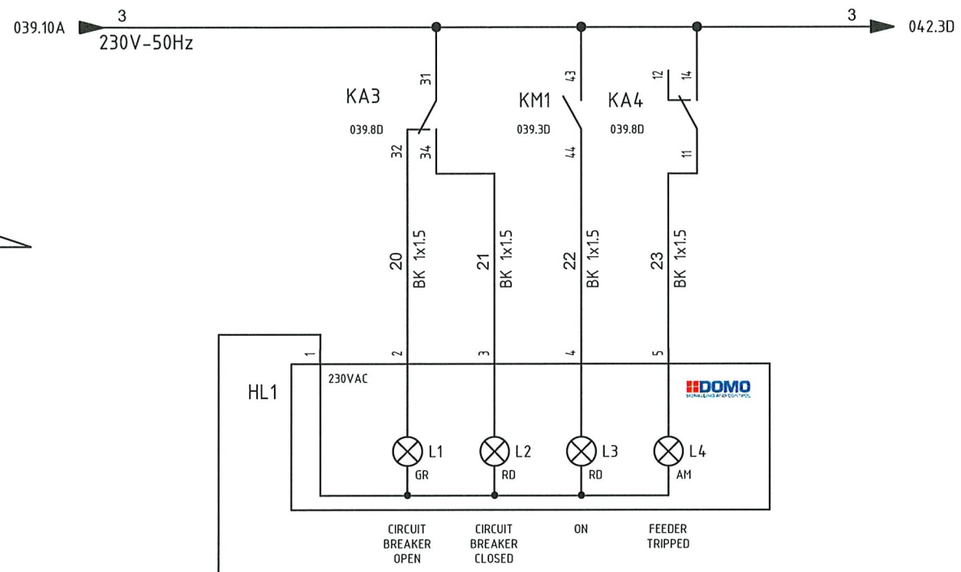
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 039 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

AS-COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
27/03/2025



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	TYPICAL
+	LK-x
DWG n° :	231298/SD/31
Item n° :	PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

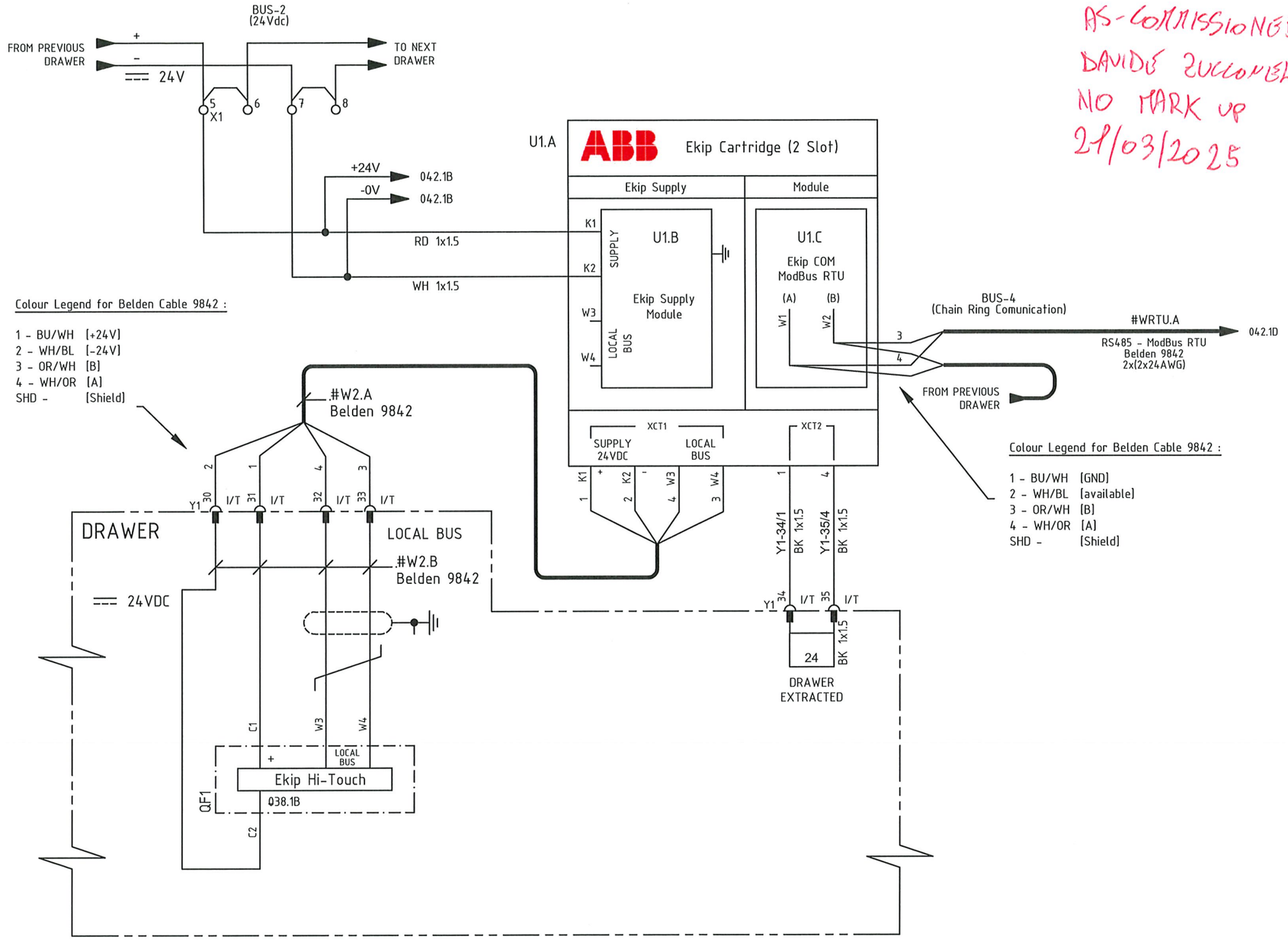
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 040 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

AS-COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	TYPICAL						
+	LK-x						
DWG n° :	231298/SD/31						
Item n° :	PF1002983/26						
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)		
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)		
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)		
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION		

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 041 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

AS-COMMISSIONED
DAVIDE ZUCCOMELLI
NO MARK UP
21/03/2025

DRAWER

C.B. - CONTACTOR CLOSED & INSERTED
C.B. - CONTACTOR OPEN OR DISCONNECTED
CIRCUIT BREAKER TRIPPED
FEEDER AVAILABLE
INTERNAL FAULT
USER ON LOCAL

KA1 039.6D
KA5 039.9D
KA4 039.8D
KA2 039.7D
QA1 038.6B
SA1 039.3B
CLOSE ON "LOC"

+25 RD 1x1.5 · +26 RD 1x1.5 · +27 RD 1x1.5 · +28 RD 1x1.5 · +29 RD 1x1.5 · +30 RD 1x1.5 · +31 RD 1x1.5 · +32 RD 1x1.5

Y1 14 I/T · 5 I · 15 I/T · 3 E · 4 E · 16 I/T · 10 I/T · 8 I/T · 9 I/T · 36 I/T · 37 I/T

Y1-14/9 BK 1x1.5 · Y1-5/10 BK 1x1.5 · Y1-15/11 BK 1x1.5 · Y1-16/12 BK 1x1.5 · Y1-10/13 BK 1x1.5 · Y1-9/14 BK 1x1.5 · Y1-36/15 BK 1x1.5 · Y1-37/19 BK 1x1.5

AVAILABLE

+103 RD 1x1.5 · +104 RD 1x1.5 · +105 RD 1x1.5 · +106 RD 1x1.5 · +107 RD 1x1.5 · +108 RD 1x1.5 · +115 RD 1x1.5 · +116 RD 1x1.5 · +117 RD 1x1.5 · +118 RD 1x1.5

041.4A +24V
041.4A -0V
=== 24V

U2.A
AC+ AC- PE
+/L -/N PE
10÷40Vdc - 19÷29Vac SUPPLY
Z-PC-DINAL2-17.5
Modbus RTU RS485
B(-) A(+) GND SHD
B/L A/H GND SHD
3 4 1 SHD
041.9B
TO NEXT DRAWER
BUS-4 (Chain Ring Comunication)

U2.B
+16V 0V IN-1 IN-2 IN-3 IN-4 IN-5
INPUT
SENECA AUTOMATION INTERFACES
MODULE I/O
Z-5DI-2DO
ID = 01
OUTPUT
DO-1 DO-2

U2.C
+16V 0V IN-1 IN-2 IN-3 IN-4 IN-5
INPUT
SENECA AUTOMATION INTERFACES
MODULE I/O
Z-5DI-2DO
ID = 02
OUTPUT
DO-1 DO-2

Colour Legend for Belden Cable 9842 :

1 - BU/WH [GND]
2 - WH/BL [available]
3 - OR/WH [B]
4 - WH/OR [A]
SHD - [Shield]

109 BK 1x1.5 · 110 BK 1x1.5 · 111 BK 1x1.5 · 112 BK 1x1.5 · 113 BK 1x1.5 · 114 BK 1x1.5

Y1-11/20 BK 1x1.5 · Y1-12/21 BK 1x1.5 · Y1-13/22 BK 1x1.5

Y1 11 I/T · 12 I/T · 13 I/T

DRAWER

040.5B 3 230V-50Hz

KA6 A1 33 · KA7 A1 34

040.5D 4

KA6 A2 CONTACTOR CLOSE COMMAND
KA7 A2 CONTACTOR OPEN COMMAND

KA6 039.5B · KA7 039.5C

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LK-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK
SCALE : NTS
A3
DRAWING NO. 1723002197-EL-DG-00031
SHEET 042
REV. 02

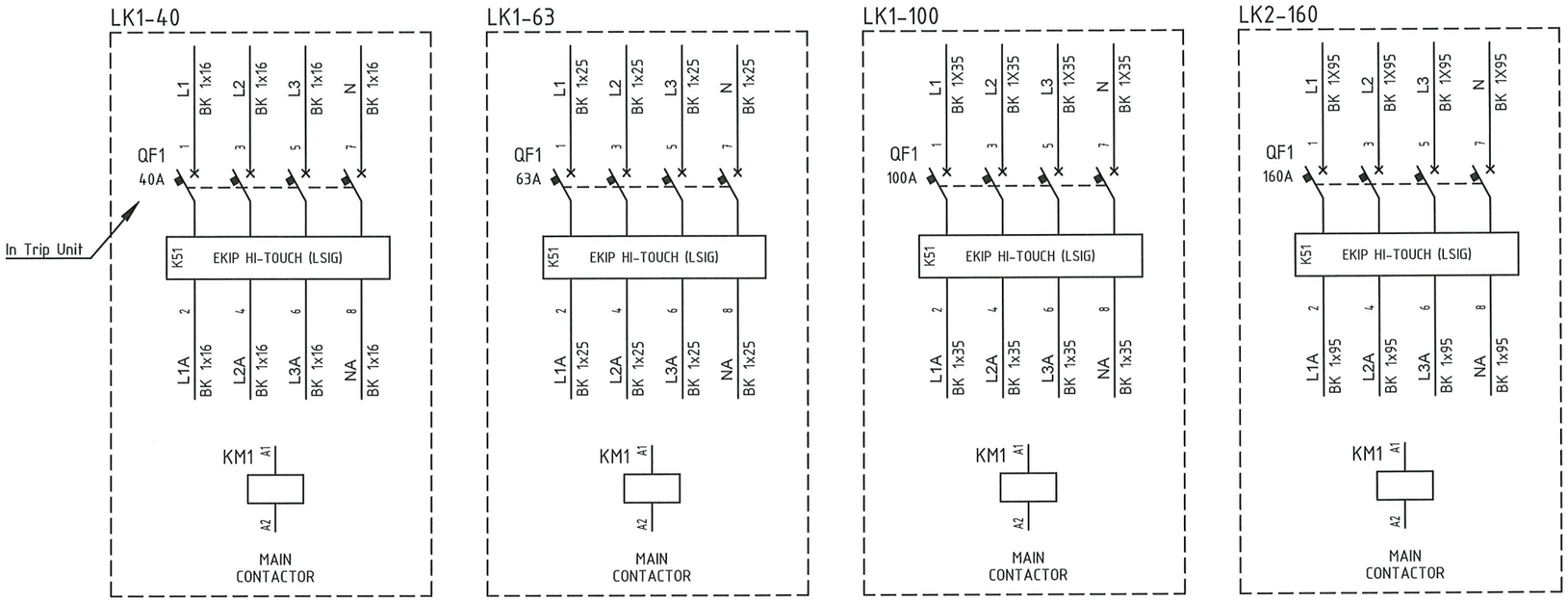
F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

SPECIFIC PARTS

TYPICAL : LINE FEEDER "LK1-n" "LK2-n"

AS-COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025



VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LK-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 043 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

TYPICAL - LK-x - Y1

AUXILIARY SOCKET
136450/001 (PF – 2 pcs) + 136458/004 (PM – 2 pcs)

N° PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
JUMP			●	●				●	●																																			
RACKED-OUT			✕	✕				✕	✕																																			
TEST								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RACKED-IN					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PIN USED			042.5B	042.5B	042.4B			042.6B	042.7B	042.6B	042.5D	042.5D	042.6D	042.3B	042.4B	042.6B			038.6A	038.6A	039.9A	039.9A								041.3C	041.3C	041.4C	041.4C	041.6C	041.7C	042.7B	042.9B							

← FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-OUT POSITION
← FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN TEST POSITION
← FIELD WHIT "X" - CONTACT CLOSE WHEN DRAWER IS IN RACKED-IN POSITION

← CROS-REFERENCE USED PIN

AS COMMISSIONED
DAVIDE ZUCCONELLI
NO MARK UP
21/03/2025

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LK-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 044 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

TYPICAL - LK-x X1					
NumM	Fg.	Sez.	Tipo	Descrizione	Costruttore
			BT003	BT/3 End bracket	Cabur
1	038.5A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
2	038.6A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
3	038.6A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
4	038.6A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
5	041.3A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
6	041.3A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
7	041.4A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
8	041.4A	2.5	HD100GR_	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD101GR	HMD/PT/GR End section - Grey	Cabur
9	042.3B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
10	042.4B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
11	042.4B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
12	042.5B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
13	042.6B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
14	042.7B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
15	042.7B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
16	042.7B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
17	042.8B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
18	042.8B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
19	042.9B	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
20	042.5C	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
21	042.5C	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
22	042.6C	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
23	042.9C	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
24	042.9C	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
25	042.10C	2.5	HD400GR_	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur
			HD201GR	HMD.1/PT/GR End section - Grey	Cabur
			BT003	BT/3 End bracket	Cabur

AS-COMMISSIONED
DAVIDE ZUCCHINELLI
NO MARK UP
21/03/2025

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LK-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 045 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
HL1	040	ML22/484L230STLTTR	1	MULTILED 48x48 - 4 LED - Vaux=230Vac/dc + LAMP TEST + TROP	DOMO	TYPICAL LK-x
KA1	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA2	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA3	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA4	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA5	039	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA6	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
KA7	042	ER 592 6	1	CR-M230AC4L SUPPLY 230VAC 4C/O 250V/6A LED	ABB	TYPICAL LK-x
		ER 609 8	1	CR-MH HOLDER FOR CR-M RELAY	ABB	TYPICAL LK-x
		ER 686 6	1	CR-M4SS SOCKET STANDARD X 2/4 C/O(CR-M)	ABB	TYPICAL LK-x
PA1	039	KW 075 2	1	MP1-10R PUSH BUTTON RED WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
PM1	039	KW 076 0	1	MP1-10G PUSH BUTTON GREEN WITH BLACK RING	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
QA1	038	S550239	1	S202M C 2 AUTOMATIC CIRCUIT BREAKER 10KA 2P	ABB	TYPICAL LK-x
		A563819	1	S2-CS/H6R AUXILIARY STATE CONTACT 1CO	ABB	TYPICAL LK-x
SA1	039	KW 329 3	1	M2SS2-10B HANDLE SELECTOR 2P 90° BLACK RING BLACK	ABB	TYPICAL LK-x
		EO 569 7	1	MCBH-00 FIXING SUPPORT 3 CONTACTS	ABB	TYPICAL LK-x
		EO 570 5	2	MCB-10 CONTACT NO FOR PUSHBUTTONS	ABB	TYPICAL LK-x
		EO 571 3	2	MCB-01 CONTACT NC FOR PUSHBUTTOM	ABB	TYPICAL LK-x
U1.2	041	1SDA074173R1	1	MODUL EKIP SUPPLY 24÷48VDC	ABB	TYPICAL LK-x
U1.3	041	1SDA105166R1	1	Module Ekip Com Modbus RS485 Tmax XT	ABB	TYPICAL LK-x
U1.A	041	1SDA105203R1	1	EKIP CARTRIDGE 2SLOT FOR XT2-XT4-XT5	ABB	TYPICAL LK-x
U2.A	042	Z-PC-DINAL2-17.5	1	DIN RAIL 2SLOT WITH HEAD FOR "Z-5DI-2DO"	SENECA	TYPICAL LK-x
U2.B	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
U2.C	042	Z-5DI-2DO	1	I/O MODUL 5DI+2DO modbus RS485 Vaux=10÷40Vdc 19÷28Vac	SENECA	TYPICAL LK-x
X1		HD100GR_	8	HMD.2/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		HD400GR_	17	HMD.2N/GR Two-level feed-through Terminal Block - Grey (2.5 mmq) - Spring type	Cabur	TYPICAL LK-x
		BT003	2	BT/3 End bracket	Cabur	TYPICAL LK-x
		HD101GR	1	HMD/PT/GR End section - Grey	Cabur	TYPICAL LK-x

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031
REV.: 2_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

= TYPICAL
+ LK-x
DWG n° : 231298/SD/31
Item n° : PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"
LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS
Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 046 | REV. 02

File Name : 1723002197-EL-DG-00031 Rev. 02

AS-COMMISSIONED DAVIDE ZUCCONELLI NO MARK UP 21/03/2025

Fito UNI A3: 420mmx297mm

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
X1		HD201GR	1	HMD.1/PT/GR End section - Grey	Cabur	TYPICAL LK-x

AS-COMMISSIONED
DAVIDE ZUCCOMELLI

NO MARK UP
21/03/2025

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF40400013	1	AF40-40-00-13 CONTACTOR 4P 40A 100-250VAC/DC	ABB	TYPICAL LK1-40
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-40
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-40
		1SDA100162R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=40A XT2 4p	ABB	TYPICAL LK1-40
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-40

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF52400013	1	AF52-30-00-13 CONTACTOR 4P 53A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-63
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-63
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-63
		1SDA100163R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=63A XT2 4p	ABB	TYPICAL LK1-63
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-63

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF80400013	1	AF80-30-00-13 CONTACTOR 4P 80A(AC3) 100-250VAC/DC	ABB	TYPICAL LK1-100
		CA440E	1	CA4-40E AUXILIARY FRONT CONTACT 4NO	ABB	TYPICAL LK1-100
QF1	043	1SDA068169R1	1	XT2S 160 BREAKING PART 4p F F	ABB	TYPICAL LK1-100
		1SDA100164R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=100A XT2 4p	ABB	TYPICAL LK1-100
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK1-100

Nome/Item	Fg/Sh	Tipo/Type	Q.ta/Q.ty	Descrizione/Description	Costruttore/Manufacturer	Quadro (descrizione)
KM1	043	AF190401113	1	AF190-40-11-13 CONT 4P 190A AC3 100-250VAC/DC	ABB	TYPICAL LK2-160
		CAL1911	1	CAL19-11 CONTATTO AUSILIARIO 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
		CAL1911B	2	CAL19-11B AUXILIARY CONTACT 1NA+1NC PER AF116÷AF370	ABB	TYPICAL LK2-160
QF1	043	1SDA068179R1	1	XT4S 250 BREAKING PART 4p F F	ABB	TYPICAL LK2-160
		1SDA100334R1	1	ELECTRONIC TRIP RELEASE Ekip Hi-Touch LSIG In=160A XT4 4p	ABB	TYPICAL LK2-160
		1SDA066431R1	1	AUX-C 1Q+1SY 250Vac/dc XT1..XT5 F/P	ABB	TYPICAL LK2-160

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00031

REV.:	DATE:	SIGNATURE:
2_A	18/03/25	G.Randi

ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

=	TYPICAL
+	LK-x
DWG n° :	231298/SD/31
Item n° :	PF1002983/26

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
2	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	10/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for Construction (AFC)
0	09/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "SG-200N1"

LV SWG FUNCTIONAL DIAGRAMS - TYPICAL FEEDERS

Functional Drawing - Typical "LK1-n" & "LK2-n"

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723002197-EL-DG-00031 | SHEET 047 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00031 Rev. 02

CAE EPLAN Electric P8

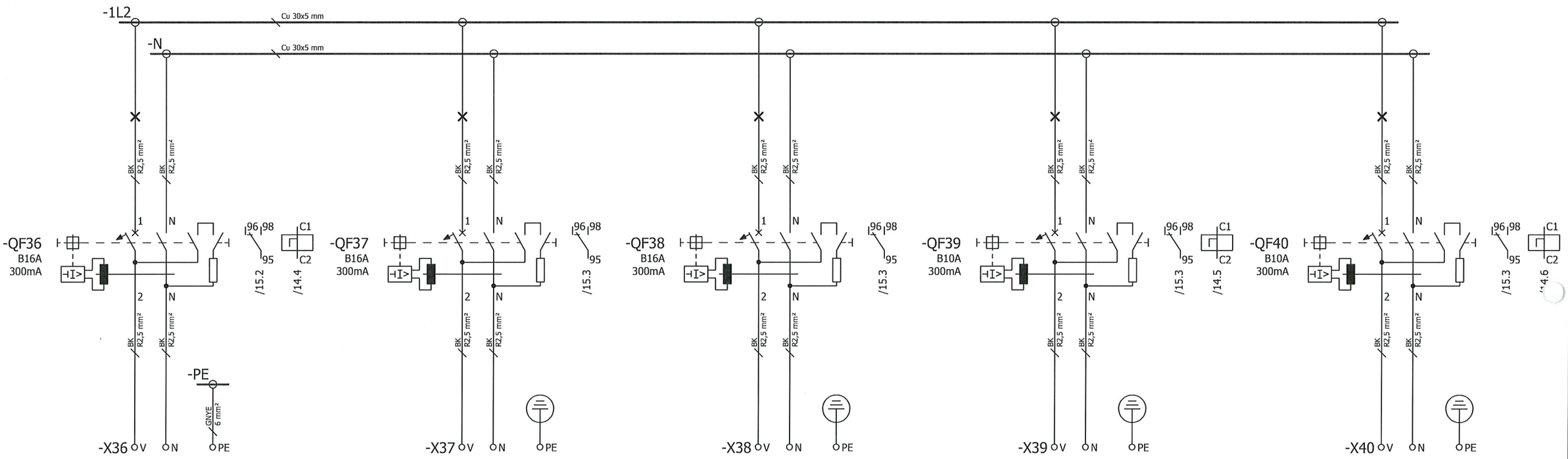
This document is property of AEG Power Solutions and must n.. e displayed or duplicated to any third party without the consent of the company

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724000372-EL-DG-00009

REV.:	DATE:	SIGNATURE:
3_A	15/11/24	G.Randi

ROSETTI MARINO SpA

NO MARK UP
AS COMMISSIONED: NATCIA GIROTI
24/3/25



Load
230V/N/PE~50Hz

JB-500-F8
UCP WATER PACKAGE
2KW

Load
230V/N/PE~50Hz

B400-SRV-001
SERVER CABINET ITER - LINE A

Load
230V/N/PE~50Hz

B400-SRV-001
SERVER CABINET ITER - LINE B

Load
230V/N/PE~50Hz

B100-HSB-001
UCP-HVAC HV ROOM
0.5KW

Load
230V/N/PE~50Hz

B200-HSB-001
UCP-HVAC LV ROOM
0.5KW

1000007888_010

				Date	23.05.2024
01	500000002053	13.08.2024	Beckschäfer	Editor	Beckschäfer
02	500000002089	27.08.2024	Beckschäfer	Checked	Ch.Peck
Stat	Alteration	Date	Name	Norm	

ROSETTI MARINO
Hollandse Kust Noord (HKN) wind farm

AEG POWER SOLUTIONS

Load
Bypass transformer cabinet
with manual bypass 40 kVA
Circuit diagram

1000007888.020
10009757

1000007888_010 en

=
+ MBC1
& EFS

A3

sheet 8
sheets 17

Section 8 LIST OF MODIFICATIONS

NOT APPLICABLE

Section 8.1 List of changes

NOT APPLICABLE

Section 9 SUPPORTING DOCUMENTS

NOT APPLICABLE