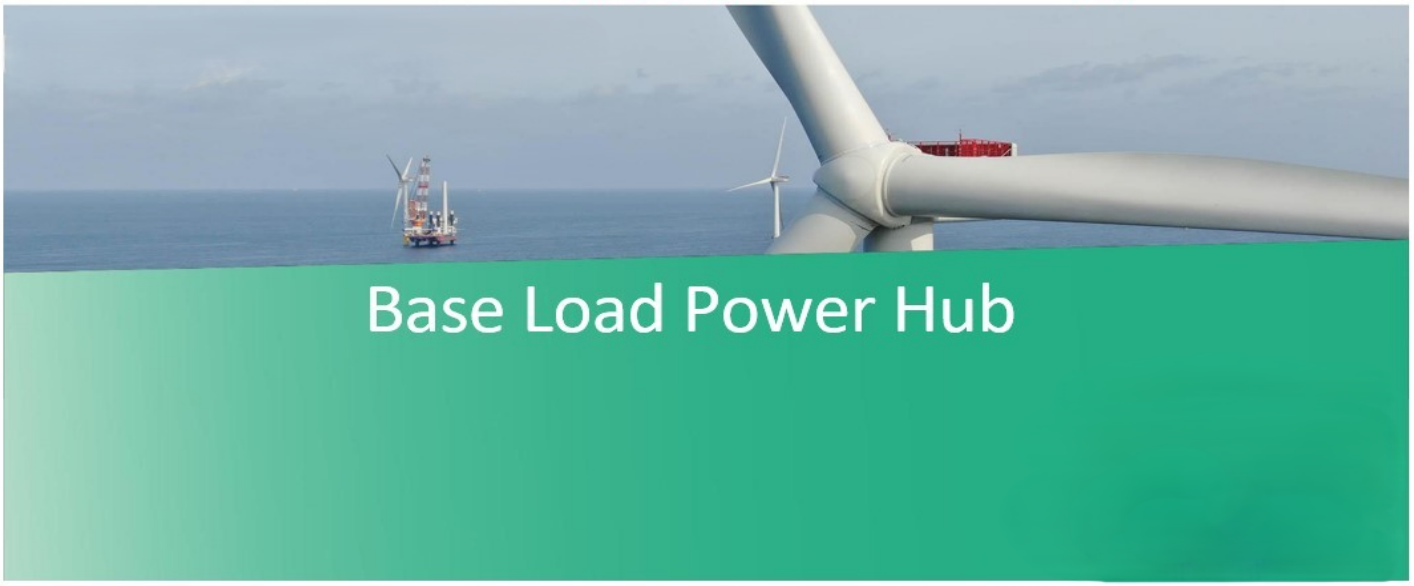
CROSSWIND

ROSETTI MARINO

PROVERLIS

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



COMMISSIONING DOSSIER (ONSHORE)

SYSTEM	70 Safety and Facility Systems
SUBSYSTEM	70-00 F&G Control System

CROSSWIND

123A90 - HOLLANDSE KUST NOORD WIND PARK
BLPH Project

COMMISSIONING DOSSIER INDEX

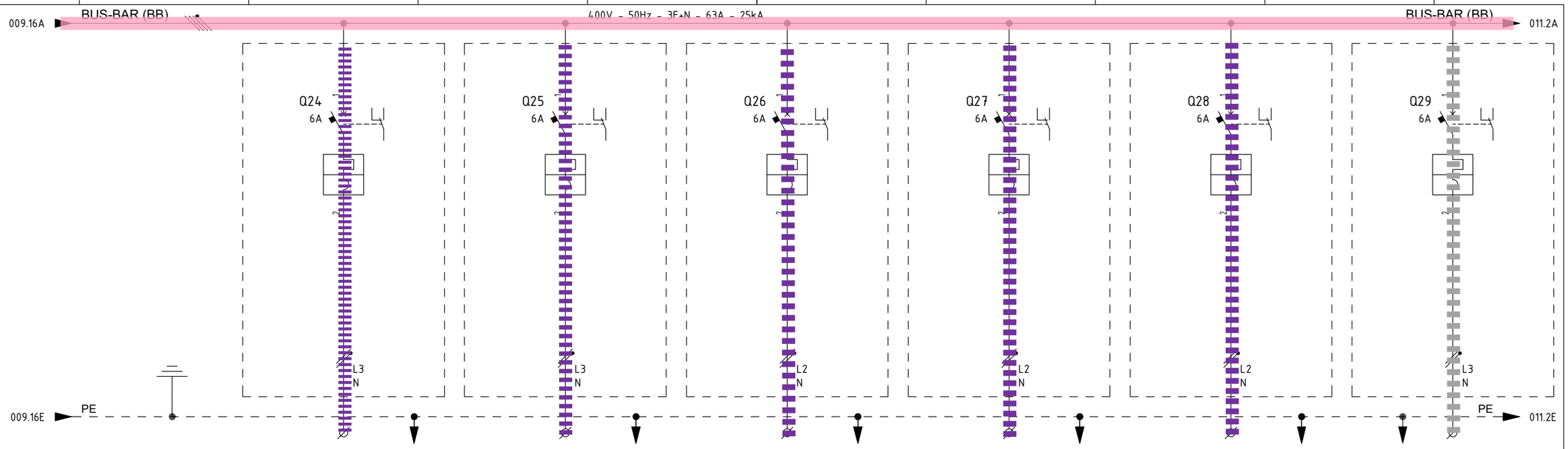
ROSETTI MARINO

Sub System N°:	70-00	**Tick as appropriate**	ONSHORE	OK
Description:	F&G Control System		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*	NA
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	2025-04-25	2025-04-25
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-25T12:16:34.444Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-25T13:14:13.506Z

Section 1 SUB-SYSTEM DEFINITION



ITEM			1	B400-PCS-001	B400-EMCS-001	B400-FGS-001	B400-NET-001	B400-SRV-001	CP-630E1
UTILITY			2	PCS-CONTROLLER AND I/O CABINET - AUXILIARY	EMCS-CONTROLLER AND I/O CABINET - AUXILIARY	FGS FIRE & GAS PANEL - AUXILIARY	SYSTEM SERVER / NETWORK CABINET - AUXILIARY	SERVER CABINET ITER - AUXILIARY	UCP - INSTRUMENT AIR PACKAGE -A-63000 - AUXILIARY
CUBICLE			3	+03	+03	+03	+03	+03	+03
RATED POWER | RATED CURRENT			4/5	0.5 KW | 2.72 A	0.5 KW | 2.72 A	0.8 KW | 4.35 A	0.5 KW | 2.72 A	0.5 KW | 2.72 A	0.5 KW | 2.72 A
TYPICAL FUNCTIONAL			6	-	-	-	-	-	-
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6	S302P-C6	S302P-C6	S302P-C6	S302P-C6	S302P-C6
	VERSION		8	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE
	TRIP UNITS		9	In=6A - Curve C	In=6A - Curve C	In=6A - Curve C	In=6A - Curve C	In=6A - Curve C	In=6A - Curve C
	Icu	KA	10	25kA	25kA	25kA	25kA	25kA	25kA
OVERLOAD	L	Range A	11	-	-	-	-	-	-
		Range t	12	-	-	-	-	-	-
SEL. SHORT-CIRCUIT	S	Range A	13	-	-	-	-	-	-
		Range t	14	-	-	-	-	-	-
INST. SHORT-CIRCUIT	I	Range A	15	-	-	-	-	-	-
		Range t	16	-	-	-	-	-	-
EARTH FAULT PROTECTION	G	Range A	17	-	-	-	-	-	-
		Range t	18	-	-	-	-	-	-
CONTACTOR (ABB)			19	-	-	-	-	-	-
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	-	-	-
SURGE ARRESTERS (DHENN)			21	-	-	-	-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-	-	-	-	-
FUSE HOLDER (ABB)			23	-	-	-	-	-	-
TWILIGHT SWITCH (ABB)			24	-	-	-	-	-	-
VOLTMETER (FRER)			25	-	-	-	-	-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	-	-	-	-	-
	PERFORMANCE/CLASS		27	-	-	-	-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-	-	-	-	-	-
	PERFORMANCE/CLASS		29	-	-	-	-	-	-
POWER TERM. BLOCK (CABUR)		Type/mm²	30	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4
POWER CONDUCTOR		mm²	31	3G2.5	3G2.5	3G2.5	3G2.5	3G2.5	3G2.5

SUBSYSTEM 87-10 | SUBSYSTEM 87-00 | SUBSYSTEM 70-00 | SUBSYSTEM 86-00 | SUBSYSTEM 86-00 | SUBSYSTEM 63-00

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DWG n° : 231298/SD/13
Item n° : PF1002888/101

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
2	24/04/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
1	15/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	08/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "DP-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-00013

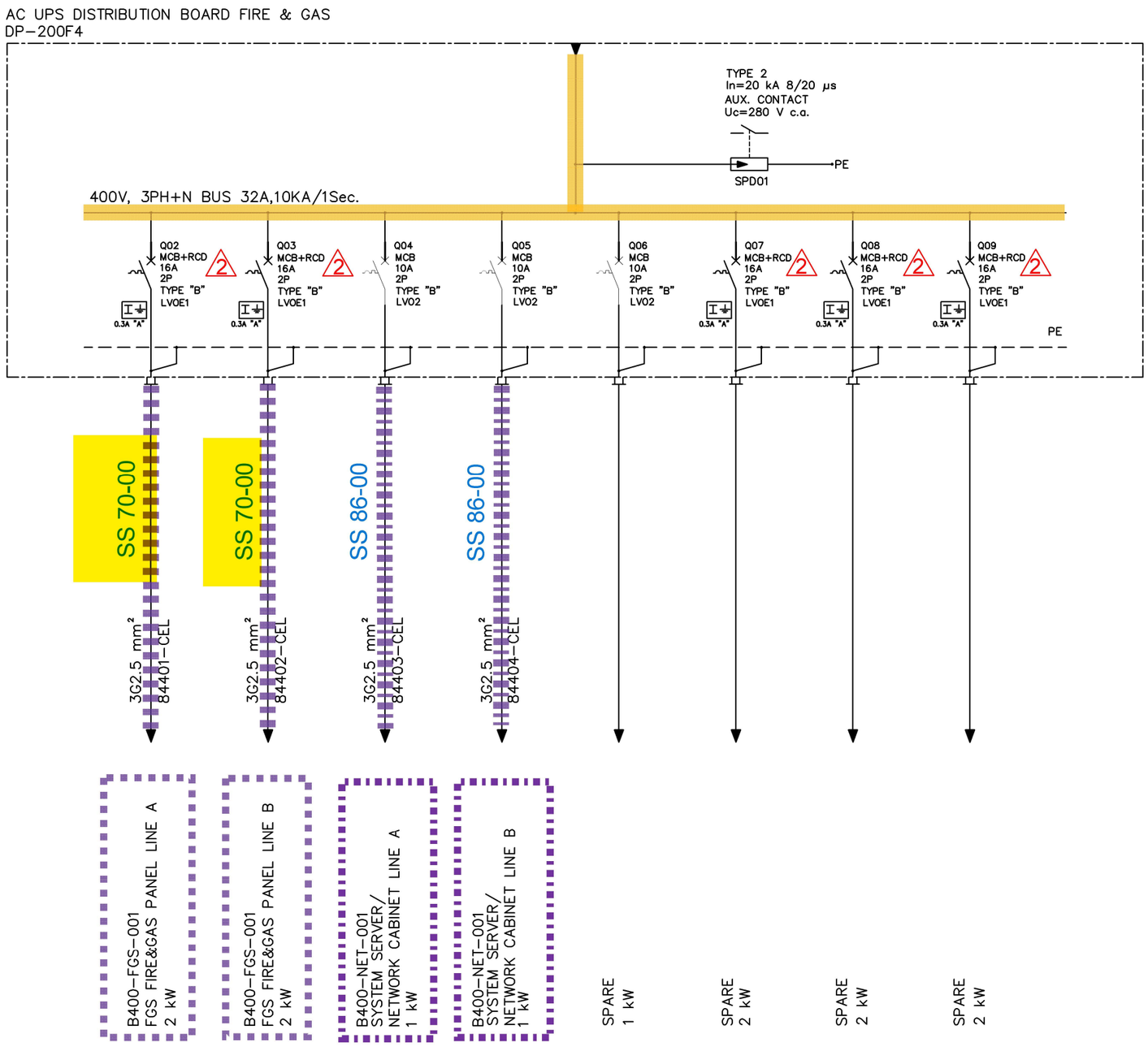
SHEET 010

REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00013 Rev. 03

AC UPS – FIRE & GAS SINGLE LINE DIAGRAM (UP–200F4) DISTRIBUTION BOARD DETAILS



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/09/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	12/04/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	14/02/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL SINGLE LINE DIAGRAMS AC UPS SYSTEMS
AC UPS DISTRIBUTION BOARD FIRE & GAS (UP–200F4)

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

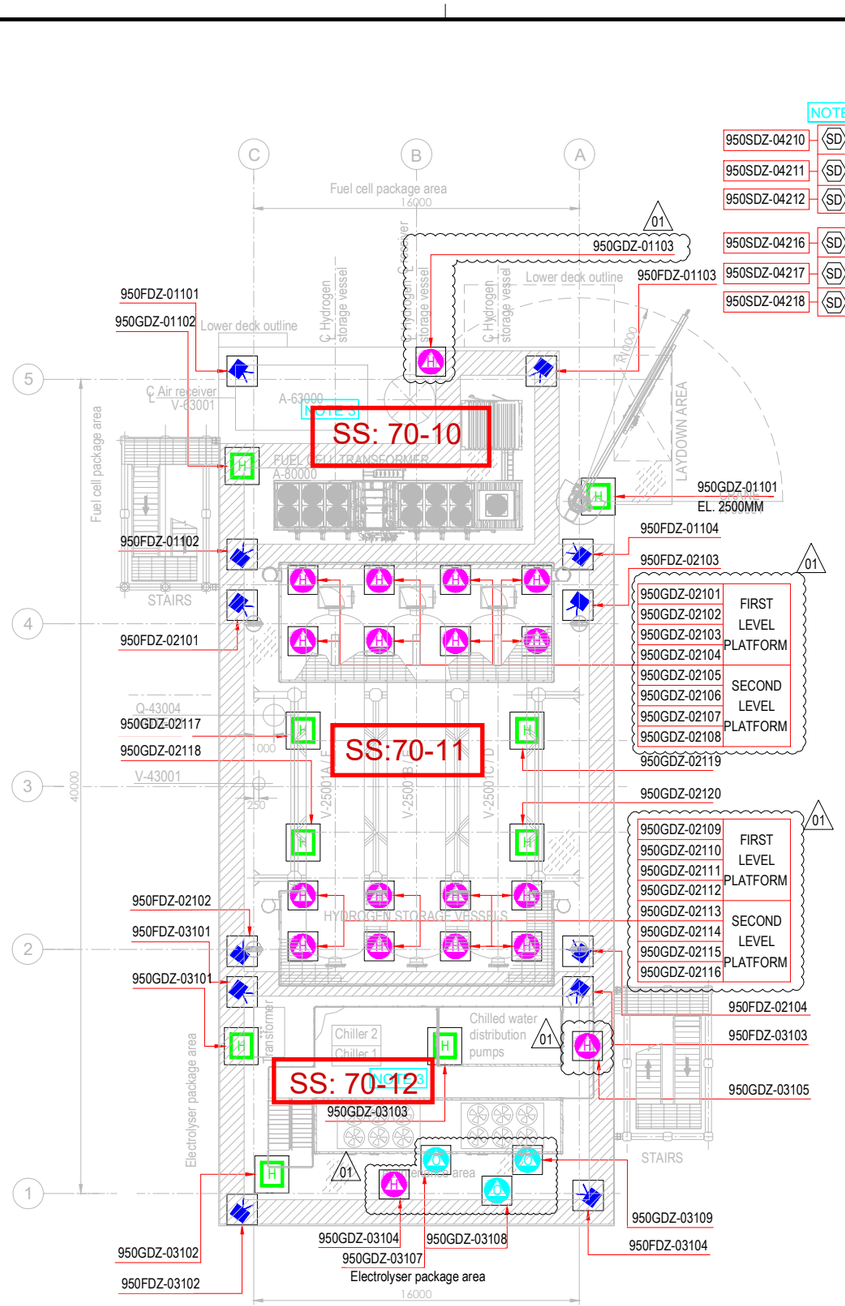
A3 | DRAWING NO. 123A90–DDL–EL–DG–20160 | SHEET 007 | REV. 02

File Name : 123A90–DDL–EL–DG–20160 Rev. 02

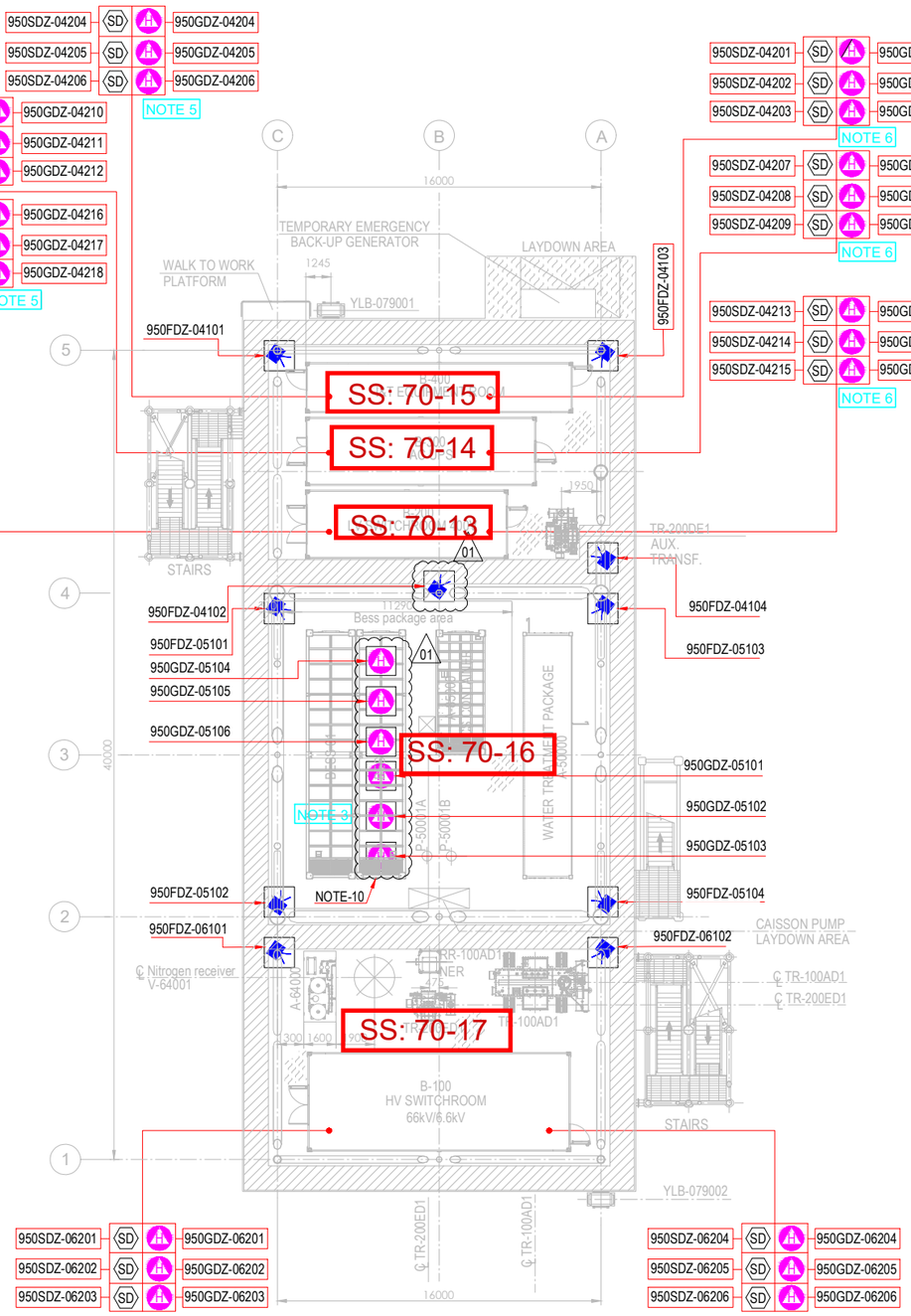
F.to UNI A3: 420mmx297mm

DRAWING NO. 123A90-DDL-PP-DL-30027

REV. 00



PLAN ON UPPER DECK
EL+30.310 T.O.S.

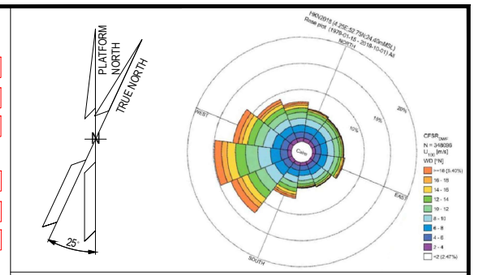


PLAN ON LOWER DECK
EL+23.310 T.O.S.

EQUIPMENT LIST

TAG NUMBER	DESCRIPTION	TAG NUMBER	DESCRIPTION
A-20000	ELECTROLYSER	TR-200DE1	TRANSFORMER AUX. 6.6kV/0.4kV
A-63000	INSTRUMENT AIR PACKAGE	TR-200ED1	SOLAR TRANSFORMER PV FARM EQUIPMENT
A-80000	FUEL CELL	RR-100AD1-NER	NEUTRAL EARTHING RESISTOR
A-85000	BESS	V-63001	AIR RECEIVER
A-50000	WATER TREATMENT PACKAGE	V-64001	NITROGEN RECEIVER
P-50001A/B	SEAWATER LIFT PUMPS	X-99001	CRANE
Q-43004	HYDROGEN VENT		
A-64000	NITROGEN SYSTEM		
V-25001A-F	HYDROGEN STORAGE VESSELS		
V-43001	HYDROGEN VENT KO DRUM		
YLB-079001/2	LIFE RAFTS		
B-100	HV/MV SWITCHROOM 66kV/6.6kV		
B-200	LV SWITCHROOM 400V		
B-300	AC UPS EQUIPMENT ROOM		
B-400	I&T EQUIPMENT ROOM		
TR-100AD1	TRANSFORMER MAIN 66kV/6.6kV		

SYMBOL	DESCRIPTION	QTY.
	UV-IR FLAME DETECTOR (FDZ)	22
	POINT SOURCE HYDROGEN DETECTOR (GDZ)	46
SD	SMOKE DETECTOR (SDZ)	24
	POINT SOURCE OXYGEN DETECTOR (GDZ)	3
H	ULTRA SONIC HYDROGEN DETECTOR (GDZ)	9



NOTES

1. ALL DIMENSIONS IN mm U.N.O
2. ALL ELEVATIONS IN METERS.
3. VENDOR TO DEFINE AND SUPPLY ALL FIRE & GAS DETECTORS TO BE USED IN FUEL CELL, ELECTROLYSER AND BESS. TO BE IN COMPLIANCE WITH PROJECT REQUIREMENTS. THESE WILL BE SHOWN IN THE NEXT REVISON OF THE DOCUMENT.
4. PERSONNEL EXPECTED TO USE HANDHELD HYDROGEN AND LOW OXYGEN DETECTORS WHEN WORKING IN CONFINED SPACES ENTRY.
5. F&G LAYOUTS FOR I&T EQUIPMENT ROOM, AC UPS, LV SWITCH ROOM AND HV/MV SWITCHROOM CONTAINERS LOCATED AT DOOR ENTRANCE OF EACH ROOM (2003) AND START ABANDON.
6. SMOKE DETECTORS (2003) AND POINT SOURCE HYDROGEN DETECTORS (2003) TO BE PROVIDED AROUND HVAC INLET AREAS AND UPON CONFIRMED DETECTION CLOSE DAMPERS TO ROOMS.
7. ULTRASONIC H2 DETECTORS TO BE LOCATED ON VALVE ACCESS PLATFORMS FOR H2 STORAGE VESSELS.
8. POINT SOURCE H2 DETECTORS TO BE LOCATED ON VALVE ACCESS PLATFORM FOR H2 STORAGE VESSELS.
9. EXACT LOCATION OF F&G DETECTORS AND DEVICES IS SHOWN IN THE 3D MODEL.
10. LOCATION OF THE 6 SENSOR (950GDZ-05101/102/103/104/105/106) AT CEALING ABOVE BESS ROOF, TO AVOID GAS ACCUMULATION AT POCKETS

ELEVATION

FDZ = 2.0m El.
GDZ = 2.5m El. INSIDE THE COTAINER
SDZ = 2.0m El.

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DS-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-PP-DS-70071	PLOT PLAN - BELOW LOWER DECK
123A90-DDL-SAF-RE-30020	FERA REPORT

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	10/07/24	MMA	CCA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	12/02/24	MMA	CCA	DLO	ISSUE FOR APPROVAL (IFA)

CROSSWIND

ROSETTI MARINO

TITLE :

F & G DETECTORS LAYOUT - LOWER & UPPER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE 1:150

DRAWN | CHECKED C. CARACCIOLO | APPROVED D. LO STERZO | DATE 10/07/24

A1 | DRAWING NO. 123A90-DDL-SAF-DL-30027 | SHEET 001 | REV. 01

File Name : 123A90-DDL-SAF-DL-30027 Rev.01

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:	1		Issued on:	2025-04-22	
System:	70	/	Safety and Facility Systems		
SubSystem:	70-00	/	F&G Control System		

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	2025-04-22	2025-04-25
Signature	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-22T16:14:04.165Z	PROVERLIS Digitaly signed by Martin Taylor 2025-04-25T10:24:44.271Z

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 70-00 & process: COMM

Electrical	70-00 F&G Control System						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
DP-200N1-Q26	BREAKER F&G AUX - DP-200N1-Q26	ONSHORE	C10002882	FTR-2	100	2024-10-29	RFO 1
UP-200F4-QF31	BREAKER F&G LINE A - UP-200F4-QF31	ONSHORE	C10002881	FTR-2	100	2024-11-14	RFO 1
UP-200F4-QF32	BREAKER F&G LINE B - UP-200F4-QF32	ONSHORE	C10002883	FTR-2	100	2024-11-14	RFO 1

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 70-00 & process: COMM

Miscellaneous	70-00 F&G Control System

ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03054	OTP - FandG and ESD CandE Logics	ONSHORE	C10004617	5300	100	2025-04-22	-
		OFFSHORE	C10004941	5300	0	-	-

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	70	Safety and Facility Systems
SUBSYSTEM	70-00	F&G Control System

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000415	A	83107-CEL C10000626	multiple earthing cables connected to one earthing connection. (See attached photo) .	.		Ecarotenuto 2024-11-09	2024-11-29	Ecarotenuto 2024-11-29	2024-11-29
C30000343	B	84401-CEL C10000594	Plastic cable ties used to fix the cable tag should be replaced on all external routing.	.		Gtangianu 2024-11-08	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000344	B	84401-CEL C10000594	Missing plastic cable tag inside the panel (UP-200F4)	.		Gtangianu 2024-11-08	2024-11-23	Lmussi 2024-11-23	2024-11-23
C30000345	B	84401-CEL C10000594	Identification tag wires are wrong.	.		Gtangianu 2024-11-08	2024-12-16	Gtangianu 2024-12-16	2024-12-16
C30000346	B	84401-CEL C10000594	Platic cable ties to be replaced on external routing.Cable needs to be fixed also on cable trays inside B-400.	.		Gtangianu 2024-11-08	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000347	B	84401-CEL C10000594	Missing ties to be fix wire grounding armour cable .	.		Gtangianu 2024-11-08	2025-02-21	JKrizanic 2025-02-21	2025-02-21
C30000348	B	84401-CEL C10000594	Identification number on terminal strip is missing [2]	.		Gtangianu 2024-11-08	2025-03-11	JKrizanic 2025-03-11	2025-03-11
C30000349	B	84402-CEL C10000595	Plastic cable ties used to fix the cable tag should be replaced on all external routing.	.		Gtangianu 2024-11-08	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000350	B	84402-CEL C10000595	Identification numbers on terminal strip are missing (PE)	.		Gtangianu 2024-11-08			

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems
SUBSYSTEM 70-00 F&G Control System

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000351	B	84402-CEL C10000595	Identification tag wires are wrong.	.		Gtangianu 2024-11-08	2024-12-16	Gtangianu 2024-12-16	2024-12-16
C30000410	B	83107-CEL C10000626	Plastic cable ties to be replaced on external routing	.		Ecarotenuto 2024-11-09	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000416	B	83107-CEL C10000626	Missing cable tags on routing, inside and outside the panels	.		Ecarotenuto 2024-11-09	2025-03-04	JKrizanic 2025-03-04	2025-03-04

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems
SUBSYSTEM 70-00 F&G Control System

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000772	A	B400-FGS-002 C10000839	TB-950-JE-04203 number 11, missing the screw inside the terminal strip.	.		Gtangianu 2024-11-22	2025-02-13	Ecarotenuto 2025-02-13	2025-02-13
C30000222	B	B400-FGS-001	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact		INSTALLED	SLinari 2024-10-14	SLinari 2024-12-10	SLinari 2024-12-10	2024-12-10
C30000223	B	B400-FGS-002	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact		SEE PL C30000222	SLinari 2024-10-14	SLinari 2024-12-10	SLinari 2024-12-10	2024-12-10
C30000224	B	B400-FGS-003	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact		SEE PL C30000222	SLinari 2024-10-14	SLinari 2024-12-10	SLinari 2024-12-10	2024-12-10
C30000225	B	B400-FGS-001	Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)		commissioning done	SLinari 2024-10-14	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30000226	B	B400-FGS-002	Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)		COMMISSIONING DONE	SLinari 2024-10-14	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30000227	B	B400-FGS-003	Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)		COMMISSIONING DONE	SLinari 2024-10-14	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30000375	B	B400-FGS-001	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000376	B	B400-FGS-002	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems
SUBSYSTEM 70-00 F&G Control System

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000377	B	B400-FGS-003	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000378	B	B400-FGS-001	Install and connect system cables (N. 20 type KS1-07/HF, N. 24 AKB331-M010/HF)			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000379	B	B400-FGS-002	Install and connect system cables (N. 20 type KS1-07/HF, N. 24 AKB331-M010/HF)			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000380	B	B400-FGS-003	Install and connect system cables (N. 20 type KS1-07/HF, N. 24 AKB331-M010/HF)			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000384	B	B400-FGS-001	Modify wiring to implement electrical isolation of limit switches of F&G dampers.		Done	SLinari 2024-10-14	Vendor 2025-03-07	SLinari 2025-03-07	2025-03-07
C30000385	B	B400-FGS-002	Modify wiring to implement electrical isolation of limit switches of F&G dampers.		Done	SLinari 2024-10-14	Vendor 2025-03-07	SLinari 2025-03-07	2025-03-07
C30000386	B	B400-FGS-003	Modify wiring to implement electrical isolation of limit switches of F&G dampers.		Done	SLinari 2024-10-14	Vendor 2025-03-07	SLinari 2025-03-07	2025-03-07
C30000663	B	B400-FGS-001 C10000873	The GA (1724000594-IN-DG-00010) does not match the installed.	.		Gtangianu 2024-11-20	2025-02-28	Ecarotenuto 2025-02-28	2025-02-28
C30000666	B	B400-FGS-001 C10000873	All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW	.		Gtangianu 2024-11-20			

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-00 F&G Control System

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000667	B	B400-FGS-001 C10000873	The front doors need to be installed.	.		Gtangianu 2024-11-20	2024-12-23	Ecarotenuto 2024-12-23	2024-12-23
C30000668	B	B400-FGS-001 C10000873	base plate will be installed after commissioning	.		Gtangianu 2024-11-20	2025-04-11	Gtangianu 2025-04-11	2025-04-11
C30000769	B	B400-FGS-002 C10000839	All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW	.		Gtangianu 2024-11-22			
C30000770	B	B400-FGS-002 C10000839	The front doors need to be installed.	.		Gtangianu 2024-11-22	2024-12-27	Ecarotenuto 2024-12-27	2024-12-27
C30000771	B	B400-FGS-002 C10000839	Internal base plate will be installed after commissioning.	.		Gtangianu 2024-11-22	2025-04-11	Gtangianu 2025-04-11	2025-04-11
C30001041	B	B400-FGS-003 C10000874	All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW	.		Gtangianu 2024-11-29			
C30001043	B	B400-FGS-003 C10000874	Earthing Internal base plate will be installed after commissioning.	.		Gtangianu 2024-11-29	2025-04-11	Gtangianu 2025-04-11	2025-04-11
C30001045	B	B400-FGS-003 C10000874	All cables need to be better dressed inside internal cable tray.	.		Gtangianu 2024-11-29	2025-02-26	Gtangianu 2025-02-26	2025-02-26

Section 2.2 Exception Punch Lists (per discipline)

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

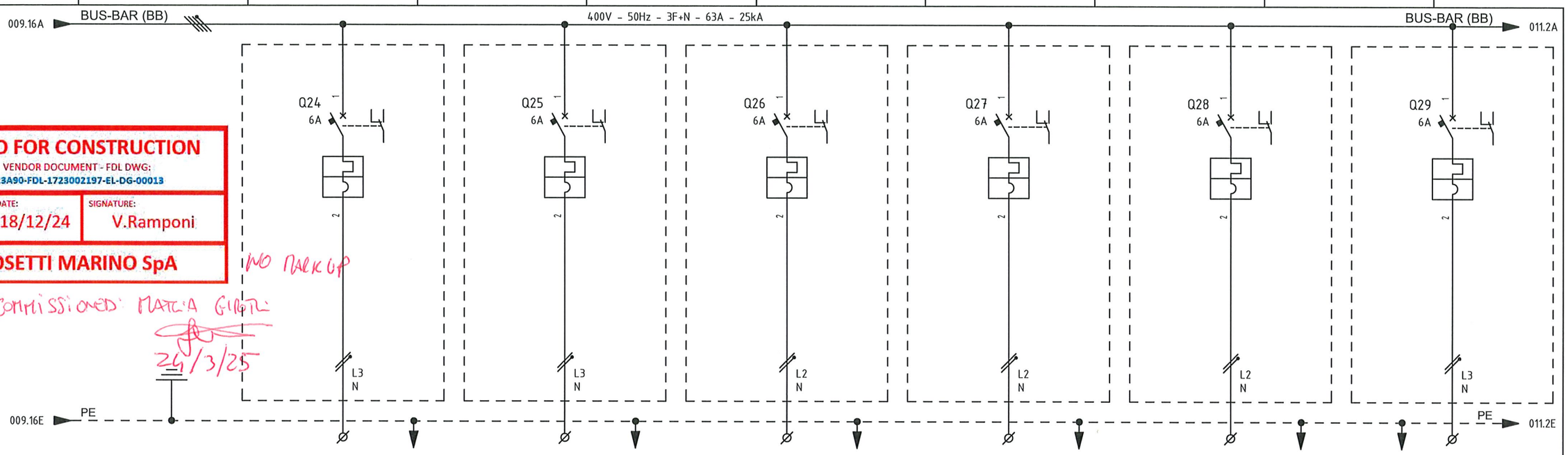
PUNCH LIST REPORT

SYSTEM	70	Safety and Facility Systems
SUBSYSTEM	70-00	F&G Control System

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000666	B	B400-FGS-001 C10000873	All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW	.		Gtangianu 2024-11-20			
C30000769	B	B400-FGS-002 C10000839	All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW	.		Gtangianu 2024-11-22			
C30001041	B	B400-FGS-003 C10000874	All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW	.		Gtangianu 2024-11-29			

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



VALID FOR CONSTRUCTION

VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1723002197-EL-DG-00013

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

ROSETTI MARINO SpA

NO MARK UP

AS COMMISSIONED: MARCIA GIUSTI 26/3/25

ITEM			1	B400-PCS-001		B400-EMCS-001		B400-FGS-001		B400-NET-001		B400-SRV-001		CP-630E1	
UTILITY			2	PCS-CONTROLLER AND I/O CABINET - AUXILIARY		EMCS-CONTROLLER AND I/O CABINET - AUXILIARY		FGS FIRE & GAS PANEL - AUXILIARY		SYSTEM SERVER / NETWORK CABINET - AUXILIARY		SERVER CABINET ITER - AUXILIARY		UCP - INSTRUMENT AIR PACKAGE -A-63000 - AUXILIARY	
CUBICLE			3	+03		+03		+03		+03		+03		+03	
RATED POWER	RATED CURRENT		4/5	0.5 KW	2.72 A	0.5 KW	2.72 A	0.8 KW	4.35 A	0.5 KW	2.72 A	0.5 KW	2.72 A	0.5 KW	2.72 A
TYPICAL FUNCTIONAL			6	-		-		-		-		-		-	
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6		S302P-C6		S302P-C6		S302P-C6		S302P-C6		S302P-C6	
	VERSION		8	2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE		2P / MINIATURE	
	TRIP UNITS		9	In=6A - Curve C		In=6A - Curve C		In=6A - Curve C		In=6A - Curve C		In=6A - Curve C		In=6A - Curve C	
	Icu	KA	10	25kA		25kA		25kA		25kA		25kA		25kA	
OVERLOAD	L	Range A	11	-		-		-		-		-		-	
		Range t	12	-		-		-		-		-		-	
SEL. SHORT-CIRCUIT	S	Range A	13	-		-		-		-		-		-	
		Range t	14	-		-		-		-		-		-	
INST. SHORT-CIRCUIT	I	Range A	15	-		-		-		-		-		-	
		Range t	16	-		-		-		-		-		-	
EARTH FAULT PROTECTION	G	Range A	17	-		-		-		-		-		-	
		Range t	18	-		-		-		-		-		-	
CONTACTOR (ABB)			19	-		-		-		-		-		-	
THERMAL OVERLOAD RELAY (ABB)			20	-		-		-		-		-		-	
SURGE ARRESTERS (DHENN)			21	-		-		-		-		-		-	
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-		-		-		-		-		-	
FUSE HOLDER (ABB)			23	-		-		-		-		-		-	
TWILIGHT SWITCH (ABB)			24	-		-		-		-		-		-	
VOLTMETER (FRER)			25	-		-		-		-		-		-	
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-		-		-		-		-		-	
	PERFORMANCE/CLASS		27	-		-		-		-		-		-	
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-		-		-		-		-		-	
	PERFORMANCE/CLASS		29	-		-		-		-		-		-	
POWER TERM. BLOCK (CABUR)		Type/mm²	30	SCREW / 4		SCREW / 4		SCREW / 4		SCREW / 4		SCREW / 4		SCREW / 4	
POWER CONDUCTOR		mm²	31	3G2.5		3G2.5		3G2.5		3G2.5		3G2.5		3G2.5	

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

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DWG n° : 231298/SD/13

Item n° : PF1002888/101

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
4	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
3	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
2	24/04/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
1	15/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	08/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "DP-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-00013

SHEET 010

REV. 04

File Name : 1723002197-EL-DG-00013 Rev. 04

F.to UNI A3: 420mmx297mm

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CAE EPLAN Electric P8

AUXILIARY
From Lighting & Small Power DB BDP DP-200N1 (Cubicle 03-Q42)
100-240V/N/PE~50/60Hz

LINE A
From LV Switchgear SG-200N1 (Cubicle A5/05)
Mains
400V;3/PE~50Hz

From LV Switchgear SG-200N1 (Cubicle A2/04)
Bypass mains
400V;3/PE~50Hz

LINE B
From LV Switchgear SG-200N1 (Cubicle A5/06)
Mains
400V;3/PE~50Hz

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

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 : MATRIA GIROTTI
26/3/25

*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.

Section 3 CONSOLIDATED PUNCH LISTS

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	70	Safety and Facility Systems
SUBSYSTEM	70-00	F&G Control System

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000415	A	83107-CEL C10000626	multiple earthing cables connected to one earthing connection. (See attached photo) .	.		Ecarotenuto 2024-11-09	2024-11-29	Ecarotenuto 2024-11-29	2024-11-29
C30000343	B	84401-CEL C10000594	Plastic cable ties used to fix the cable tag should be replaced on all external routing.	.		Gtangianu 2024-11-08	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000344	B	84401-CEL C10000594	Missing plastic cable tag inside the panel (UP-200F4)	.		Gtangianu 2024-11-08	2024-11-23	Lmussi 2024-11-23	2024-11-23
C30000345	B	84401-CEL C10000594	Identification tag wires are wrong.	.		Gtangianu 2024-11-08	2024-12-16	Gtangianu 2024-12-16	2024-12-16
C30000346	B	84401-CEL C10000594	Platic cable ties to be replaced on external routing.Cable needs to be fixed also on cable trays inside B-400.	.		Gtangianu 2024-11-08	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000347	B	84401-CEL C10000594	Missing ties to be fix wire grounding armour cable .	.		Gtangianu 2024-11-08	2025-02-21	JKrizanic 2025-02-21	2025-02-21
C30000348	B	84401-CEL C10000594	Identification number on terminal strip is missing [2]	.		Gtangianu 2024-11-08	2025-03-11	JKrizanic 2025-03-11	2025-03-11
C30000349	B	84402-CEL C10000595	Plastic cable ties used to fix the cable tag should be replaced on all external routing.	.		Gtangianu 2024-11-08	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000350	B	84402-CEL C10000595	Identification numbers on terminal strip are missing (PE)	.		Gtangianu 2024-11-08	2025-04-24	Gtangianu 2025-04-24	2025-04-24

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	70	Safety and Facility Systems
SUBSYSTEM	70-00	F&G Control System

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000351	B	84402-CEL C10000595	Identification tag wires are wrong.	.		Gtangianu 2024-11-08	2024-12-16	Gtangianu 2024-12-16	2024-12-16
C30000410	B	83107-CEL C10000626	Plastic cable ties to be replaced on external routing	.		Ecarotenuto 2024-11-09	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000416	B	83107-CEL C10000626	Missing cable tags on routing, inside and outside the panels	.		Ecarotenuto 2024-11-09	2025-03-04	JKrizanic 2025-03-04	2025-03-04

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems
SUBSYSTEM 70-00 F&G Control System

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000772	A	B400-FGS-002 C10000839	TB-950-JE-04203 number 11, missing the screw inside the terminal strip.	.		Gtangianu 2024-11-22	2025-02-13	Ecarotenuto 2025-02-13	2025-02-13
C30000222	B	B400-FGS-001	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact		INSTALLED	SLinari 2024-10-14	SLinari 2024-12-10	SLinari 2024-12-10	2024-12-10
C30000223	B	B400-FGS-002	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact		SEE PL C30000222	SLinari 2024-10-14	SLinari 2024-12-10	SLinari 2024-12-10	2024-12-10
C30000224	B	B400-FGS-003	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact		SEE PL C30000222	SLinari 2024-10-14	SLinari 2024-12-10	SLinari 2024-12-10	2024-12-10
C30000225	B	B400-FGS-001	Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)		commissioning done	SLinari 2024-10-14	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30000226	B	B400-FGS-002	Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)		COMMISSIONING DONE	SLinari 2024-10-14	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30000227	B	B400-FGS-003	Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)		COMMISSIONING DONE	SLinari 2024-10-14	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30000375	B	B400-FGS-001	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000376	B	B400-FGS-002	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems
SUBSYSTEM 70-00 F&G Control System

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000377	B	B400-FGS-003	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000378	B	B400-FGS-001	Install and connect system cables (N. 20 type KS1-07/HF, N. 24 AKB331-M010/HF)			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000379	B	B400-FGS-002	Install and connect system cables (N. 20 type KS1-07/HF, N. 24 AKB331-M010/HF)			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000380	B	B400-FGS-003	Install and connect system cables (N. 20 type KS1-07/HF, N. 24 AKB331-M010/HF)			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000384	B	B400-FGS-001	Modify wiring to implement electrical isolation of limit switches of F&G dampers.		Done	SLinari 2024-10-14	Vendor 2025-03-07	SLinari 2025-03-07	2025-03-07
C30000385	B	B400-FGS-002	Modify wiring to implement electrical isolation of limit switches of F&G dampers.		Done	SLinari 2024-10-14	Vendor 2025-03-07	SLinari 2025-03-07	2025-03-07
C30000386	B	B400-FGS-003	Modify wiring to implement electrical isolation of limit switches of F&G dampers.		Done	SLinari 2024-10-14	Vendor 2025-03-07	SLinari 2025-03-07	2025-03-07
C30000663	B	B400-FGS-001 C10000873	The GA (1724000594-IN-DG-00010) does not match the installed.	.		Gtangianu 2024-11-20	2025-02-28	Ecarotenuto 2025-02-28	2025-02-28
C30000666	B	B400-FGS-001 C10000873	All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW	.	The issuance of the as-built documentation is part of the vendor's contractual	Gtangianu 2024-11-20	RDegliEsposti 2025-06-16	RDegliEsposti 2025-06-16	2025-06-16

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems

SUBSYSTEM 70-00 F&G Control System

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000667	B	B400-FGS-001 C10000873	The front doors need to be installed.	.		Gtangianu 2024-11-20	2024-12-23	Ecarotenuto 2024-12-23	2024-12-23
C30000668	B	B400-FGS-001 C10000873	base plate will be installed after commissioning	.		Gtangianu 2024-11-20	2025-04-11	Gtangianu 2025-04-11	2025-04-11
C30000769	B	B400-FGS-002 C10000839	All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW	.		Gtangianu 2024-11-22	RDegliEsposti 2025-06-16	RDegliEsposti 2025-06-16	2025-06-16
C30000770	B	B400-FGS-002 C10000839	The front doors need to be installed.	.		Gtangianu 2024-11-22	2024-12-27	Ecarotenuto 2024-12-27	2024-12-27
C30000771	B	B400-FGS-002 C10000839	Internal base plate will be installed after commissioning.	.		Gtangianu 2024-11-22	2025-04-11	Gtangianu 2025-04-11	2025-04-11
C30001041	B	B400-FGS-003 C10000874	All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW	.	The issuance of the as-built documentation is part of the vendor’s contractual	Gtangianu 2024-11-29	RDegliEsposti 2025-06-16	RDegliEsposti 2025-06-16	2025-06-16
C30001043	B	B400-FGS-003 C10000874	Earthing Internal base plate will be installed after commissioning.	.		Gtangianu 2024-11-29	2025-04-11	Gtangianu 2025-04-11	2025-04-11
C30001045	B	B400-FGS-003 C10000874	All cables need to be better dressed inside internal cable tray.	.		Gtangianu 2024-11-29	2025-02-26	Gtangianu 2025-02-26	2025-02-26

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000415

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000626	CPX09	1.4 Discipline	Electrical
1.2 Item	83107-CEL			Lighting & Small Power DB BoP / FGS Fire & Gas Panel - Auxiliary
1.3 Subsystem	70-00			F&G Control System

2 - OBSERVATION

multiple earthing cables connected to one earthing connection. (See attached photo) .

Name: Giovanni Tangianu

Date: 2024-11-08

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Eleonora Carotenuto
3.4 Activity code	MC Mechanical Completion	Date	2024-11-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Eleonora Carotenuto

Date: 2024-11-29

Signature:

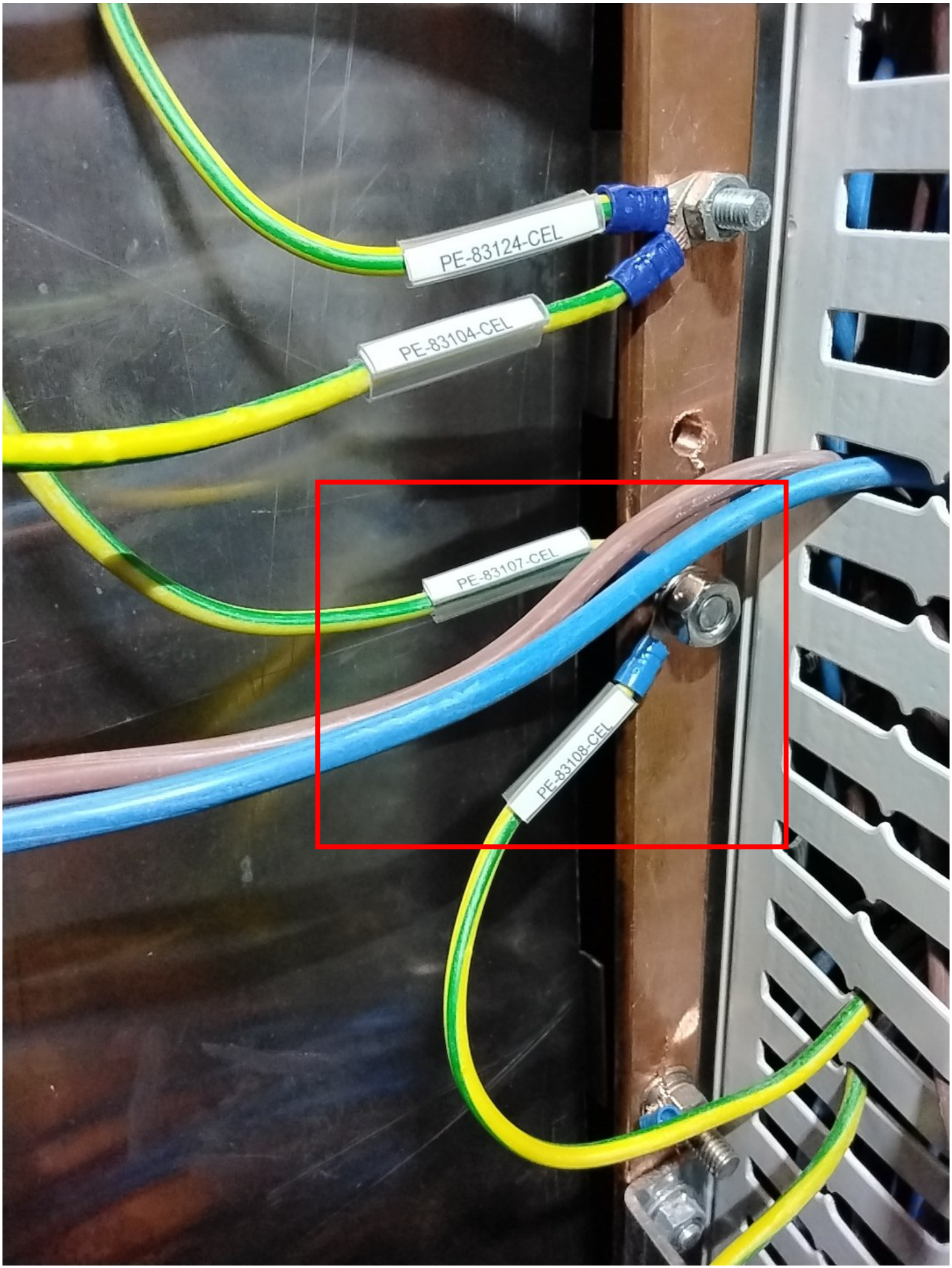
6- CLEARANCE APPROVAL

Name:

Date:

Signature:

2024-11-08 09:56 By Giovanni Tangianu



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000416

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000626	CPX09	1.4 Discipline	Electrical
1.2 Item	83107-CEL			Lighting & Small Power DB BoP / FGS Fire & Gas Panel - Auxiliary
1.3 Subsystem	70-00			F&G Control System

2 - OBSERVATION

Missing cable tags on routing, inside and outside the panels

Name: Giovanni Tangianu

Date: 2024-11-08

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Eleonora Carotenuto
3.4 Activity code	MC Mechanical Completion	Date	2024-11-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-03-04

Signature:

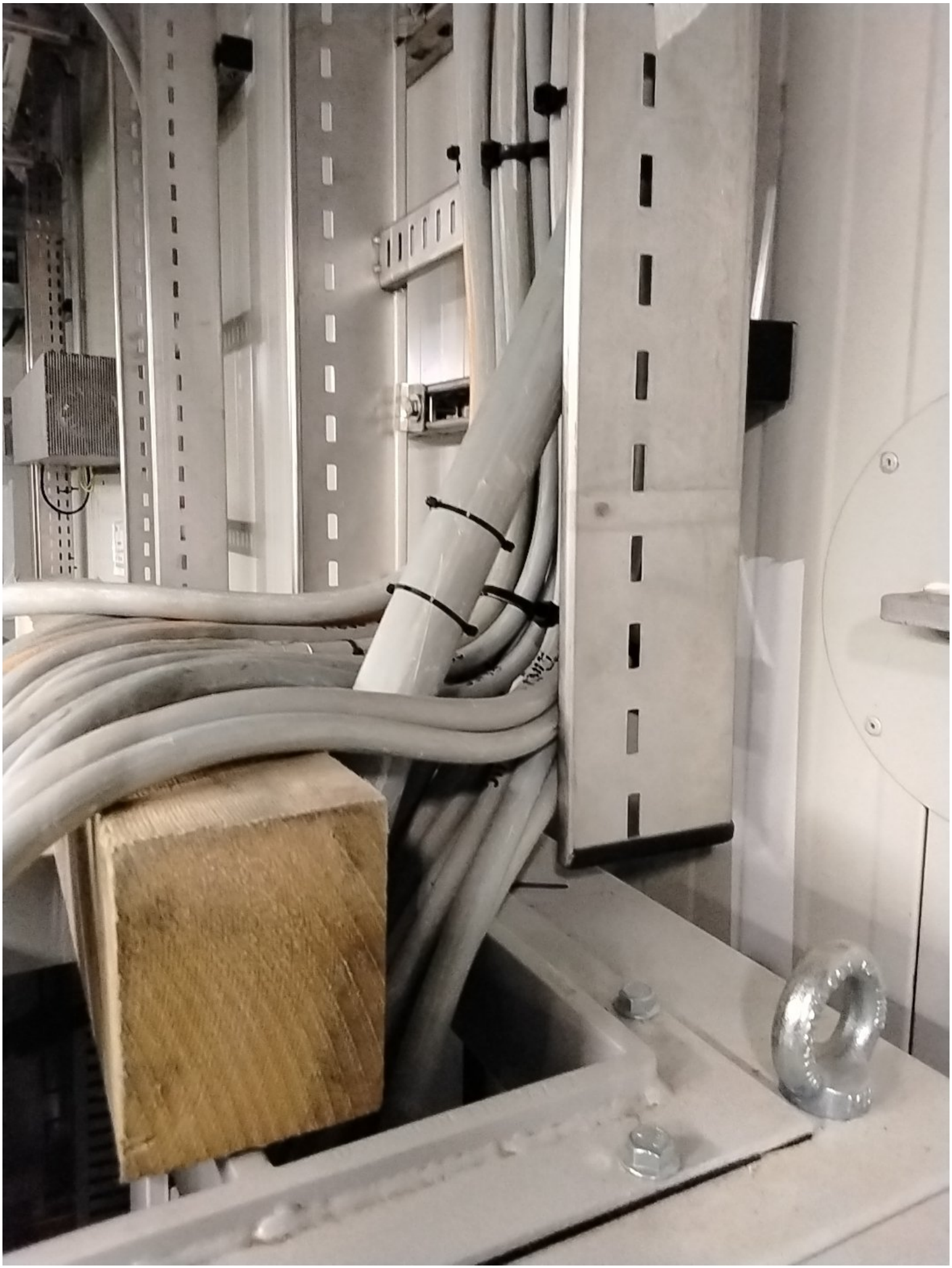
6- CLEARANCE APPROVAL

Name:

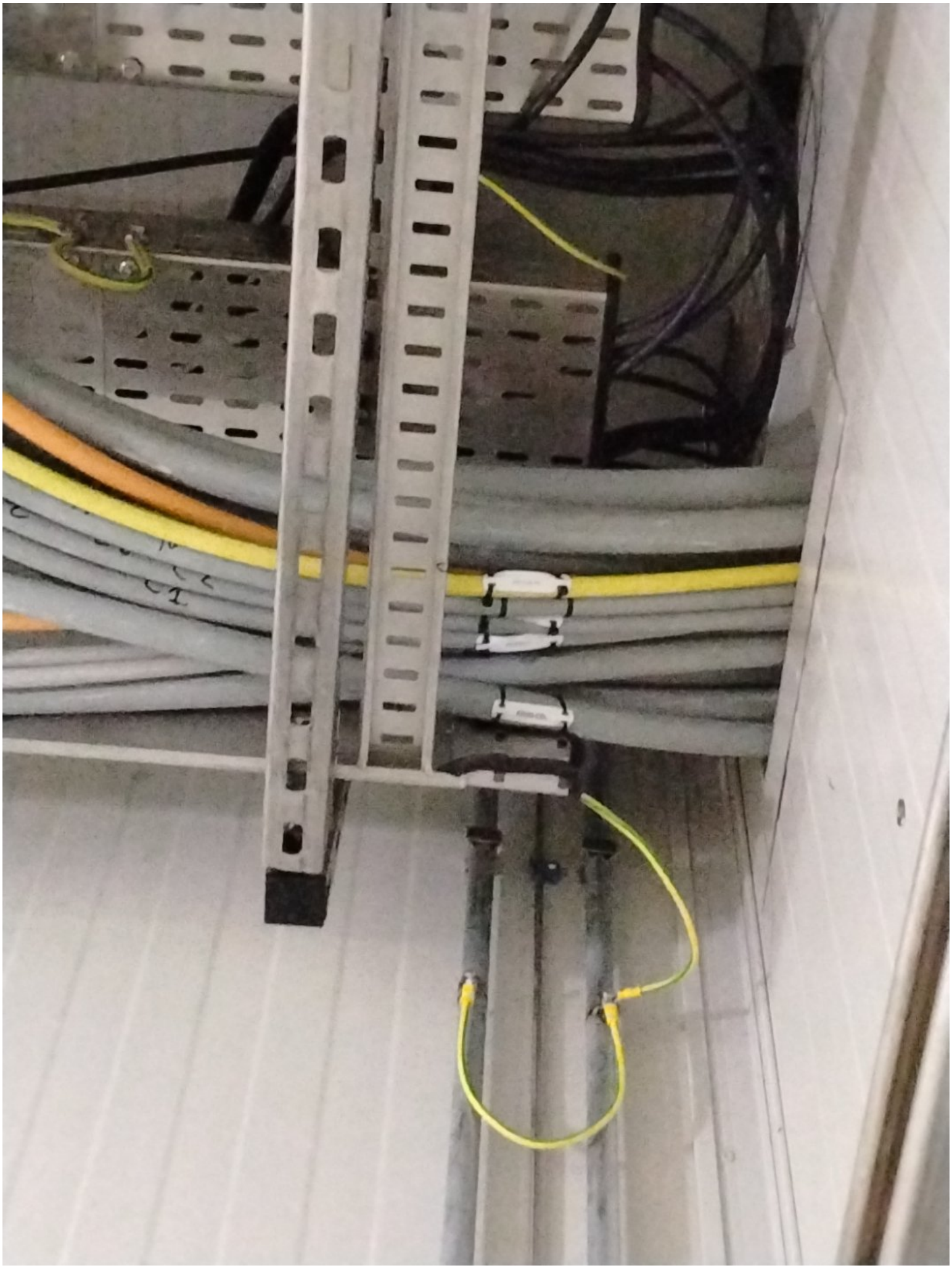
Date:

Signature:

2024-11-08 09:53 By Giovanni Tangianu



2024-11-08 09:53 By Giovanni Tangianu



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000663

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000873	1.4 Discipline	Instrumental
1.2 Item	B400-FGS-001	FGS System Cabinet	
1.3 Subsystem	70-00	F&G Control System	

2 - OBSERVATION

The GA (1724000594-IN-DG-00010) does not match the installed.

Name: Giovanni Tangianu

Date: 2024-11-20

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	2024-11-20
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Duplicate point. Refer to PL n° C30000663

Name: Eleonora Carotenuto

Date: 2025-02-28

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000666

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000873	1.4 Discipline	Instrumental
1.2 Item	B400-FGS-001	FGS System Cabinet	
1.3 Subsystem	70-00	F&G Control System	

2 - OBSERVATION

All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW

Name: Giovanni Tangianu
Date: 2024-11-20
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	2024-11-20
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

The issuance of the as-built documentation is part of the vendor's contractual obligations. This punch item is essentially a warning/reminder. All documentation listed in the SMIR must be approved with code 1 by RM and CW. The final vendor dossier is subject to approval.

Strictly speaking, this punch should not have been raised, as the requirement to issue final documentation was already implicit in the vendor scope. In principle, the same punch would have applied to all vendor packages.

Name: Raffaele Degli Esposti
Date: 2025-06-16
Signature:

5 - CLEARANCE CHECK

DONE

Name: Raffaele Degli Esposti
Date: 2025-06-16
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000667

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000873	1.4 Discipline	Instrumental
1.2 Item	B400-FGS-001	FGS System Cabinet	
1.3 Subsystem	70-00	F&G Control System	

2 - OBSERVATION

The front doors need to be installed.

Name: Giovanni Tangianu

Date: 2024-11-20

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	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Eleonora Carotenuto

Date: 2024-12-23

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000668

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000873	1.4 Discipline	Instrumental
1.2 Item	B400-FGS-001	FGS System Cabinet	
1.3 Subsystem	70-00	F&G Control System	

2 - OBSERVATION

base plate will be installed after commissioning

Name: Giovanni Tangianu

Date: 2024-11-20

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	2024-11-20
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-04-11

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000769

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000839	1.4 Discipline	Instrumental
1.2 Item	B400-FGS-002	FGS Marshalling Cabinet 1	
1.3 Subsystem	70-00	F&G Control System	

2 - OBSERVATION

All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW

Name: Giovanni Tangianu

Date: 2024-11-22

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	2024-11-22
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name: Raffaele Degli Esposti

Date: 2025-06-16

Signature:

5 - CLEARANCE CHECK

The issuance of the as-built documentation is part of the vendor's contractual obligations. This punch item is essentially a warning/reminder. All documentation listed in the SMIR must be approved with code 1 by RM and CW. The final vendor dossier is subject to approval.

Strictly speaking, this punch should not have been raised, as the requirement to issue final documentation was already implicit in the vendor scope. In principle, the same punch would have applied to all vendor packages.

Name: Raffaele Degli Esposti

Date: 2025-06-16

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000770

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000839	1.4 Discipline	Instrumental
1.2 Item	B400-FGS-002	FGS Marshalling Cabinet 1	
1.3 Subsystem	70-00	F&G Control System	

2 - OBSERVATION

The front doors need to be installed.

Name: Giovanni Tangianu

Date: 2024-11-22

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	2024-11-22
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Eleonora Carotenuto

Date: 2024-12-27

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000771

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000839	1.4 Discipline	Instrumental
1.2 Item	B400-FGS-002	FGS Marshalling Cabinet 1	
1.3 Subsystem	70-00	F&G Control System	

2 - OBSERVATION

Internal base plate will be installed after commissioning.

Name: Giovanni Tangianu

Date: 2024-11-22

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	2024-11-22
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-04-11

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000772

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000839	1.4 Discipline	Instrumental
1.2 Item	B400-FGS-002	FGS Marshalling Cabinet 1	
1.3 Subsystem	70-00	F&G Control System	

2 - OBSERVATION

TB-950-JE-04203 number 11, missing the screw inside the terminal strip.

Name: Giovanni Tangianu

Date: 2024-11-22

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2024-11-22
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Replaced

Name: Eleonora Carotenuto

Date: 2025-02-13

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:


TB-950-JE-04207

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001041

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000874	1.4 Discipline	Instrumental
1.2 Item	B400-FGS-003	FGS Marshalling Cabinet 2	
1.3 Subsystem	70-00	F&G Control System	

2 - OBSERVATION

All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW

Name: Giovanni Tangianu
Date: 2024-11-29
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	2024-11-29
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

The issuance of the as-built documentation is part of the vendor's contractual obligations. This punch item is essentially a warning/reminder. All documentation listed in the SMIR must be approved with code 1 by RM and CW. The final vendor dossier is subject to approval.

Strictly speaking, this punch should not have been raised, as the requirement to issue final documentation was already implicit in the vendor scope. In principle, the same punch would have applied to all vendor packages.

Name: Raffaele Degli Esposti
Date: 2025-06-16
Signature:

5 - CLEARANCE CHECK

DONE

Name: Raffaele Degli Esposti
Date: 2025-06-16
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001043

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000874	1.4 Discipline	Instrumental
1.2 Item	B400-FGS-003	FGS Marshalling Cabinet 2	
1.3 Subsystem	70-00	F&G Control System	

2 - OBSERVATION

Earthing Internal base plate will be installed after commissioning.

Name: Giovanni Tangianu

Date: 2024-11-29

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	2024-11-29
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-04-11

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001045

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000874	1.4 Discipline	Instrumental
1.2 Item	B400-FGS-003	FGS Marshalling Cabinet 2	
1.3 Subsystem	70-00	F&G Control System	

2 - OBSERVATION

All cables need to be better dressed inside internal cable tray.

Name: Giovanni Tangianu

Date: 2024-11-29

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	2024-11-29
3.5 Action by	PRE-COMM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done.

Name: Giovanni Tangianu

Date: 2025-02-26

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000222

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-001		FGS System Cabinet
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

INSTALLED

Name VENDOR YOKOGAWA

Date 2024-12-10

Signature

5 - CLEARANCE CHECK

INSTALLED

Name Stefano Linari

Date 2024-12-10

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature


EATON
Q22
EATON
Q21

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000223

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-002		FGS Marshalling Cabinet 1
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

SEE PL C30000222

Name VENDOR YOKOGAWA

Date 2024-12-10

Signature

5 - CLEARANCE CHECK

SEE PL C30000222

Name Stefano Linari

Date 2024-12-10

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000224

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-003		FGS Marshalling Cabinet 2
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

SEE PL C30000222

Name VENDOR YOKOGAWA

Date 2024-12-10

Signature

5 - CLEARANCE CHECK

SEE PL C30000222

Name Stefano Linari

Date 2024-12-10

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000225

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-001		FGS System Cabinet
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

commissioning done

Name VENDOR YOKOGAWA

Date 2025-02-06

Signature

5 - CLEARANCE CHECK

commissioning done

Name Stefano Linari

Date 2025-02-06

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

Linari Stefano (Rosetti)

Da: Sirigu Fabio (ERM)
Inviato: mercoledì 5 febbraio 2025 14:59
A: Linari Stefano (Rosetti)
Cc: Iveson Anthony (ERM); Casagrande Davide (ERM)
Oggetto: 123A90 CW // Punch list FAT HW

Ciao,
ti inforno che le presenti punch sono state chiuse:

3.	N107		HKN-WPO1-BLPH-NET-01 / HKN-WPO1-BLPH-SRV-01	M.Dossena	Missing Axioline module (Phoenix Contact) to be used to connect diagnostic signals to be exchanged via Modbus.		B	YOK		
6.	F004		B400-FGS-001/002/003	M.Dossena	Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)		B	YOK		

Ciao

Fabio SIRIGU
Commissioning Lead Automation
CROSSWIND BLPH PROJECT

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000226

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-002		FGS Marshalling Cabinet 1
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

COMMISSIONING DONE

Name VENDOR YOKOGAWA

Date 2025-02-06

Signature

5 - CLEARANCE CHECK

COMMISSIONING DONE

Name Stefano Linari

Date 2025-02-06

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

Linari Stefano (Rosetti)

Da: Sirigu Fabio (ERM)
Inviato: mercoledì 5 febbraio 2025 14:59
A: Linari Stefano (Rosetti)
Cc: Iveson Anthony (ERM); Casagrande Davide (ERM)
Oggetto: 123A90 CW // Punch list FAT HW

Ciao,
ti inforno che le presenti punch sono state chiuse:

3.	N107		HKN-WPO1-BLPH-NET-01 / HKN-WPO1-BLPH-SRV-01	M.Dossena	Missing Axioline module (Phoenix Contact) to be used to connect diagnostic signals to be exchanged via Modbus.		B	YOK		
6.	F004		B400-FGS-001/002/003	M.Dossena	Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)		B	YOK		

Ciao

Fabio SIRIGU
Commissioning Lead Automation
CROSSWIND BLPH PROJECT

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000227

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-003		FGS Marshalling Cabinet 2
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

COMMISSIONING DONE

Name VENDOR YOKOGAWA

Date 2025-02-06

Signature

5 - CLEARANCE CHECK

COMMISSIONING DONE

Name Stefano Linari

Date 2025-02-06

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

Linari Stefano (Rosetti)

Da: Sirigu Fabio (ERM)
Inviato: mercoledì 5 febbraio 2025 14:59
A: Linari Stefano (Rosetti)
Cc: Iveson Anthony (ERM); Casagrande Davide (ERM)
Oggetto: 123A90 CW // Punch list FAT HW

Ciao,
ti inforno che le presenti punch sono state chiuse:

3.	N107		HKN-WPO1-BLPH-NET-01 / HKN-WPO1-BLPH-SRV-01	M.Dossena	Missing Axioline module (Phoenix Contact) to be used to connect diagnostic signals to be exchanged via Modbus.		B	YOK		
6.	F004		B400-FGS-001/002/003	M.Dossena	Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)		B	YOK		

Ciao

Fabio SIRIGU
Commissioning Lead Automation
CROSSWIND BLPH PROJECT

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000343

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000594	1.4 Discipline	Electrical
1.2 Item	84401-CEL		AC UPS - F&G DB / FGS Fire & Gas Panel - Line A
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Plastic cable ties used to fix the cable tag should be replaced on all external routing.

Name: Giovanni Tangianu

Date: 2024-11-07

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	2024-11-08
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

C30000344

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000594	CPX09	1.4 Discipline	Electrical
1.2 Item	84401-CEL			
1.3 Subsystem	70-00			

2 - OBSERVATION

Missing plastic cable tag inside the panel (UP-200F4)

Name: Giovanni Tangianu

Date: 2024-11-07

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	2024-11-08
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done

Name: Luca Mussi

Date: 2024-11-21

Signature:

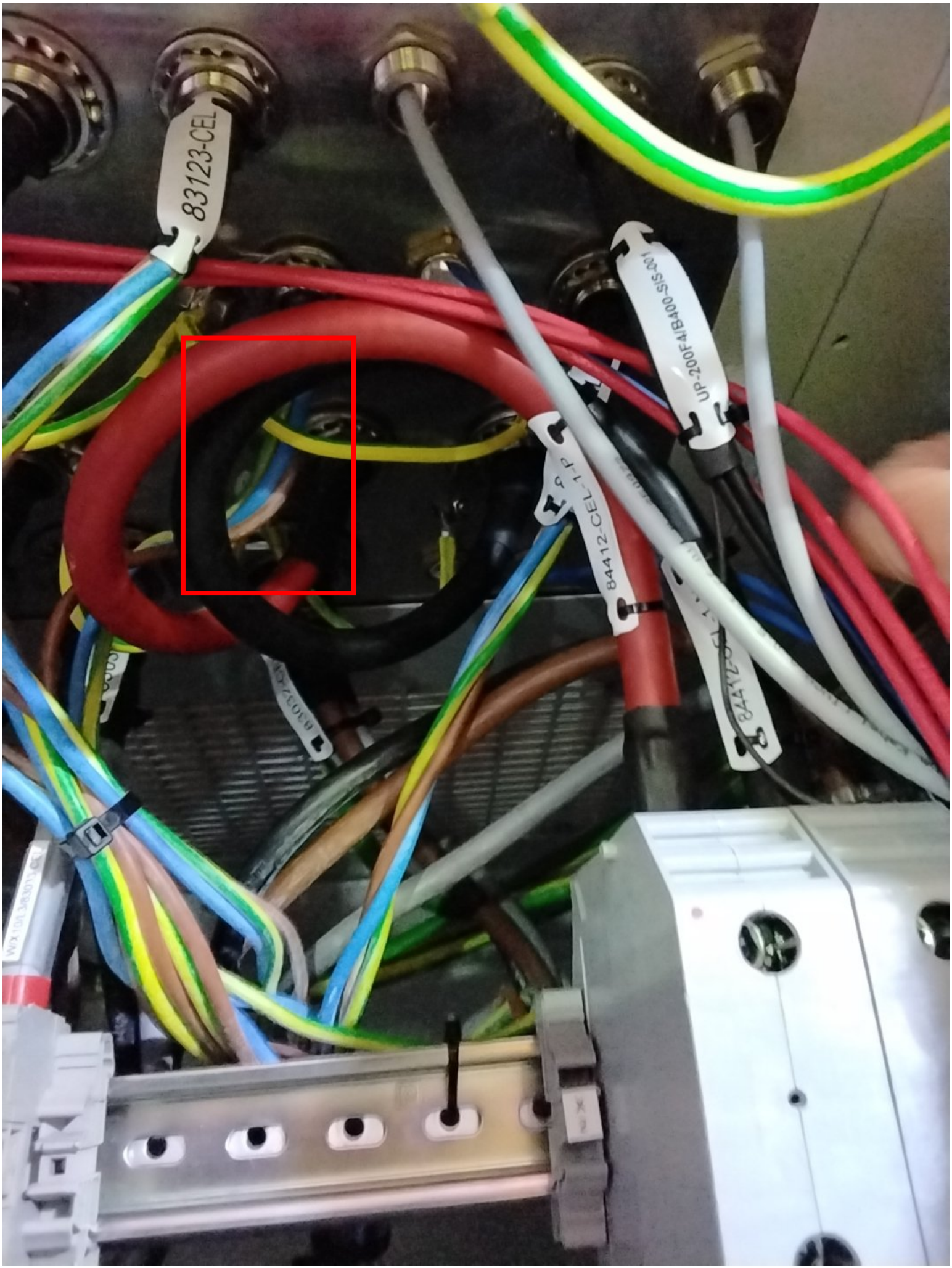
6- CLEARANCE APPROVAL

Name:

Date:

Signature:

2024-11-07 14:53 By Giovanni Tangianu




84401-CEL

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000345

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000594	CPX09	1.4 Discipline	Electrical
1.2 Item	84401-CEL			
1.3 Subsystem	70-00			

2 - OBSERVATION

Identification tag wires are wrong.

Name: Giovanni Tangianu

Date: 2024-11-07

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	2024-11-08
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

installed.

Name: Giovanni Tangianu

Date: 2024-12-16

Signature:

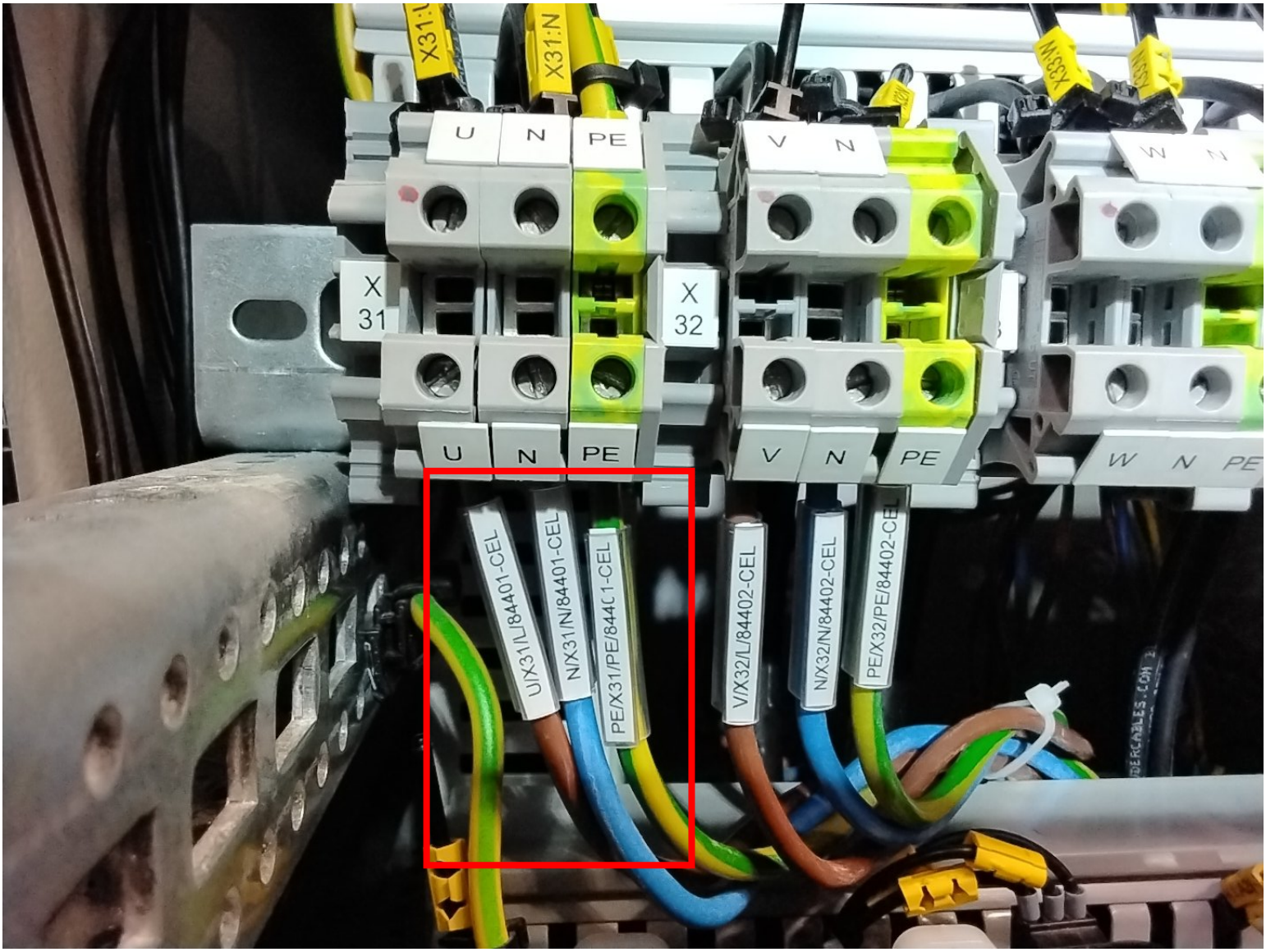
6- CLEARANCE APPROVAL

Name:

Date:

Signature:

2024-11-07 14:59 By Giovanni Tangianu



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000346

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000594	1.4 Discipline	Electrical
1.2 Item	84401-CEL		AC UPS - F&G DB / FGS Fire & Gas Panel - Line A
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Platic cable ties to be replaced on external routing.Cable needs to be fixed also on cable trays inside B-400.

Name: Giovanni Tangianu

Date: 2024-11-08

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	2024-11-08
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

C30000347

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000594	1.4 Discipline	Electrical
1.2 Item	84401-CEL		AC UPS - F&G DB / FGS Fire & Gas Panel - Line A
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Missing ties to be fix wire grounding armour cable .

Name: Giovanni Tangianu
Date: 2024-11-08
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	2024-11-08
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

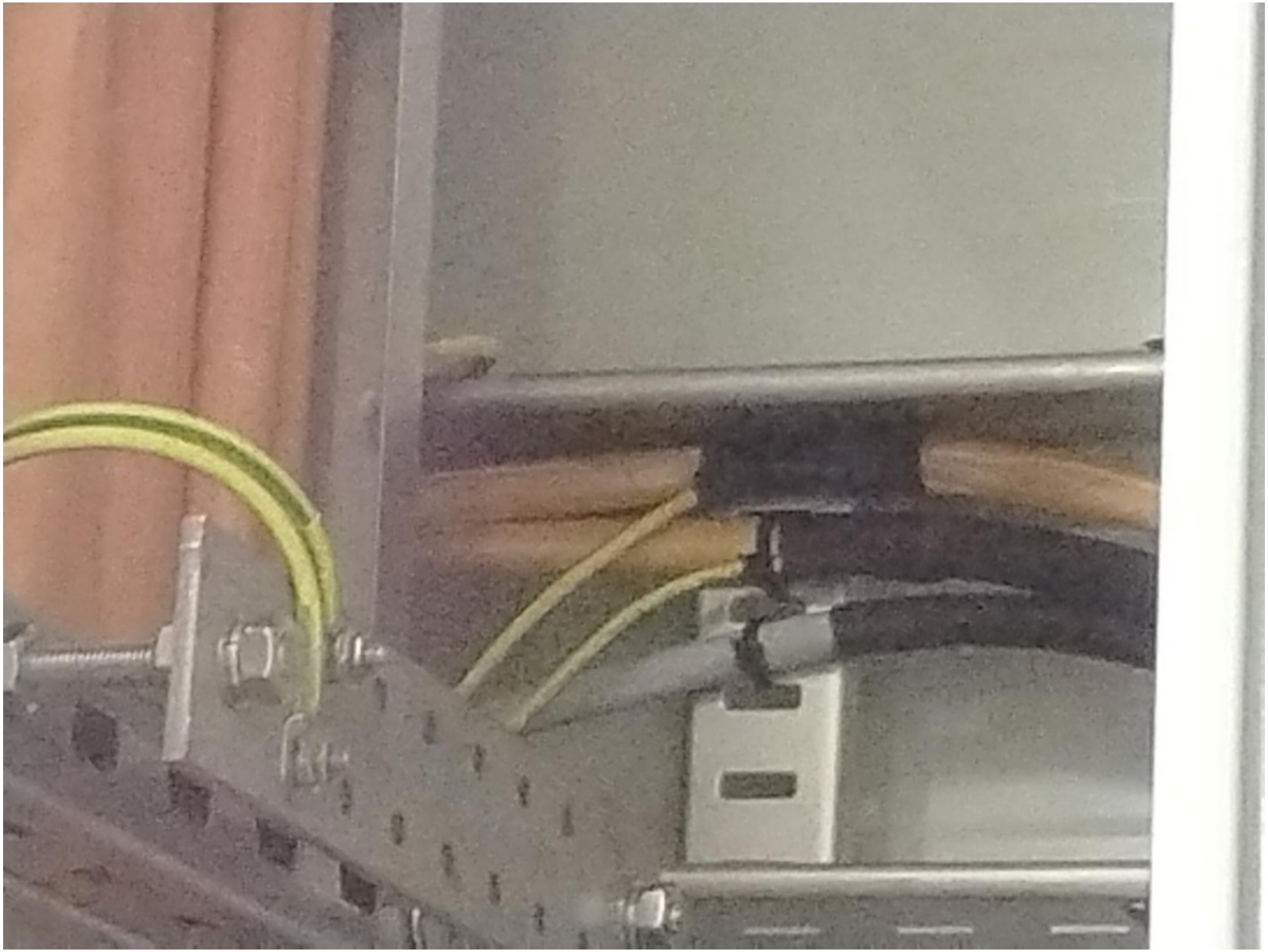
5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic
Date: 2025-02-21
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000348

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000594	CPX09	1.4 Discipline	Electrical
1.2 Item	84401-CEL			
1.3 Subsystem	70-00			

2 - OBSERVATION

Identification number on terminal strip is missing [2]

Name: Giovanni Tangianu

Date: 2024-11-07

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	2024-11-08
3.5 Action by	VND Vendor	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Josip Krizanic

Date: 2025-03-11

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

2024-11-07 11:49 By Giovanni Tangianu

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000349

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000595	1.4 Discipline	Electrical
1.2 Item	84402-CEL		AC UPS - F&G DB / FGS Fire & Gas Panel - Line B
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Plastic cable ties used to fix the cable tag should be replaced on all external routing.

Name: Giovanni Tangianu

Date: 2024-11-07

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	2024-11-08
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

C30000350

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000595	CPX09	1.4 Discipline	Electrical
1.2 Item	84402-CEL		AC UPS - F&G DB / FGS Fire & Gas Panel - Line B	
1.3 Subsystem	70-00		F&G Control System	

2 - OBSERVATION

Identification numbers on terminal strip are missing (PE)

Name: Giovanni Tangianu

Date: 2024-11-07

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	2024-11-08
3.5 Action by	PRE-COMM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-04-24

Signature:

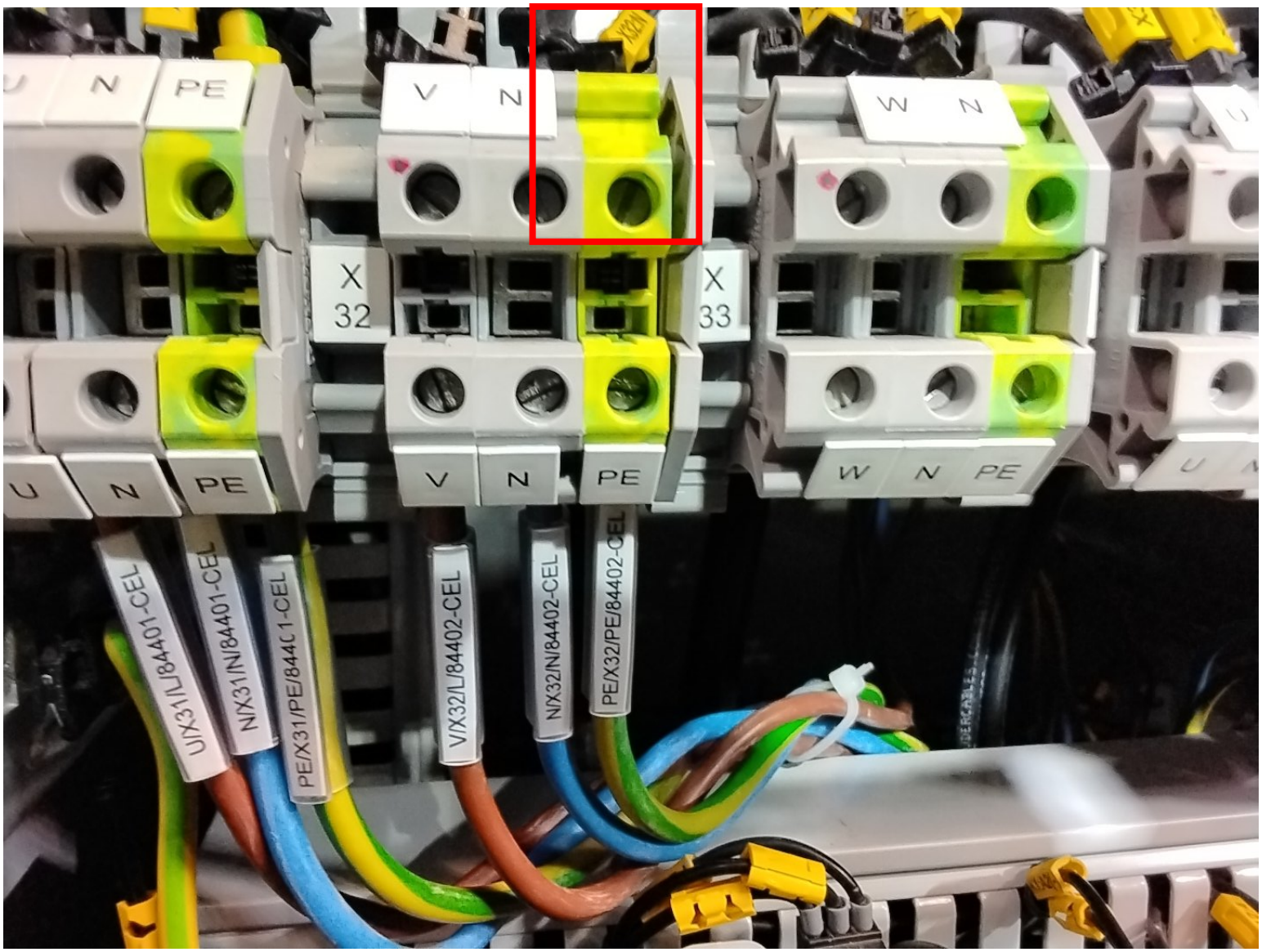
6- CLEARANCE APPROVAL

Name:

Date:

Signature:

2024-11-07 14:47 By Giovanni Tangianu



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000351

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000595	CPX09	1.4 Discipline	Electrical
1.2 Item	84402-CEL			
1.3 Subsystem	70-00			

2 - OBSERVATION

Identification tag wires are wrong.

Name: Giovanni Tangianu

Date: 2024-11-07

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	2024-11-08
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2024-12-16

Signature:

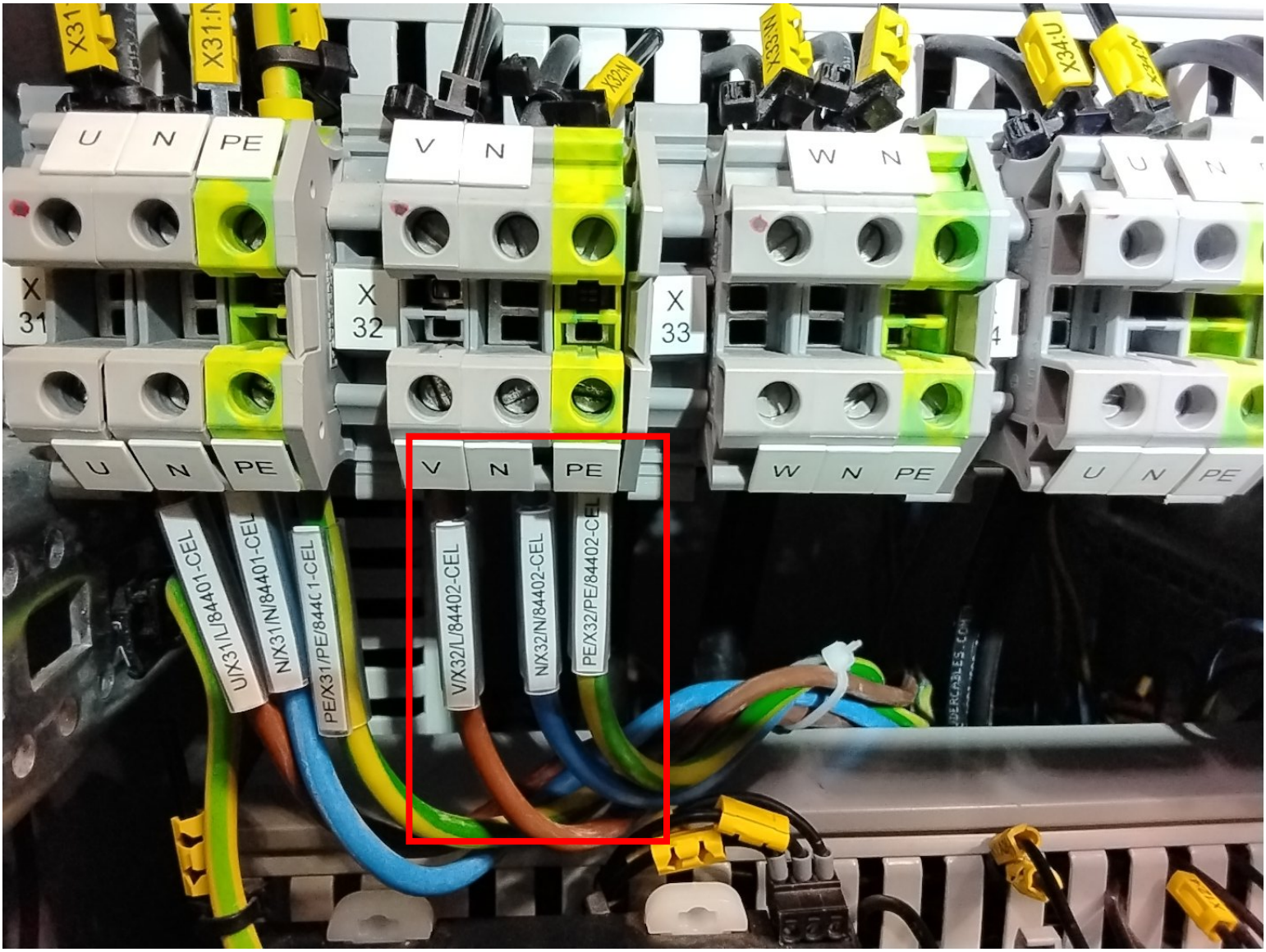
6- CLEARANCE APPROVAL

Name:

Date:

Signature:

2024-11-07 15:00 By Giovanni Tangianu



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000375

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-001		FGS System Cabinet
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Name

Date

Signature

5 - CLEARANCE CHECK

Refer to punch number: C30000222

Name Lorenzo Novaga

Date 2024-12-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000376

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-002		FGS Marshalling Cabinet 1
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Name

Date

Signature

5 - CLEARANCE CHECK

Refer to punch number: C30000223

Name Lorenzo Novaga

Date 2024-12-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000377

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-003		FGS Marshalling Cabinet 2
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Name

Date

Signature

5 - CLEARANCE CHECK

Refer to punch number: C30000224

Name Lorenzo Novaga

Date 2024-12-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000378

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-001		FGS System Cabinet
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Install and connect system cables (N. 20 type KS1-07/HF, N. 24 AKB331-M010/HF)

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Name

Date

Signature

5 - CLEARANCE CHECK

Refer to punch number: C30000225

Name	Lorenzo Novaga
Date	2024-12-07
Signature	

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000379

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-002		FGS Marshalling Cabinet 1
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Install and connect system cables (N. 20 type KS1-07/HF, N. 24 AKB331-M010/HF)

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Name

Date

Signature

5 - CLEARANCE CHECK

Refer to punch number: C30000226

Name Lorenzo Novaga

Date 2024-12-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000380

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-003		FGS Marshalling Cabinet 2
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Install and connect system cables (N. 20 type KS1-07/HF, N. 24 AKB331-M010/HF)

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Name

Date

Signature

5 - CLEARANCE CHECK

Refer to punch number: C30000227

Name Lorenzo Novaga

Date 2024-12-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000384

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-001		FGS System Cabinet
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Modify wiring to implement electrical isolation of limit switches of F&G dampers.

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Done

Name YOKOGAWA

Date 2025-03-07

Signature

5 - CLEARANCE CHECK

Done

Name Stefano Linari

Date 2025-03-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000385

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-002		FGS Marshalling Cabinet 1
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Modify wiring to implement electrical isolation of limit switches of F&G dampers.

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Done

Name YOKOGAWA

Date 2025-03-07

Signature

5 - CLEARANCE CHECK

Done

Name Stefano Linari

Date 2025-03-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000386

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task		1.4 Discipline	Instrumental
1.2 Item	B400-FGS-003		FGS Marshalling Cabinet 2
1.3 Subsystem	70-00		F&G Control System

2 - OBSERVATION

Modify wiring to implement electrical isolation of limit switches of F&G dampers.

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	2024-10-14
3.5 Action by		Signature	--- Proverlis --- Duplicata issued from database information Signature is on original form

4 - PERFORMED ACTION

Done

Name YOKOGAWA

Date 2025-03-07

Signature

5 - CLEARANCE CHECK

Done

Name Stefano Linari

Date 2025-03-07

Signature

6- CLEARANCE APPROVAL

Name

Date

Signature

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000410

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000626	CPX09	1.4 Discipline	Electrical
1.2 Item	83107-CEL			Lighting & Small Power DB BoP / FGS Fire & Gas Panel - Auxiliary
1.3 Subsystem	70-00			F&G Control System

2 - OBSERVATION

Plastic cable ties to be replaced on external routing

Name: Giovanni Tangianu

Date: 2024-11-08

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Eleonora Carotenuto
3.4 Activity code	MC Mechanical Completion	Date	2024-11-09
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:

Section 4 FUNCTIONAL TESTS SHEETS

Section 4.1 Electrical functional test sheets index

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 70-00 & process: COMM & discipline : E

Electrical	70-00 F&G Control System						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
DP-200N1-Q26	BREAKER F&G AUX - DP-200N1-Q26	ONSHORE	C10002882	FTR-2	100	2024-10-29	RFO 1
UP-200F4-QF31	BREAKER F&G LINE A - UP-200F4-QF31	ONSHORE	C10002881	FTR-2	100	2024-11-14	RFO 1
UP-200F4-QF32	BREAKER F&G LINE B - UP-200F4-QF32	ONSHORE	C10002883	FTR-2	100	2024-11-14	RFO 1

ITEM	Tag	UP-200F4-QF31	: BREAKER F&G LINE A - UP-200F4-QF31		Dwg	1724000372-EL-DG-00009	
	S/Sys	70-00	: F&G Control System		Module		
TASK	code	C10002881	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:	A TYPE
Auxiliary supply:	NA	Location:	B300	Cubicle:	NA
Switchboard:	UP-200F4				

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	36,4ms

Testing & measurement instruments used

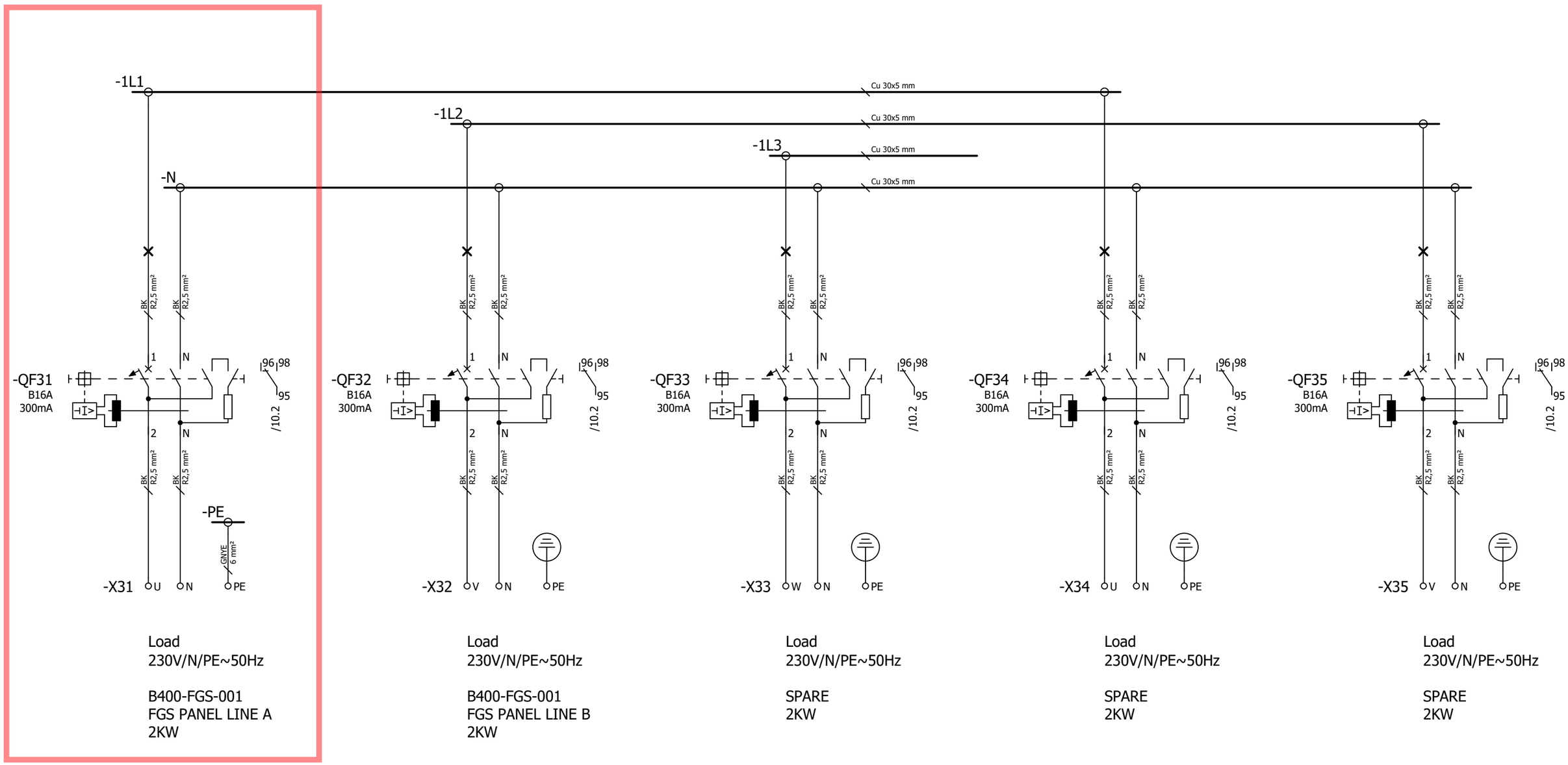
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025

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	2024-11-13	2024-11-14	2024-11-14
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-13T09:51:46.767Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-14T08:15:14.336Z	PROVERLIS Digitaly signed by Witness waived 2024-11-14T08:40:38.525Z

CAE EPLAN Electric P8

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Load
230V/N/PE~50Hz

B400-FGS-001
FGS PANEL LINE A
2KW

Load
230V/N/PE~50Hz

B400-FGS-001
FGS PANEL LINE B
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

1000007888_080

				Date	28.05.2024
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 20 kVA
Circuit diagram

1000007888.090
10009760

1000007888_080 en

=
+ MBC1
& EFS

A3

sheet 7
sheets 11

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	DP-200N1-Q26	: BREAKER F&G AUX - DP-200N1-Q26	Dwg	1723002197-EL-DG-00013		
	S/Sys	70-00	: F&G Control System	Module			
TASK	code	C10002882	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:	NA
Auxiliary supply:	NA	Location:	B200	Cubicle:	+03
Switchboard:	DP-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
I	6A	NA	NA	FIXED	NA

Testing & measurement instruments used

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

Comments:

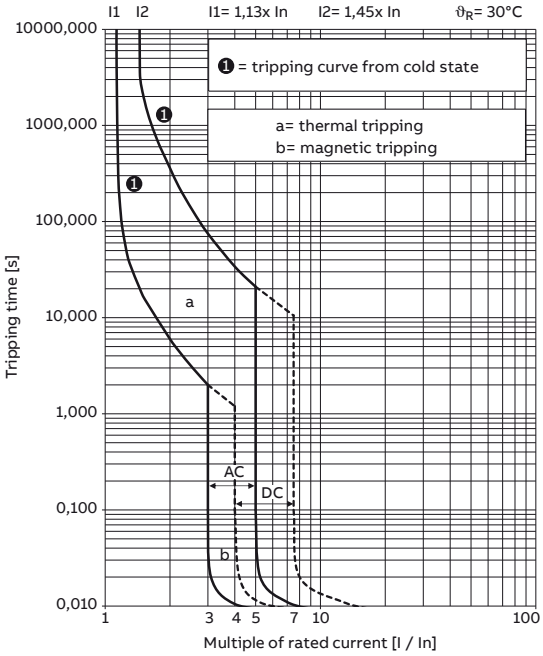
Page 1/1	Performed by	☐ WITNESS ☉ REVIEW	☐ WITNESS ☐ REVIEW
Company	RM COMM	RM COMM	CPY NOT PRESENT
Name	Mattia Girotti	Kristian Castellani	Witness waived
Date	2024-10-28	2024-10-29	2024-10-29
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-10-28T13:23:03.858Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-10-29T08:47:53.634Z	PROVERLIS Digitaly signed by Witness waived 2024-10-29T09:01:49.148Z

Miniature Circuit breakers S300P

Tripping characteristics

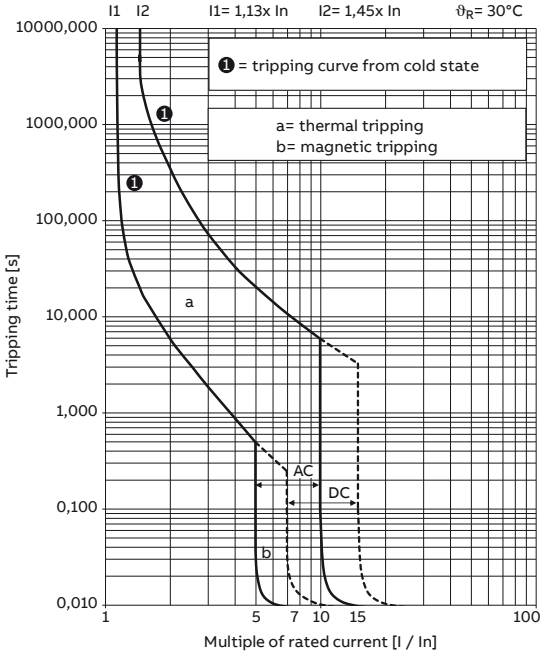
MCB Type S300P - B (3 ... 5 x I_n AC)

Tripping Characteristic IEC/EN 60898-1



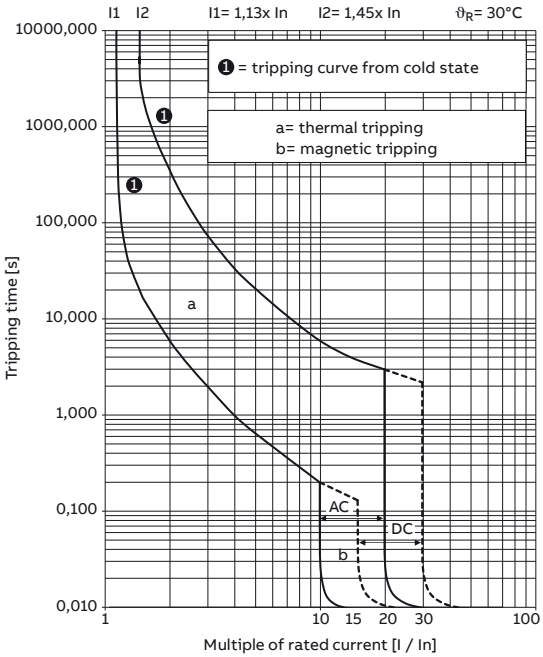
MCB Type S300P - C (5 ... 10 x I_n AC)

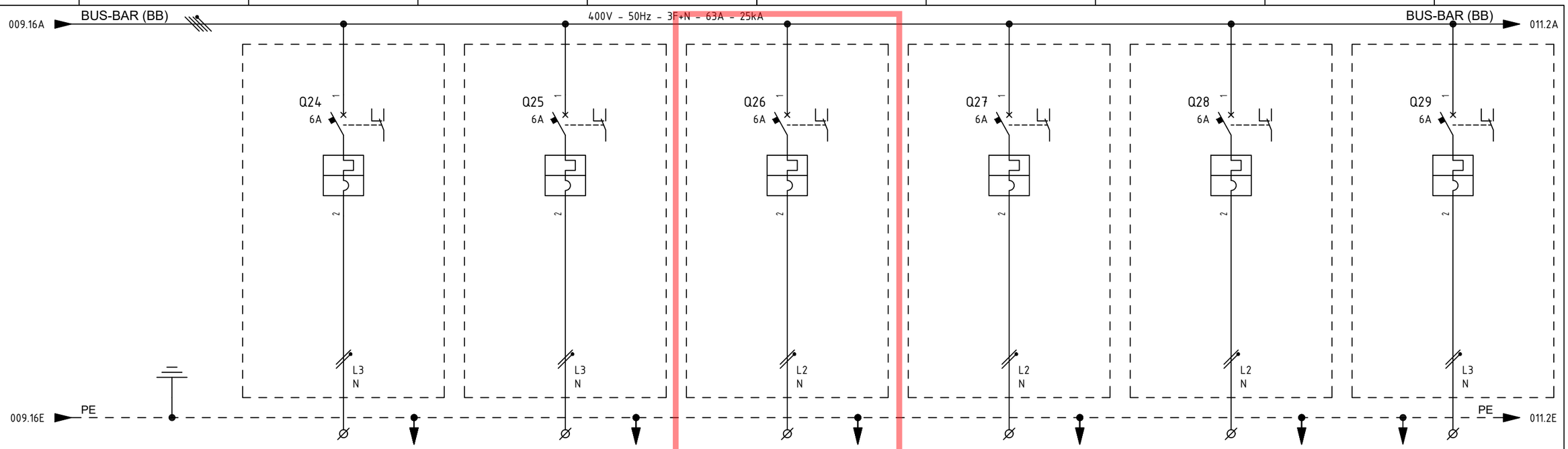
Tripping Characteristic IEC/EN 60898-1



MCB Type S300P - D (10 ... 20 x I_n AC)

Tripping Characteristic IEC/EN 60898-1





ITEM			1	B400-PCS-001	B400-EMCS-001	B400-FGS-001	B400-NET-001	B400-SRV-001	CP-630E1
UTILITY			2	PCS-CONTROLLER AND I/O CABINET - AUXILIARY	EMCS-CONTROLLER AND I/O CABINET - AUXILIARY	FGS FIRE & GAS PANEL - AUXILIARY	SYSTEM SERVER / NETWORK CABINET - AUXILIARY	SERVER CABINET ITER - AUXILIARY	UCP - INSTRUMENT AIR PACKAGE -A-63000 - AUXILIARY
CUBICLE			3	+03	+03	+03	+03	+03	+03
RATED POWER | RATED CURRENT			4/5	0.5 KW | 2.72 A	0.5 KW | 2.72 A	0.8 KW | 4.35 A	0.5 KW | 2.72 A	0.5 KW | 2.72 A	0.5 KW | 2.72 A
TYPICAL FUNCTIONAL			6	-	-	-	-	-	-
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6	S302P-C6	S302P-C6	S302P-C6	S302P-C6	S302P-C6
	VERSION		8	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE	2P / MINIATURE
	TRIP UNITS		9	In=6A - Curve C	In=6A - Curve C	In=6A - Curve C	In=6A - Curve C	In=6A - Curve C	In=6A - Curve C
	Icu	KA	10	25kA	25kA	25kA	25kA	25kA	25kA
OVERLOAD	L	Range A	11	-	-	-	-	-	-
		Range t	12	-	-	-	-	-	-
SEL. SHORT-CIRCUIT	S	Range A	13	-	-	-	-	-	-
		Range t	14	-	-	-	-	-	-
INST. SHORT-CIRCUIT	I	Range A	15	-	-	-	-	-	-
		Range t	16	-	-	-	-	-	-
EARTH FAULT PROTECTION	G	Range A	17	-	-	-	-	-	-
		Range t	18	-	-	-	-	-	-
CONTACTOR (ABB)			19	-	-	-	-	-	-
THERMAL OVERLOAD RELAY (ABB)			20	-	-	-	-	-	-
SURGE ARRESTERS (DHENN)			21	-	-	-	-	-	-
TOROIDAL CURRENT TRANSFORMER (FRER)			22	-	-	-	-	-	-
FUSE HOLDER (ABB)			23	-	-	-	-	-	-
TWILIGHT SWITCH (ABB)			24	-	-	-	-	-	-
VOLTMETER (FRER)			25	-	-	-	-	-	-
CURRENT TRANSFORMER FOR MEASURE (FRER)	TYPE		26	-	-	-	-	-	-
	PERFORMANCE/CLASS		27	-	-	-	-	-	-
VOLTAGE TRANSFORMER FOR MEASURE (FRER)	TYPE		28	-	-	-	-	-	-
	PERFORMANCE/CLASS		29	-	-	-	-	-	-
POWER TERM. BLOCK (CABUR)		Type/mm²	30	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4
POWER CONDUCTOR		mm²	31	3G2.5	3G2.5	3G2.5	3G2.5	3G2.5	3G2.5

=

+

DWG n° : 231298/SD/13

Item n° : PF1002888/101

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
4	18/09/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
3	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
2	24/04/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
1	15/03/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)
0	08/02/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

IMESA ELECTRICAL ENGINEERING

CROSSWIND

ROSETTI MARINO

TITLE : "DP-200N1"

SINGLE LINE DIAGRAM

Single Line Drawing

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

SCALE : NTS

A3

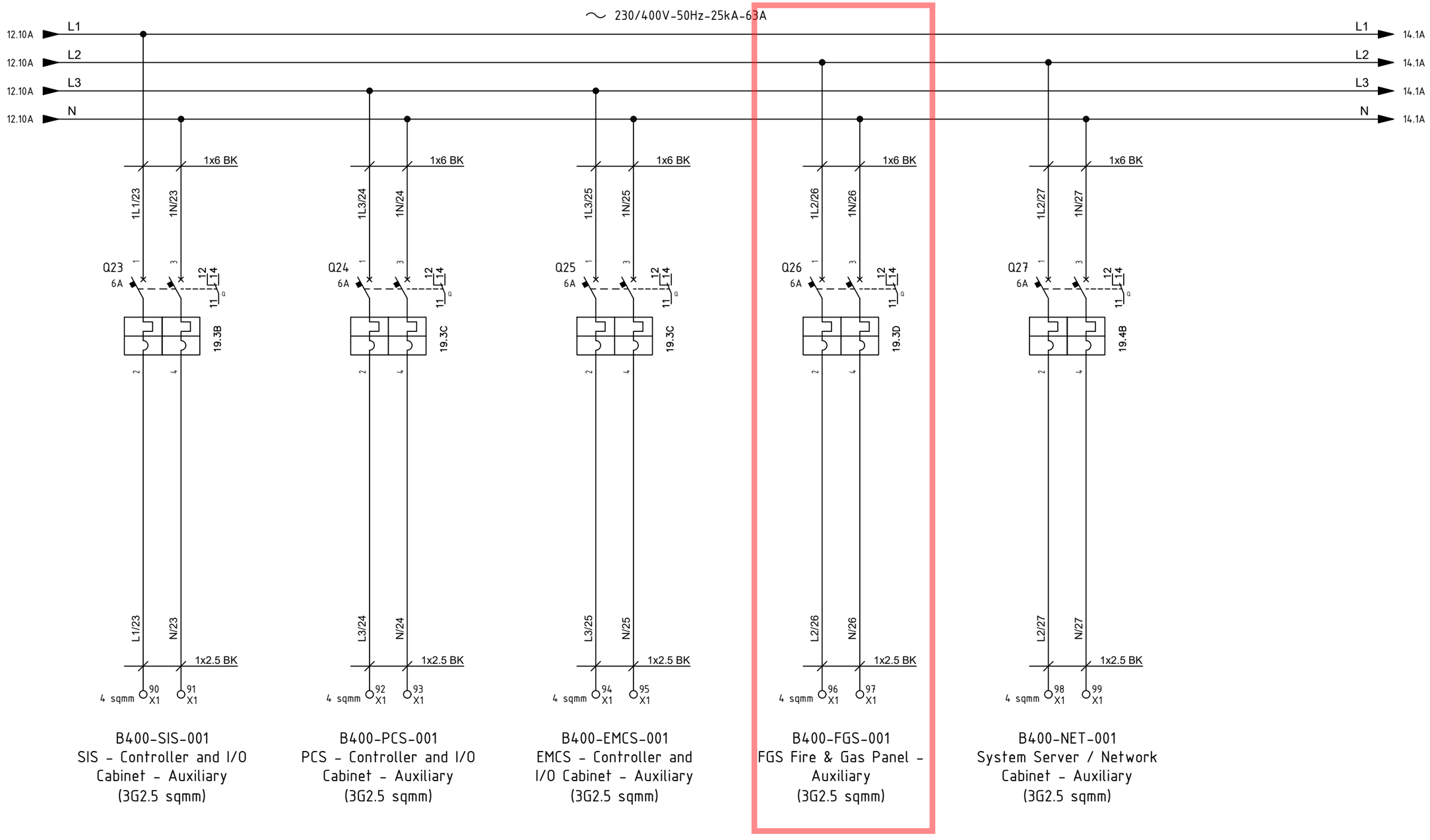
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SHEET 010

REV. 04

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00013 Rev. 04



B400-SIS-001
SIS - Controller and I/O Cabinet - Auxiliary
(3G2.5 sqmm)

B400-PCS-001
PCS - Controller and I/O Cabinet - Auxiliary
(3G2.5 sqmm)

B400-EMCS-001
EMCS - Controller and I/O Cabinet - Auxiliary
(3G2.5 sqmm)

B400-FGS-001
FGS Fire & Gas Panel - Auxiliary
(3G2.5 sqmm)

B400-NET-001
System Server / Network Cabinet - Auxiliary
(3G2.5 sqmm)

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
=					
+					
2	19/08/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
0	29/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n° : 231298/SD/33
Item n° : PF1002888/101

TITLE : "DP-200N1"
LV SWBD FUNCTIONAL DIAGRAMS
Functional Drawing

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

SCALE : NTS

A3

DRAWING NO. 1723002197-EL-DG-00033

SHEET 1,3

REV. 02

File Name : 1723002197-EL-DG-00033 Rev. 02

F.to UNI A3: 420mmx297mm

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	UP-200F4-QF32	: BREAKER F&G LINE B - UP-200F4-QF32			Dwg	1724000372-EL-DG-00009
	S/Sys	70-00	: F&G Control System			Module	
TASK	code	C10002883		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:	NA	Location:	B300	Cubicle:	NA
Switchboard:	UP-200F4				

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	240mA	FIXED	37,1ms

Testing & measurement instruments used

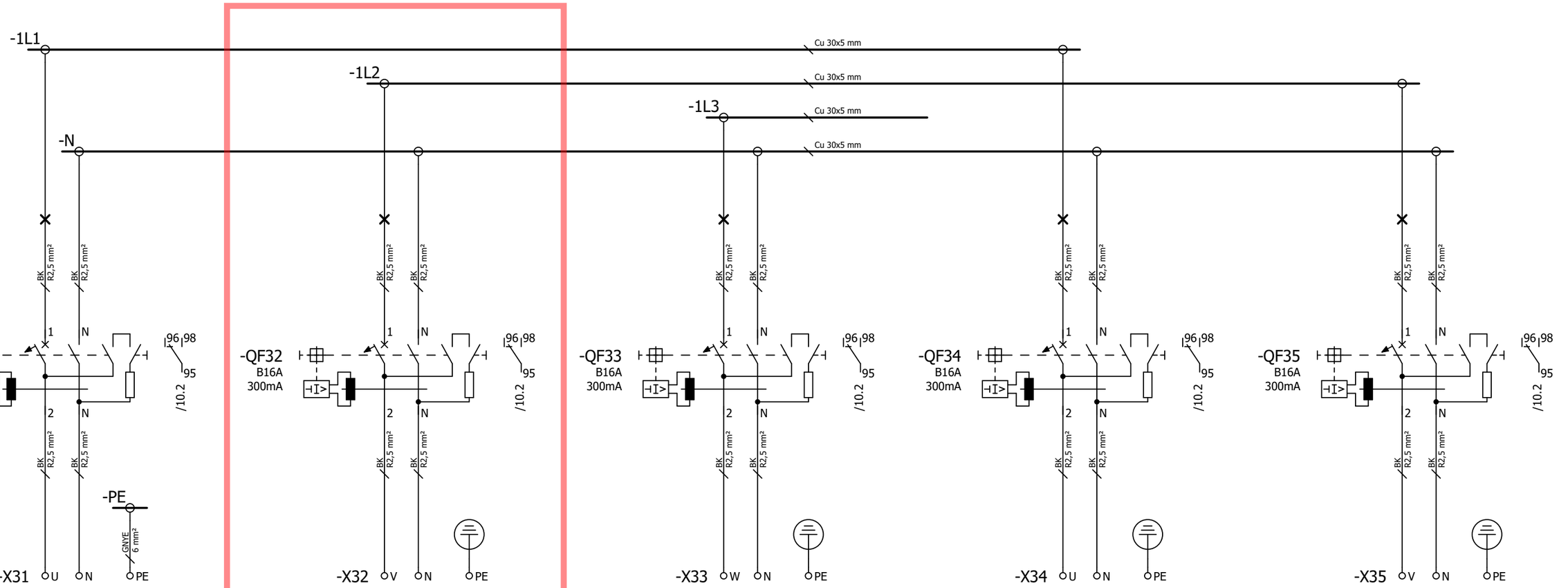
Type	Serial n°	Calibration certificate	Validity
FLUKE 1663	5380144	7727/24	10/07/2025

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	2024-11-13	2024-11-14	2024-11-14
Signature	PROVERLIS Digitaly signed by Mattia Girotti 2024-11-13T09:46:56.727Z	PROVERLIS Digitaly signed by Kristian Castellani 2024-11-14T08:17:36.402Z	PROVERLIS Digitaly signed by Witness waived 2024-11-14T08:40:58.412Z

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1000007888_080

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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 20 kVA
Circuit diagram

1000007888.090
10009760

1000007888_080 en

=
+ MBC1
& EFS

A3

sheet 7
sheets 11

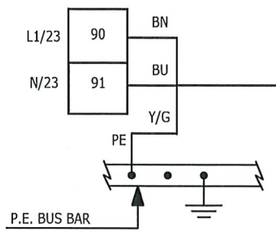
Section 4.2 Electrical
“As-Commissioned” interconnection diagrams

FROM	TO

DESCRIPTION: LIGHTING & SMALL POWER DB BOP
TAG NUMBER: DP-200N1

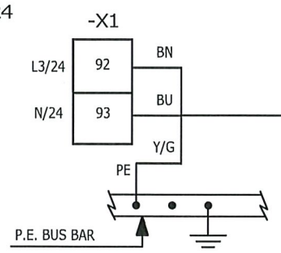
NO MARK UP
MARCO MORETTO
21/3/25

CUBICLE/CB: +03/Q23



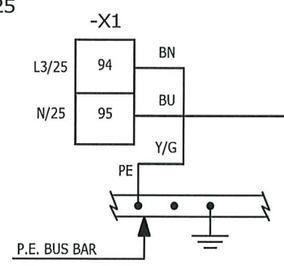
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3G2.5 mm²

CUBICLE/CB: +03/Q24



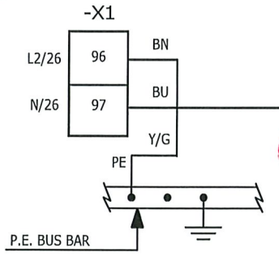
83105-CEL
3G2.5 mm²

CUBICLE/CB: +03/Q25



83106-CEL
3G2.5 mm²

CUBICLE/CB: +03/Q26

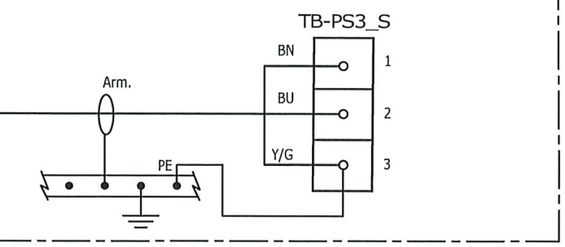


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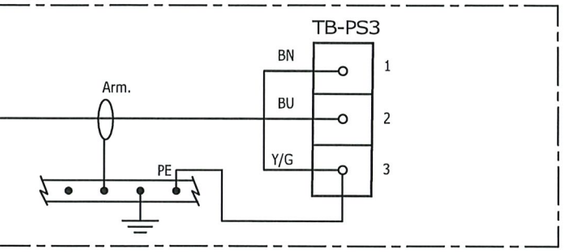
AS COMMISSIONED: MATTIA GIROTTI

NO MARK UP
MARCO MORETTO
21/3/25

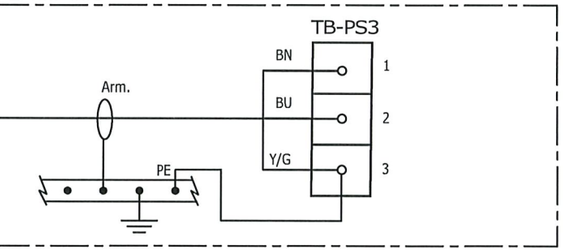
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TAG NUMBER: B400-SIS-001



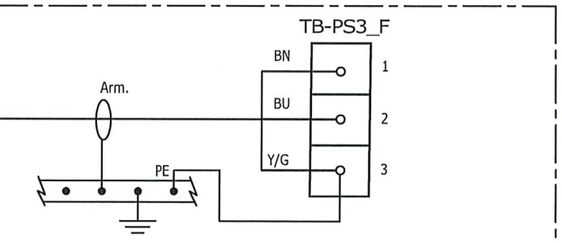
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TAG NUMBER: B400-PCS-001



DESCRIPTION: EMCS -CONTROLLER AND I/O CABINET - AUXILIARY
TAG NUMBER: B400-EMCS-001



DESCRIPTION: FGS FIRE & GAS PANEL - AUXILIARY
TAG NUMBER: B400-FGS-001



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
LIGHTING & SMALL POWER DB BOP

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 052

REV. 02

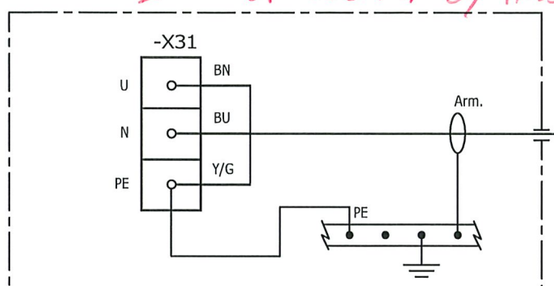
F.to UNI A3: 420mmx297mm

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

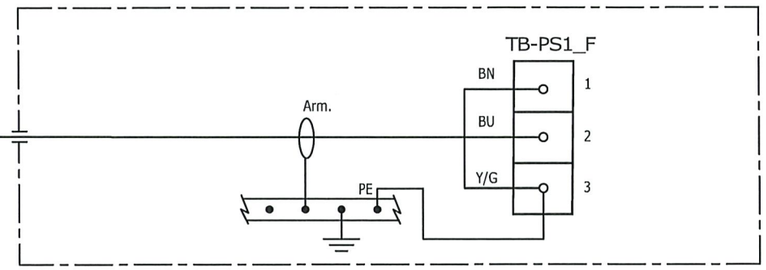
FROM	TO

DESCRIPTION: AC UPS - F&G DB
TAG NUMBER: ~~DP-200F4~~ UP-200 F4 BY PASS

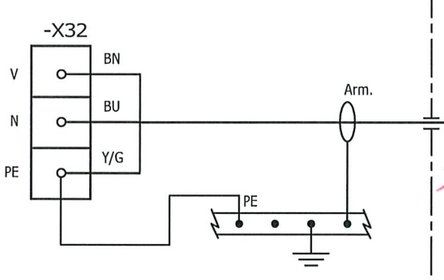
MARCO MORETTO 21/3/25



84401-CEL
3G2.5 mm²

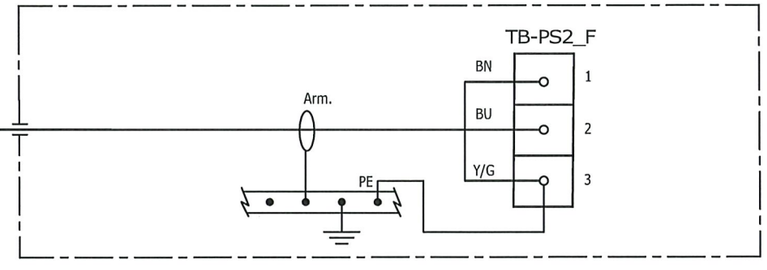


DESCRIPTION: FGS FIRE & GAS PANEL - LINE A
TAG NUMBER: B400-FGS-001



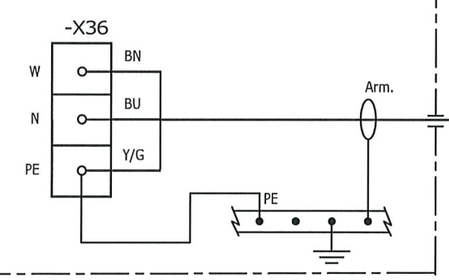
NO MARK UP
MARCO MORETTO 21/3/25

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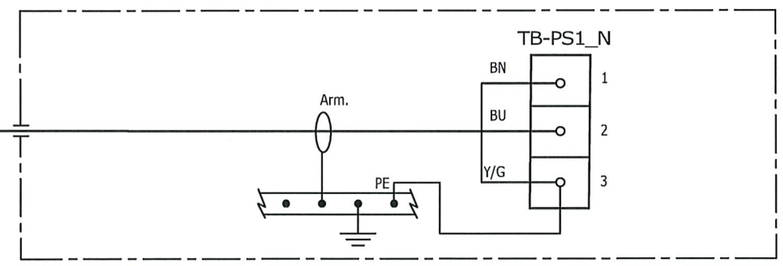


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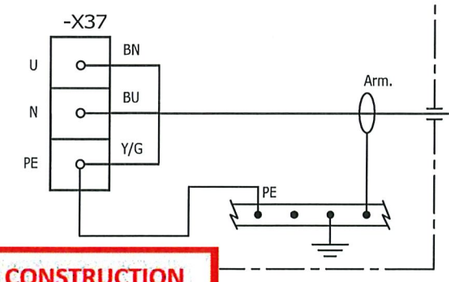
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TAG NUMBER: B400-NET-001



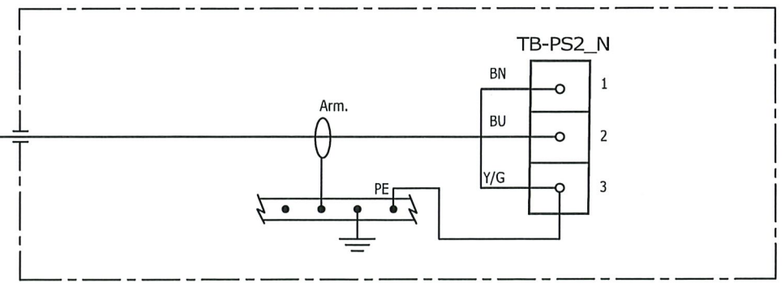
84403-CEL
3G2.5 mm²



DESCRIPTION: SYSTEM SERVER / NETWORK CABINET - LINE B
TAG NUMBER: B400-NET-001



84404-CEL
3G2.5 mm²



AS COMMISSIONED: NATALIA GIROTTI

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 – F&G DB (DP-200F4)

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 043

REV. 02

F.to UNI A3: 420mmx297mm

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

NOT APPLICABLE

Section 4.3 Instrumentation functional test sheets index

NOT APPLICABLE

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: 70-00

Miscellaneous	70-00 F&G Control System						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03054	OTP - FandG and ESD CandE Logics	ONSHORE	C10004617	5300	100	2025-04-22	-
		OFFSHORE	C10004941	5300	0	-	-

ITEM	Tag	123A90-PML-COM-PRO-03054 : OTP - FandG and ESD CandE Logics				Dwg	123A90-PML-COM-PRO-03054
	S/Sys	70-00 : F&G Control System				Module	
TASK	code	C10004617		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-03054

Associated subsystems: 70-00,70-10,70-11,70-12,70-13,70-14,70-15,70-16,70-17,70-18,79-11,79-12,79-13,79-14,79-15

Completion date: 19/04/2025

Comments/Remarks:

	Performed by	● WITNESS ☐ REVIEW	● WITNESS ☐ REVIEW
	COMMISSIONING DISCIPLINE LEAD	RM COMMISSIONING MANAGER	CPY COMMISSIONING MANAGER
Name	Giandonato Delmissier	Anthony Iveson	Jamie McAllister
Date	2025-04-19	2025-04-19	2025-04-22
Signature	PROVERLIS Digitaly signed by Giandonato Delmissier 2025-04-19T08:31:39.185Z	PROVERLIS Digitaly signed by Anthony Iveson 2025-04-19T08:33:30.753Z	PROVERLIS Digitaly signed by Jamie McAllister 2025-04-22T15:14:19.573Z

Base Load Power Hub (BLPH)

OTP – F&G and ESD C&E Logics

Document Number: 123A90-PML-COM-PRO-03054

Document Class: 2

01	09/03/2025	Accepted for Construction (AFC)	G. DEL MISSIER	A. IVESON	M.BRUNELLI
00	08/02/2025	Issue for Review (IFR)	D.CASAGRANDE	A. IVESON	M.BRUNELLI
Rev.	Date	Description	Prepared	Reviewed	Approved

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Revision / Change Log

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

HOLDS LIST

No.	Description
1	
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3	
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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 topside 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.

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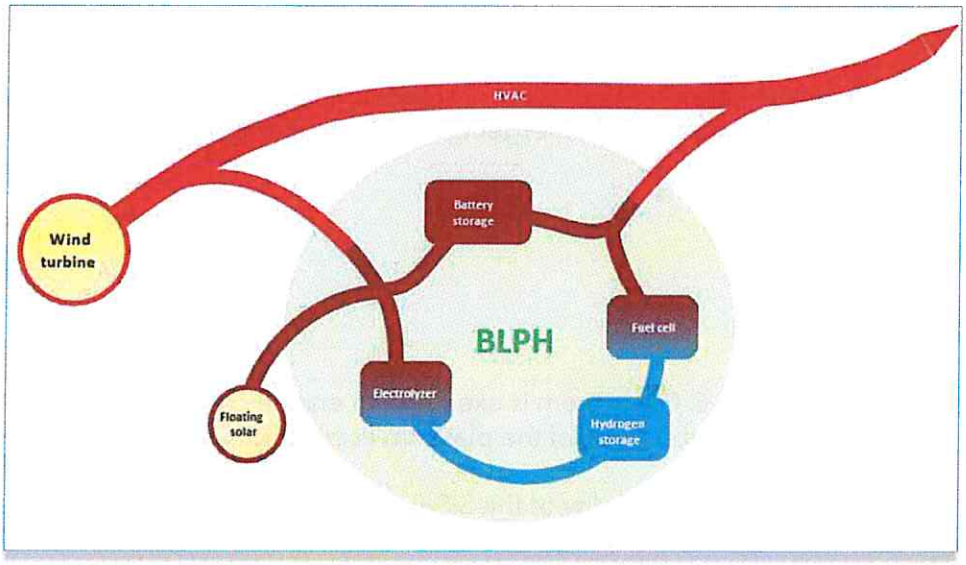


Figure 3 - BLPH Concept

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 scope of this document is intended to provide a procedure to ensure the functionality of the SIS and FIRE & GAS systems in normal and emergency condition of the platform according to the project requirements.

3. OTP SUMMARY

3.1 Test Objective

The operating test of the SIS-Fire & Gas system is executed to ensure the functionality of the system in normal and emergency condition of the platform according to the project requirements.
These OTP will demonstrate the functionality of the SIS-Fire & Gas system scope as defined in Customer supplied IO Lists, Control and Process Shutdown narratives, P&IDs, Process Graphics design inputs, Alarm list, C&E Documents, Emergency Shutdown Diagrams, Layout graphics and approved design documents available in Crosswind project.

3.2 Test and System Description

Safety system (SIS-Fire & Gas) is combined into two System cabinet but with segregated racks for each system. For Safety System there are 1 dedicated to SIS and 3 for Fire & Gas marshalling cabinets included. There are 2 PCS system cabinets and 1 dedicated network cabinet. Network is redundant via direct connection between PCS and SIS and Fire & Gas. Modbus TCP is used as communication to other packages. For network architecture refer to document 172400594-IN-DD-00015.

This document is related to the following ICSS systems / subsystems:

- SS 79-00 Emergency Shutdown Systems (SIS).
- SS 70-00 Fire and Gas Control Systems (F&G).

Reference documents:
123A90-DDL-IN-SP-40100 - Safety System Specification (SIS-Fire & Gas).
123A90-DDL-SAF-DL-30028 - Fire & Gas Detection (plant area).

3.3 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.

3.4 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)

3.5 Acceptance Criteria

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 wrong connections.

The testing procedures will be considered accepted when all of the steps in this document will be successfully completed.

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
[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

Document ID	Document Title
[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
[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)

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Document ID	Document Title
[42] 123A90-PML-COM-PRO-03063	OTP – BESS (CPI)

Table 2: Project Documents

4.1.3 Vendor Documents

- N/A

Document ID	Document Title
n/a	

Table 3: Vendor Documents

4.2 Acronyms and Abbreviations

Acronyms and Abbreviations	Description
BLPH	Base Load Power Hub
BESS	Battery Energy Storage System
C&E	Cause & Effects
CCS	Central Control System
CPI	Company Provided Item
E&I	Electrical & Instrumentation
ESD	Emergency Shut Down
F&G	Fire & Gas
FAT	Factory Acceptance Test
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
LOTO	Lock-Out / Tag-Out
LV	Low Voltage
OEM	Original Equipment Manufacturer
ORR	Operations Readiness Review
OTP	Operational Test Procedure (Commissioning)

Acronyms and Abbreviations	Description
PCS	Process Control System
PSV	Pressure Safety Valve
RFC	Ready for Commissioning
RFO	Ready for Operation
SAT	Site Acceptance test
SIS	Safety Instrumented System
UPS	Uninterruptible Power Supply
VooW	Van Oord Offshore Wind
WEF	Work Execution Flow Scheme

Table 4: Acronyms and Abbreviation

5. OTP TEST REQUIREMENTS – ONSHORE WORKSITE

This chapter 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 Specialist F&G and SIS with Operator workstation

5.1.2 Test duration estimate

The test duration should be as follows:

- 6 days approx.

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 YOKOGAWA will provide a qualified specialist to assist with all aspects of commissioning of the SIS and F&G systems.

5.1.4 Items postponed being tested

- Not Applicable

5.1.5 Items HARDWIRED to be tested

Document Number:	Document description:
1724000594-IN-LIS-00004	PCS and Safety System IO List (HW-SW)

5.2 OTP TEST REQUIREMENTS – ON SHORE WORKSITE

5.2.1 Pre-Commissioning achievement

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

5.2.2 Commissioning achievement

The commissioning achievement will be the successful operation, functionality of SIS and F&G systems, installed and put in operation during the WORKSITE phase:

- SS 79-00 SIS (ESD)
- SS 70-00 FGS

5.2.3 Status of Required Associated Subsystem

- SS 86-00 Server Cabinet
- SS 86-00 Network Cabinet

5.2.4 Special tools & test equipment

The following special tool and Test Equipment are required:

- Continuity tester (Multimeter).
- Toolbox.
- Hart Communicator.
- Portable radios (2 pcs + 1 per Technical Room).
- Gas bottles for gas sensors test.
- Smoke bottles for smoke detector test.
- UV lamp for flame detector test.

TESTING & MEASUREMENT INSTRUMENT USED			
Type	Serial N.	Calibration certificate	Validity
FGS FSIM-UV-18	1549	N/A	MFGDATE 6/2024
SOLO 330-005	FM566319	255-2945429	
W 0480628-8	6810388	ISO 7866	05/12/2029
W 0451403-2	6813239	ISO 7866	16/5/2029
FLUKE 175	AW1/018	17140769	10/02/2025

5.2.5 Consumable list

- Not applicable

5.2.6 Commissioning spare parts

- Not applicable

5.2.7 Temporary facilities

- Temporary control room

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		10-03-2025
2.	No Mechanical Completion or Pre-commissioning punch list 'A' items are outstanding against the system to be commissioned.	OK		10-03-2025
3.	Factory Acceptance Test Procedure has been carried out successfully (refer to Doc. 1724000594-QC-PRO-00031)	OK		10-03-2025
4.	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		10-03-2025
5.	A final walkdown of the system has been completed, to ensure that the system and the area are ready for commissioning (correct installation of all sensors/elements).	OK		10-03-2025
6.	Check that areas are free for work and escape routes are clear of any obstructions.	OK		10-03-2025
7.	All safety barriers and warning signs have been installed.	OK		10-03-2025
8.	Ensure that proper communications have been established between parties involved in the implementation of the procedure.	OK		10-03-2025
9.	Verify availability of test equipment as per section 5.2.4.	OK		10-03-2025
10.	System(s) isolations as per LOTO procedure defined within HSSE Permits to Work and Commissioning procedures duly prepared and approved	OK		10-03-2025

11.	All yard personnel have been duly notified by dedicated LUN (Livening Up Notification) that the system(s) is ready for commissioning.	OK		10-03-2025

5.3.2 Electrical preparation

- Check that grounding and bonding are in accordance with applicable documents.

5.3.3 Mechanical preparation

- Not applicable

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		10-03-2025
2.	Verify that all relevant associated systems / subsystems are ready.	OK		10-03-2025
3.	Check Inhibit and Override register has been prepared and validated.	OK		10-03-2025
4.	Verify that relevant equipment/ components are available and in operation for start of commissioning activities.	OK		10-03-2025
5.	Verify availability of test equipment as per section	OK		10-03-2025

5.3.5 Piping preparation

- Not applicable

5.3.6 Additional Discipline preparation

- Not applicable

5.4 OTP TEST STEPS - ONSHORE WORKSITE

In the following steps the functionality of the SIS and F&G shall be tested:

- SS 79-00 SIS (ESD)
- SS 70-00 FGS

5.4.1 Test Preparation

Need to Verify:

- SS 86-00 Server Cabinet
- SS 86-00 Network Cabinet

All systems and subsystems involved in this procedure must be ready for commissioning and available.

5.4.2 OTP DESCRIPTION WORKSITE TEST OF SIS and F&G

The previous chapters must be successfully performed prior to commissioning of the SIS and F&G.
Relevant SIS and F&G ITRs must be closed and accepted.
Other system OTP relevant to SIS and F&G C&E shall be finalized and approved.
Dedicated output/input signals from/to F&G to/from SIS will be forced and simulated during this OTP.

Master document to follow up during this OTP will be:
123A90-DDL-IN-CE-40002 F&G - Cause and Effect Matrix
123A90-DDL-IN-CE-40000 SIS - Cause and Effect Matrix

All points tested and confirmed OK will be marked up on C&E, each page on C&E will be signed off and stamped when test is completed together with dedicated OTP steps signed below in this OTP.
If some Steps are already performed and accepted as part of other OTP, they can also be signed off in this OTP with attached documentation as a proof of acceptance.
During Loop Check hand pump, calibrated gas, IR light, aerosol bottle, etc. test equipment will be used to have real simulation where possible.
During Functional test it can be proceed with simulation for instrument that were tested by real simulation during Loop Check.
Cause can be simulated, and effect will be checked in real action, logic will be verified if correctly implemented as per C&E documents.
Through the OTP shall be verified the override functionality Bypass, Maintenance Inhibit, Reset function (Manual and Auto), relevant timers, graphic representation and animation, Alarm activation on OWS.

5.4.3 OTP Methodology

To avoid duplication of the test, the Shutdown output to the effects will be verified only once.
Once the reset and normalization of the tripped bar has been carried out, the effect (valve, motor, etc.) will not be normalized until the test is completed.
The next shutdowns will be verified only in the HMI.
The cascade effect from a higher level will be tested as a normal input of the level under test and will be executed using one of the causes of this level. The output or effect of this higher level towards the lower level will not need to be checked when the higher-level test is performed.

Testing of Inputs:
At the beginning of the test of each bar all the associated causes must have their bypass active.
Activate the trip of the signal to test and verify that the bar is not tripped, and the corresponding alarms appear in the HMI. Remove the bypass and verify the trip of the bar and alarms in HMI.

Testing of Outputs:
At the beginning of the test of each bar all the associated effects must have their bypass active.
After the Trip of the bar, verify that no effect was activated.
Remove the bypass of the effects one by one and verify that the corresponding effect was activated, and the alarms appear in HMI.

5.4.4 Test step

In this section there will be described step procedure for OTP of SIS and F&G C&E documents.
It is divided in section as per SIS and PSD levels following same structure as SIS and F&G C&E documents.
Once each level has been successfully completed dedicated section of this OTP will be signed off.
SIS-Fire & Gas C&E need to be read in conjunction with documents listed in point 4.1.3 Project document from [1] to [18]

5.4.5 SIS SYSTEM TEST

5.4.5.1 ASD Level

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant Process Safety C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	ok		19.03.2025
2	ASD level check see document 123A90-DDL-IN-CE-40000 page 5.	ok		19.03.2025
3	Test the signal 70-XA-001 from F&G and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 5.	ok		19.03.2025
4	Test all push buttons ADS in FZ 01/03/04/ 06/07 and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 5.	ok		19.03.2025
5	Verify that all relevant HMI alarms are activated and graphics symbols animated and indicated correctly to the operator as detailed in the Process Safety C&E document 123A90-DDL-IN-CE-40000 page 5.	ok		19.03.2025
6	Check and confirm all relevant Time Delay timers are configured and executed as detailed in the Process Safety C&E document 123A90-DDL-IN-CE-40000. T3: 30 Seconds T4: 15 Seconds	ok		19.03.2025

Step	Description	Result	Verified by	Date
7	Normalize input to ASD and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	ok		14.03.2025

5.4.5.2 ESD-1D level

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant Process Safety C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	ok		14.03.2025
2	ESD 1 D level check see document 123A90-DDL-IN-CE-40000 page 6.	ok		14.03.2025
3	Test all signals from F&G and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 6.	ok		14.03.2025
4	Test all input transmitters on H2 Storage Tank and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 6.	ok		14.03.2025
5	Test all push buttons EDS-D1 in FZ 01/03/04/ 06/07 and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 6.	ok		14.03.2025
6	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the ESD -1D and C&E documents.	ok		14.03.2025
7	Check and confirm all relevant Time Delay timers are configured and executed as detailed in the Process Safety C&E document 123A90-DDL-IN-CE-40000. T1: 115 min. ~~Seconds~~. T2: 5 Seconds. T4: 15 (T4<T3) Seconds.	ok		14.03.2025

Step	Description	Result	Verified by	Date
	T5: 24 hr (T1 → T2) Seconds.	OK		14-03-2025
8	Normalize input to ESD-1D and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	OK		14-03-2025

5.4.5.3 ESD1 level

Step	Description	Result	Verified by	Date
1	Check that the following is completed and Available. Ensure that all loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	OK		14-03-2025
2	ESD-1 level check see document 123A90-DDL-IN-CE-40000 page 7.	OK		14-03-2025
3	Test all push buttons EDS-1 in FZ 01/03/04/ 06/07 and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 7.	OK		14-03-2025
4	Test the ESD-1 push buttons ONSHORE 950-ESD-00001 and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 7.	OK		14-03-2025
5	Test the signal 85-XA-004 BESS Alarm Thermal Run Away and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 7.	OK		14-03-2025
6	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the ESD -1D and C&E documents.	OK		14-03-2025
7	Normalize input to ESD-1D and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	OK		14-03-2025

5.4.5.4 PSD level

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	OK		14.03.2025
2	PSD level check see document 123A90-DDL-IN-CE-40000 page 8.	OK		14.03.2025
3	Test all input transmitters listed in C&E Charts PSD and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 8.	OK		14.03.2025
4	Test all Cumulative Critical Fault from: • Electrolyzer 20-XA-003 [✓] • Fuel Cell 80-XA-003 [✓] • Bess 85-XA-003 [✓] • Instrument package 63-XA-003 [✓] • Nitrogen Package 64-XA-003 [✓] • HVAC (HV Container) 77-XA-001 [✓] • HVAC (LV Container) 77-XA-002 [✓] • HVAC (UPS Container) 77-XA-003 [✓] • HVAC (ITER Container) 77-XA-004 [✓] • Navaids Package 72-XA-001 [✓] and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 8.	OK		19.03.2025
5	Test the signal 50-XA-003 S/D Electrolyzer PKG from FGS System for O2 Confirmed and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 8.	OK		14.03.2025
6	Test the signal 70-XA-003 F&G UCP Panel Fault Water Treatment and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 8.	OK		18.03.2025
7	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the PSD and C&E documents.	OK		14.03.2025
8	Normalize input to PSD and Reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	OK		14.03.2025

5.4.5.5 MOB

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	OK		14.03.2025
2	MOB check document 123A90-DDL-IN-CE-40000 page 9.	OK		14-03-2025
3	Test all push buttons MOB in FZ 01/03/04/ 06/07 and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40000 page 9.	OK		14-03-2025
4	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the MOB and C&E documents.	OK		14-03-2025
5	Normalize input to MOB and Reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	OK		14-03-2025

5.4.6 FIRE & GAS SYSTEM TEST

5.4.6.1 FIRE ZONE 06 B100 (HV CONTAINER)

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	OK		17.03.2025
2	FIRE ZONE 06 (HV CONTAINER) check document 123A90-DDL-IN-CE-40002 page 5.	OK		17-03-2025
3	Test all H2 GAS sensors listed in C&E page 5 and confirm all relevant effects have been activated as per document.	OK		17-03-2025

Step	Description	Result	Verified by	Date
4	Test all SMOKE sensors listed in C&E page 5 and confirm all relevant effects have been activated as per document.	OK		14.03.2025
5	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the FIRE ZONE 06 and C&E documents.	OK		14.03.2025
6	Verify that all SOUNDERS AND BEACONS are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the C&E documents page 17.	OK		14.03.2025
7	Normalize input to FIRE ZONE 06 and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	OK		14.03.2025

5.4.6.2 FIRE ZONE 04 B200 (LV Technical Room)

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	OK		15.03.2025
2	FIRE ZONE 04 (LV CONTAINER) check document 123A90-DDL-IN-CE-40002 page 6.	OK		15.03.2025
3	Test all H2 GAS sensors listed in C&E page 6 and confirm all relevant effects have been activated as per document.	OK		15.03.2025
4	Test all SMOKE sensors listed in C&E page 6 and confirm all relevant effects have been activated as per document.	OK		15.03.2025
5	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the FIRE ZONE 04 and C&E documents.	OK		15.03.2025
6	Verify that all SOUNDERS AND BEACONS are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the C&E documents page 17.	OK		15.03.2025
7	Normalize input to FIRE ZONE 04 and reset activated trip and alarms.	OK		15.03.2025

Step	Description	Result	Verified by	Date
	Verify and confirm that system has returned to normal operating condition.	OK		15.03.2025

5.4.6.3 FIRE ZONE 04 B300 (UPS TECHNICAL ROOM)

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	OK		15.03.2025
2	FIRE ZONE 04 (UPS CONTAINER) check document 123A90-DDL-IN-CE-40002 page 7.	OK		15.03.2025
3	Test all H2 GAS sensors listed in C&E page 7 and confirm all relevant effects have been activated as per document.	OK		15.03.2025
4	Test all SMOKE sensors listed in C&E page 7 and confirm all relevant effects have been activated as per document.	OK		15.03.2025
5	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the FIRE ZONE 04 and C&E documents.	OK		15.03.2025
6	Verify that all SOUNDERS AND BEACONS are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the C&E documents page17.	OK		15.03.2025
7	Normalize input to FIRE ZONE 04 and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	OK		15.03.2025

5.4.6.4 FIRE ZONE 04 B400 (ITR TECHNICAL ROOM)

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B	OK		15.03.2025

Step	Description	Result	Verified by	Date
	items. Confirm that communication between SIS-F&G and PCS is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	OK		15.03.2025
2	FIRE ZONE 04 (ITR CONTAINER) check document 123A90-DDL-IN-CE-40002 page 8.	OK		15.03.2025
3	Test all H2 GAS sensors listed in C&E page 8 and confirm all relevant effects have been activated as per document.	OK		15.03.2025
4	Test all SMOKE sensors listed in C&E page 8 and confirm all relevant effects have been activated as per document.	OK		15.03.2025
5	Verify that all SOUNDERS AND BEACONS are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the C&E documents page17.	OK		15.03.2025
6	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the FIRE ZONE 04 and C&E documents.	OK		15.03.2025
7	Normalize input to FIRE ZONE 04 and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	OK		15.03.2025

5.4.6.5 FIRE ZONE 01 FUEL CELL

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	OK		14.03.2025
2	FIRE ZONE 01 FUEL CELL check document 123A90-DDL-IN-CE-40002 page 9.	OK		14.03.2025
3	Test the signal 80-XA-001 GAS Confirmed in Fuel Cell and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40002 page 9.	OK		14.03.2025
4	Test the signal 80-XA-002 SMOKE Confirmed in Fuel Cell and confirm all relevant effects have	OK		14.03.2025

Step	Description	Result	Verified by	Date
	been activated as per document 123A90-DDL-IN-CE-40002 page 9.	OK		14-03-2025
5	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the FIRE ZONE 01 and C&E documents.	OK		14-03-2025
6	Verify that all SOUNDERS AND BEACONS are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the C&E documents page 17.	OK		14-03-2025
7	Normalize input to FIRE ZONE 01 and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	OK		14-03-2025

5.4.6.6 FIRE ZONE 05 BESS

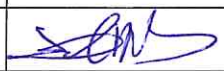
Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	OK		13-03-2025
2	FIRE ZONE 05 BESS check document 123A90-DDL-IN-CE-40002 page 10.	OK		13-03-2025
3	Test the signal 85-XA-001 GAS Confirmed in Bess and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40002 page 10.	OK		13-03-2025
4	Test the signal 85-XA-002 SMOKE Confirmed in Bess and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40002 page 10.	OK		13-03-2025
5	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the FIRE ZONE 05 and C&E documents.	OK		13-03-2025
6	Verify that all SOUNDERS AND BEACONS are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the C&E documents page 17.	OK		13-03-2025

Step	Description	Result	Verified by	Date
7	Normalize input to FIRE ZONE 05 and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	OK		13.03.2025

5.4.6.7 FIRE ZONE 03 ELECTROLYZER

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	ok		13.03.2025
2	FIRE ZONE 03 ELECTROLYSER check document 123A90-DDL-IN-CE-40002 page 11.	ok		13.03.2025
3	Test the signal 20-XA-001 GAS Confirmed in Electrolyzer and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40002 page 11.	ok		13.03.2025
4	Test the signal 20-XA-002 SMOKE Confirmed in Electrolyzer and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40002 page 11.	ok		13.03.2025
5	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the FIRE ZONE 03 and C&E documents.	ok		13.03.2025
6	Verify that all SOUNDERS AND BEACONS are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the C&E documents page 17.	ok		13.03.2025
7	Normalize input to FIRE ZONE 03 and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	OK		13.03.2025

5.4.6.8 FIRE ZONE 05 WATER TREATMENT

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	ok		13.03.2025
2	FIRE ZONE 05 WATER TREATMENT check document 123A90-DDL-IN-CE-40002 page 12.	ok		13.03.2025
3	Test the signal 50-XA-001 GAS Confirmed in water Treatment and confirm all relevant effects have been activated as per documents 123A90-DDL-IN-CE-40002 page 12.	ok		13.03.2025
4	Test the signal 50-XS-002 SMOKE Confirmed in Water Treatment PKG and confirm all relevant effects have been activated as per documents123A90-DDL-IN-CE-40002 page 12.	ok		13.03.2025
5	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the FIRE ZONE 05 and C&E documents.	ok		13.03.2025
6	Verify that all SOUNDERS AND BEACONS are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the C&E documents page 17.	ok		13.03.2025
7	Normalize input to FIRE ZONE 05 and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	ok		13.03.2025

5.4.6.9 FIRE ZONE 01/02/03/05 HYDROGEN IN OPEN AREA

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	OK		14.03.2025
2	FIRE ZONE 01/02/03/05 HYDROGEN IN OPEN AREA check document 123A90-DDL-IN-CE-40002 page 13.	OK		14.03.2025
3	Test the signals H2 GAS FZ-01/02/03/05 and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40002 page 13.	OK		14.03.2025
4	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the FIRE ZONE 01/02/03/05 and C&E document 123A90-DDL-IN-CE-40002.	OK		14.03.2025
5	Verify that all SOUNDERS AND BEACONS are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the C&E document 123A90-DDL-IN-CE-40002 page17.	OK		14.03.2025
6	Normalize input to FIRE ZONE 01/02/03 /05 and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	OK		14.03.2025

5.4.6.10 FIRE ZONE 03 OXYGEN IN OPEN AREA

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA CI server is available, and all graphic pages are updated as last revision.	OK		12.03.2025

Step	Description	Result	Verified by	Date
2	FIRE ZONE 03 OXYGEN IN OPEN AREA check see document 123A90-DDL-IN-CE-40002 page 14.	OK		12-03-2025
3	Test the signals O2 GAS FZ-03 and confirm all relevant effects have been activated as per document 123A90-DDL-IN-CE-40002 page 14.	Ok		12.03.2025
4	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the FIRE ZONE 03 and C&E document 123A90-DDL-IN-CE-40002.	Ok		12.03.2025
5	Verify that all SOUNDERS AND BEACONS are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the C&E document123A90-DDL-IN-CE-40002 page 17.	Ok		12-03-2025
6	Normalize input to FIRE ZONE 03 and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	Ok		12-03-2025

5.4.6.11 FIRE ZONE 01/02/03/04/05/06 FIRE IN OPEN AREA

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA IC server is available, and all graphic pages are updated as last revision.	Ok		14-03-2025
2	FIRE ZONE 01/02/03/04/05/06 FIRE IN OPEN AREA check document 123A90-DDL-IN-CE-40002 page 15.	Ok		14-03-2025
3	Test all signals FDZ (UV/IR) FZ 01/02/ 03/04/ 05/06 and confirm all relevant effects have been activated as per 123A90-DDL-IN-CE-40002 page 15.	Ok		14-03-2025
4	Verify that all relevant HMI alarms are activated and graphics symbols animated and indicated correctly to the operator as detailed in the FIRE ZONE 01/02/03/ 04/ 05/06 and C&E document 123A90-DDL-IN-CE-40002 page 15.	OK		14-03-2025

Step	Description	Result	Verified by	Date
5	Verify that all SOUNDERS AND BEACONS are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the C&E document 123A90-DDL-IN-CE-40002 page 17.	ok		14.03.2025
6	Normalize input to FIRE ZONE 01/02/03/04/05/06 and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	ok		14.03.2025

5.4.6.12 FIRE ZONE 01/02/03/04/05/06/7 MFA PUSH BUTTONS

Step	Description	Result	Verified by	Date
1	Check that the following is completed and available: Ensure that all Loops for relevant C&E page that is going to be tested are completed and without outstanding punch B items. Confirm that communication between SIS and F&G is working properly. Ensure that SCADA IC server is available, and all graphic pages are updated as last revision.	ok		12.03.2025
2	FIRE ZONE 01/02/03/04/05/06 MFA PUSH BUTTON check document 123A90-DDL-IN-CE-40002 page 16.	ok		12.03.2025
3	Test all signals MFA FZ 01/02/ 03/ 04/ 05/06 and confirm all relevant effects have been activated as per 123A90-DDL-IN-CE-40002 page 16.	ok		12.03.2025
4	Verify that all relevant HMI alarms are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the FIRE ZONE 01/02/03/ 04/ 05/06 and C&E document 123A90-DDL-IN-CE-40002 page 16.	ok		12.03.2025
5	Verify that all SOUNDERS AND BEACONS are activated, and graphics symbols animated and indicated correctly to the operator as detailed in the C&E document 123A90-DDL-IN-CE-40002 page 17.	ok		12.03.2025
6	Normalize input to FIRE ZONE 01/02/03/04/ 05/06 and reset activated trip and alarms. Verify and confirm that system has returned to normal operating condition.	ok		12.03.2025

5.4.7 OTP Worksite Tests Notes and Remark

OTP WAS COMPLETED WITH PUNCH LIST ITEMS RAISE AGAINST RELEVANT SUB - SYSTEMS.

5.4.8 OTP Worksite Tests Certifying Authority Table of Attendances

Name and Surname	Certifying Authority	Position	Signature

5.4.9 OTP Worksite Test Final Signatures and Company Acceptance

Name and Surname	Company Representative	Position	Signature
ANTHONY IVESON	ROSETTI MARINO	COMM MGR.	
JAMIE MCALLISTER	CLV	COMM 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 pulled up, tested and completed.
- All panels are in normal operation and no alarm pending.
- System to remain active after completion of validation tests.

5.6 REINSTATEMENT AND PRESERVATION TASKS

After functional tests have been completed, system / sub-systems are left in safety condition and that they are operational.

After the tests have been completed, the SIS and F&G systems are left in operational condition.

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 SIS and F&G. 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:

- 4 days.

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 SIS and F&G

- SS 86-00 Server Cabinet
- SS 86-00 Network Cabinet

6.2.4 Special Tools & Test Equipment

The following special tool and Test Equipment are required:

- Continuity tester (Multimeter)
- 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

- Not applicable

6.2.7 Temporary Facilities

- Not applicable

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.	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).			
3.	A final walkdown of the system has been completed, to ensure that the system and the area are ready for start-up.			
4.	Verify availability of test equipment as per section 6.2.4.			
5.	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.			

6.3.3 Mechanical Preparation

- Not applicable

6.3.4 Instrument Preparation

Step	Description	Result	Verified by	Date
1.	Verify all Panels are available as per section 6.2.3			

6.3.5 Piping Preparation

- Not applicable

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 86-00 NETWORK CABINET is available.
- SS 86-00 SERVER CABINET 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
1.	Check and confirm all relevant systems / subsystems are ready. • SS 70-00 F&G • SS 79-00 SIS (ESD) • SS 86-00 Server Cabinet • SS 86-00 Network Cabinet			

Step	Description	Result	Verified by	Date
2.	Verify and confirm that Systems has to normal operating condition.			

6.4.3 OTP Site Tests Notes and Remarks

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

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 Summery System Reports

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 70-00 & process: COMM

Electrical	70-00 F&G Control System						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
DP-200N1-Q26	BREAKER F&G AUX - DP-200N1-Q26	ONSHORE	C10002882	FTR-2	100	2024-10-29	-
UP-200F4-QF31	BREAKER F&G LINE A - UP-200F4-QF31	ONSHORE	C10002881	FTR-2	100	2024-11-14	-
UP-200F4-QF32	BREAKER F&G LINE B - UP-200F4-QF32	ONSHORE	C10002883	FTR-2	100	2024-11-14	-

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 70-00 & process: COMM

Miscellaneous	70-00 F&G Control System						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
123A90-PML-COM-PRO-03054	OTP - FandG and ESD CandE Logics	ONSHORE	C10004617	5300	99	-	-
		OFFSHORE	C10004941	5300	0	-	-

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	70	Safety and Facility Systems
SUBSYSTEM	70-00	F&G Control System

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000415	A	83107-CEL C10000626	multiple earthing cables connected to one earthing connection. (See attached photo) .	.		Ecarotenuto 2024-11-09	2024-11-29	Ecarotenuto 2024-11-29	2024-11-29
C30000343	B	84401-CEL C10000594	Plastic cable ties used to fix the cable tag should be replaced on all external routing.	.		Gtangianu 2024-11-08	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000344	B	84401-CEL C10000594	Missing plastic cable tag inside the panel (UP-200F4)	.		Gtangianu 2024-11-08	2024-11-23	Lmussi 2024-11-23	2024-11-23
C30000345	B	84401-CEL C10000594	Identification tag wires are wrong.	.		Gtangianu 2024-11-08	2024-12-16	Gtangianu 2024-12-16	2024-12-16
C30000346	B	84401-CEL C10000594	Platic cable ties to be replaced on external routing.Cable needs to be fixed also on cable trays inside B-400.	.		Gtangianu 2024-11-08	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000347	B	84401-CEL C10000594	Missing ties to be fix wire grounding armour cable .	.		Gtangianu 2024-11-08	2025-02-21	JKrizanic 2025-02-21	2025-02-21
C30000348	B	84401-CEL C10000594	Identification number on terminal strip is missing [2]	.		Gtangianu 2024-11-08	2025-03-11	JKrizanic 2025-03-11	2025-03-11
C30000349	B	84402-CEL C10000595	Plastic cable ties used to fix the cable tag should be replaced on all external routing.	.		Gtangianu 2024-11-08	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000350	B	84402-CEL C10000595	Identification numbers on terminal strip are missing (PE)	.		Gtangianu 2024-11-08			

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems
SUBSYSTEM 70-00 F&G Control System

Electrical									
CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000351	B	84402-CEL C10000595	Identification tag wires are wrong.	.		Gtangianu 2024-11-08	2024-12-16	Gtangianu 2024-12-16	2024-12-16
C30000410	B	83107-CEL C10000626	Plastic cable ties to be replaced on external routing	.		Ecarotenuto 2024-11-09	2025-02-26	Pschintu 2025-02-26	2025-02-26
C30000416	B	83107-CEL C10000626	Missing cable tags on routing, inside and outside the panels	.		Ecarotenuto 2024-11-09	2025-03-04	JKrizanic 2025-03-04	2025-03-04

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems
SUBSYSTEM 70-00 F&G Control System

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000772	A	B400-FGS-002 C10000839	TB-950-JE-04203 number 11, missing the screw inside the terminal strip.	.		Gtangianu 2024-11-22	2025-02-13	Ecarotenuto 2025-02-13	2025-02-13
C30000222	B	B400-FGS-001	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact		INSTALLED	SLinari 2024-10-14	SLinari 2024-12-10	SLinari 2024-12-10	2024-12-10
C30000223	B	B400-FGS-002	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact		SEE PL C30000222	SLinari 2024-10-14	SLinari 2024-12-10	SLinari 2024-12-10	2024-12-10
C30000224	B	B400-FGS-003	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact		SEE PL C30000222	SLinari 2024-10-14	SLinari 2024-12-10	SLinari 2024-12-10	2024-12-10
C30000225	B	B400-FGS-001	Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)		commissioning done	SLinari 2024-10-14	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30000226	B	B400-FGS-002	Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)		COMMISSIONING DONE	SLinari 2024-10-14	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30000227	B	B400-FGS-003	Install and connect system cables (N. 20 type KS1-10/HF, N. 24 AKB331-M010/HF)		COMMISSIONING DONE	SLinari 2024-10-14	SLinari 2025-02-06	SLinari 2025-02-06	2025-02-06
C30000375	B	B400-FGS-001	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000376	B	B400-FGS-002	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems
SUBSYSTEM 70-00 F&G Control System

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000377	B	B400-FGS-003	Replace disconnector switches Q22 and Q23 with the right rating 32A, with NO auxiliary contact			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000378	B	B400-FGS-001	Install and connect system cables (N. 20 type KS1-07/HF, N. 24 AKB331-M010/HF)			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000379	B	B400-FGS-002	Install and connect system cables (N. 20 type KS1-07/HF, N. 24 AKB331-M010/HF)			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000380	B	B400-FGS-003	Install and connect system cables (N. 20 type KS1-07/HF, N. 24 AKB331-M010/HF)			SLinari 2024-10-14	2024-12-07	LNovaga 2024-12-07	2024-12-07
C30000384	B	B400-FGS-001	Modify wiring to implement electrical isolation of limit switches of F&G dampers.		Done	SLinari 2024-10-14	Vendor 2025-03-07	SLinari 2025-03-07	2025-03-07
C30000385	B	B400-FGS-002	Modify wiring to implement electrical isolation of limit switches of F&G dampers.		Done	SLinari 2024-10-14	Vendor 2025-03-07	SLinari 2025-03-07	2025-03-07
C30000386	B	B400-FGS-003	Modify wiring to implement electrical isolation of limit switches of F&G dampers.		Done	SLinari 2024-10-14	Vendor 2025-03-07	SLinari 2025-03-07	2025-03-07
C30000663	B	B400-FGS-001 C10000873	The GA (1724000594-IN-DG-00010) does not match the installed.	.		Gtangianu 2024-11-20	2025-02-28	Ecarotenuto 2025-02-28	2025-02-28
C30000666	B	B400-FGS-001 C10000873	All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW	.		Gtangianu 2024-11-20			

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 70 Safety and Facility Systems
SUBSYSTEM 70-00 F&G Control System

Instrumental

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000667	B	B400-FGS-001 C10000873	The front doors need to be installed.	.		Gtangianu 2024-11-20	2024-12-23	Ecarotenuto 2024-12-23	2024-12-23
C30000668	B	B400-FGS-001 C10000873	base plate will be installed after commissioning	.		Gtangianu 2024-11-20	2025-04-11	Gtangianu 2025-04-11	2025-04-11
C30000769	B	B400-FGS-002 C10000839	All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW	.		Gtangianu 2024-11-22			
C30000770	B	B400-FGS-002 C10000839	The front doors need to be installed.	.		Gtangianu 2024-11-22	2024-12-27	Ecarotenuto 2024-12-27	2024-12-27
C30000771	B	B400-FGS-002 C10000839	Internal base plate will be installed after commissioning.	.		Gtangianu 2024-11-22	2025-04-11	Gtangianu 2025-04-11	2025-04-11
C30001041	B	B400-FGS-003 C10000874	All documentation listed in the SMIR, shall be re-issued in final revision and approved by RM and CW	.		Gtangianu 2024-11-29			
C30001043	B	B400-FGS-003 C10000874	Earthing Internal base plate will be installed after commissioning.	.		Gtangianu 2024-11-29	2025-04-11	Gtangianu 2025-04-11	2025-04-11
C30001045	B	B400-FGS-003 C10000874	All cables need to be better dressed inside internal cable tray.	.		Gtangianu 2024-11-29	2025-02-26	Gtangianu 2025-02-26	2025-02-26

PROVERLIS - CROSSWIND								
PL number	**Item code**	**Defect description**	**Issued date**	**PL Category**	**Action by (user group code)**	**Subsystem code**	**SubSystem Desc**	**Issued by user**
C30004322	950-GDZ-02119	Leak detector does not recognize the sensor.	2025-04-15	B	COMM	70-11	F&G Devices FZ-02 (Hydrogen Storage Area)	GDelmissier
C30004323	77-HY-001	Fire damper B-100 doesn't work.	2025-04-15	B	COMM	70-17	F&G Devices FZ-06 (B-100 HV/MV Switchroom Area)	GDelmissier
C30004324	B-100	During execution of Cause & Effect OTP doc. n. 123A90-PML-COM-PRO-03054, it had been noted that on equipment packages provided with a dedicated PLC controller, it was not possible to remotely reset the C&E trip command. Equipment package PLC internal logic to be updated and tested from Yokogawa workstation	2025-04-15	B	COMM	77-10	HVAC HV/MV Switchgear Room B-100	GDelmissier
C30004325	B-200	During execution of Cause & Effect OTP doc. n. 123A90-PML-COM-PRO-03054, it had been noted that on equipment packages provided with a dedicated PLC controller, it was not possible to remotely reset the C&E trip command. Equipment package PLC internal logic to be updated and tested from Yokogawa workstation	2025-04-15	B	COMM	77-20	HVAC LV Switchgear Room B-200	GDelmissier
C30004326	B-300	During execution of Cause & Effect OTP doc. n. 123A90-PML-COM-PRO-03054, it had been noted that on equipment packages provided with a dedicated PLC controller, it was not possible to remotely reset the C&E trip command. Equipment package PLC internal logic to be updated and tested from Yokogawa workstation	2025-04-15	B	COMM	77-30	HVAC UPS Equipment Room B-300	GDelmissier
C30004327	B-400	During execution of Cause & Effect OTP doc. n. 123A90-PML-COM-PRO-03054, it had been noted that on equipment packages provided with a dedicated PLC controller, it was not possible to remotely reset the C&E trip command. Equipment package PLC internal logic to be updated and tested from Yokogawa workstation	2025-04-15	B	COMM	77-40	HVAC I&T Equipment Room B-400	GDelmissier
C30004328	A-63000	During execution of Cause & Effect OTP doc. n. 123A90-PML-COM-PRO-03054, it had been noted that on equipment packages provided with a dedicated PLC controller, it was not possible to remotely reset the C&E trip command. Equipment package PLC internal logic to be updated and tested from Yokogawa workstation	2025-04-15	B	COMM	63-00	Instrument Air Package (A-63000)	GDelmissier
C30004329	A-64000	During execution of Cause & Effect OTP doc. n. 123A90-PML-COM-PRO-03054, it had been noted that on equipment packages provided with a dedicated PLC controller, it was not possible to remotely reset the C&E trip command. Equipment package PLC internal logic to be updated and tested from Yokogawa workstation	2025-04-15	B	COMM	64-00	Nitrogen Generator Package (U-64000)	GDelmissier
C30004330	A-80000	During execution of Cause & Effect OTP doc. n. 123A90-PML-COM-PRO-03054, it had been noted that on equipment packages provided with a dedicated PLC controller, it was not possible to remotely reset the C&E trip command. Equipment package PLC internal logic to be updated and tested from Yokogawa workstation	2025-04-15	B	CPY	80-00	Hydrogen Fuel Cell Package (A-80000)	GDelmissier
C30004331	A-85000	During execution of Cause & Effect OTP doc. n. 123A90-PML-COM-PRO-03054, it had been noted that on equipment packages provided with a dedicated PLC controller, it was not possible to remotely reset the C&E trip command. Equipment package PLC internal logic to be updated and tested from Yokogawa workstation	2025-04-15	B	CPY	85-00	BESS Package (A-85000)	GDelmissier

7.3 Equipment Related Technical Queries (where applicable)

7.4 As Built Documentation (where applicable)

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7.5 Management of Change – Summary Table of Tasks and Details of Affected Related Documentation (where applicable).

Base Load Power Hub (BLPH)

Fire & Gas Cause & Effect Matrix

Document Number: 123A90-DDL-IN-CE-40002

Document Class: 1

03	11/02/2025	Accepted for Construction (AFC)	LCA	MGA	DLO
02	08/10/2024	Accepted for Construction (AFC)	LCA	MGA	DLO
01	12/06/2024	Accepted for Construction (AFC)	LCA	MGA	DLO
00	08/03/2024	Issue for Acceptance (IFA)	LCA	MGA	DLO
Rev.	Date	Description	Prepared	Reviewed	Approved

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Table of Contents

SH.	DESCRIPTION	REVISIONS							
		00	01	02	03				
1	Cover	X	X	X	X				
2	Table of Contents	X	X	X	X				
3	Revision / Change Log	X	X	X	X				
4	NOTES	X	X	X	X				
5	FIRE ZONE 06: B-100 (HV CONTAINER)	X	X	X					
6	FIRE ZONE 04: B-200 (LV CONTAINER)	X	X	X					
7	FIRE ZONE 04: B-300 (UPS CONTAINER)	X	X	X					
8	FIRE ZONE 04: B-400 (ITER CONTAINER)	X	X	X					
9	FIRE ZONE 01: FUEL CELL	X	X	X					
10	FIRE ZONE 05: BESS	X	X	X					
11	FIRE ZONE 03: ELECTROLYZER	X	X	X					
12	FIRE ZONE 05: WATER TREATMENT	X	X	X					
13	FIRE ZONE 01/02/03/05: HYDROGEN OPEN AREA	X	X	X					
14	FIRE ZONE 03: OXYGEN OPEN AREA	X	X	X					
15	FIRE ZONE 01/02/03/04/05/06: FIRE OPEN AREA	X	X	X	X				
16	FIRE ZONE 01/02/03/04/05/06/7: MFA PUSH BUTTONS	X	X	X					
17	FIRE ZONE 01/02/03/04/05/06/7: SOUNDERS AND BEACONS	X	X	X					

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Revision / Change Log

Rev.	Description
00	ISSUE FOR ACCEPTANCE (IFA)
01	ACCEPTED FOR CONSTRUCTION (AFC)
02	ACCEPTED FOR CONSTRUCTION (AFC)
03	ACCEPTED FOR CONSTRUCTION (AFC)

HOLDS LIST

No.	Description
1.	
2.	
3.	
4.	

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Notes:

1) Abbreviation

CCR = CENTRAL CONTROL ROOM (ONSHORE)
OER = ONSHORE EQUIPMENT ROOM
ITER = OFFSHORE CONTROL ROOM
R = RESET
EL = EVENT LOG
F = FLASHING LIGHT INDICATION ON CAP
T = TIME DELAY

ASD=ABANDON
ESD=EMERGENCY SHUTDOWN
MOB= MAN OVERBORD
FGS=FIRE & GAS SYSTEM
HMI=HUMAN MACHINE INTERFACE
SIS=SAFETY INSTRUMENTED SYSTEM

PKG=PACKGE
UPS=Uninterruptible Power Supply
P&ID=Piping and Instrument Diagram
HVAC=Heating, Ventilation and Air Condition.
BLPH=Base Load Power Hub
ITER=Instrument & Telecoms Equipment Room

2) Digital Input/Output on SIS System TAGs legend:

Digital Output from SIS	Digital Input to Fire & Gas System
79-XS-001 (ASD activation)	79-XA-001 (ASD activation)
79-XS-002 (ESD-1D activation)	79-XA-002 (ESD-1D activation)
79-XS-003 (ESD-1 activation)	79-XA-003 (ESD-1 activation)
79-XS-004 (MOB activation)	79-XA-004 (MOB activation)

3) Digital Input/Output on FGS System TAGs legend:

Digital Output from FGS	Digital Input to SIS
70-XS-001 (ASD activation)	70-XA-001 (ASD activation)
70-XS-002 (ESD-1D activation)	70-XA-002 (ESD-1D activation)
70-XS-003 (S/D Electrolyzer)	70-XA-003 (S/D Electrolyzer)
70-XS-004 (Inhibit battery Charging B-300)	70-XA-004 (Inhibit battery Charging B-300)
70-XS-005 (H2 Open Area)	70-XA-005 (H2 Open Area)
70-XS-006 (H2/SMOKE B-100)	70-XA-006 (H2/SMOKE B-100)
70-XS-007 (H2/SMOKE B-200)	70-XA-007 (H2/SMOKE B-200)
70-XS-008 (Inhibit battery Charging B-100)	70-XA-008 (Inhibit battery Charging B-100)
70-XS-010 (H2/Smoke in water Treat.)	70-XA-010 (H2/Smoke in water Treat.)
70-XS-015 (H2/Smoke intake B-100)	70-XA-015 (H2/Smoke intake B-100)
70-XS-016 (H2/Smoke intake B-200)	70-XA-016 (H2/Smoke intake B-200)
70-XS-017 (H2/Smoke intake B-300)	70-XA-017 (H2/Smoke intake B-300)
70-XS-018 (H2/Smoke intake B-400)	70-XA-018 (H2/Smoke intake B-400)

4) Voting logic degradation:

1) in case of a MooN Loop, the F&G logic degradation will be as follow:
a) Detector in fault condition: (M-1)oo(N-1) if N≤3
b) 2 (Two) Detectors in fault condition→ "Trip Logic" if N≤3
c) Detector in fault condition: Moo(N-1) if N>3
d) Detector in by-pass condition: (M-1)oo(N-1) if N≤3 (with Loop 2oo3)
e) Detector in by-pass condition: Moo(N-1) if N≤3 (with Loop 1oo2)
f) Detector in by-pass condition: Moo(N-1) if N>3

5) Software push buttons for RESET F&G logics on HMI is provided

6) INTERNAL WIRING ISOLATION INSIDE FGS CABINETS:

70-XS-011	ELECTR. ISOLATION LIMIT SWITCHES FGS DAMPERS B-100 (77-ZSL-001/002/003)
70-XS-012	ELECTR. ISOLATION LIMIT SWITCHES FGS DAMPERS B-200 (77-ZSL-004/005/006)

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FIRE ZONE 06
B-100 (HV CONTAINER)

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

EFFECT

No.	SYS	NOTES	DESCRIPTION	TAG No.
1	AUDIO / VISUAL ALERT		OPERATOR WORKSTATION DISPLAY - EVENT/ALARM	
3	AUDIO / VISUAL ALERT		F&G ALARM ON CAP ONSHORE	
5	AUDIO / VISUAL ALERT	TO SHEET 17	GAS BEACON ACTIVATION - AMBER	
7	AUDIO / VISUAL ALERT	TO SHEET 17	FIRE BEACON ACTIVATION - RED	
9	AUDIO / VISUAL ALERT	TO SHEET 17	SOUNDER ACTIVATION	
11	AUDIO / VISUAL ALERT		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS	72-XS-001
17	SIS SYSTEM	3	ESD-1D TO SIS SYTEM	70-XS-002
19	SIS SYSTEM	3	INHIBIT BATTERY CHARGING B-100 TO SIS	70-XS-008
21	SIS SYSTEM	3	H2/SMOKE INSIDE B-100 (ELECT. ISOLATION) TO SIS SYTEM	70-XS-006
23	SIS SYSTEM	3	H2/SMOKE INTAKE B-100 TO SIS SYTEM	70-XS-015
27	ELECTRIC ISOLATION	4	ELECTR. ISOLATION LIMIT SWITCHES FGS DAMPERS B-100 (77-ZSL-001/002/003)	70-XS-011
34	OTHER		CLOSE F&G DAMPER 77-HFD-001 B-100 (HV CONTAINER)	77-HY-001
35	OTHER		CLOSE F&G DAMPER 77-HFD-002 B-100 (HV CONTAINER)	77-HY-002
36	OTHER		CLOSE F&G DAMPER 77-HFD-003 B-100 (HV CONTAINER)	77-HY-003

CAUSE

TAG Nos	DESCRIPTION	VOTING	INHIBITION	REMARK	No.	1	3	5	7	9	11	17	19	21	23	27	34	35	36
950-GDZ-06204 950-GDZ-06205 950-GDZ-06206	H2 GAS LOW (ELECTROCHEM. POINT 5% LFL)	1oo3	X		1	X	F												
	H2 GAS HIGH (ELECTROCHEM. POINT 10% LFL)	1oo3	X		2	X	F												
	H2 GAS HIGH CONFIRMED (ELECTROCHEM. POINT 10% LFL)	2oo3			3	X	F	X		X	(1)		(2)	(1)		(1)	(1)	(1)	(1)
					4														
950-GDZ-06201 950-GDZ-06202 950-GDZ-06203	AIR INTAKE-H2 GAS LOW (ELECTROCHEM. POINT 5% LFL)	1oo3	X		5	X	F												
	AIR INTAKE -H2 GAS HIGH (ELECTROCHEM. POINT 10% LFL)	1oo3	X		6	X	F												
	AIR INTAKE -H2 GAS HIGH CONFIRMED (ELECT. POINT 10% LFL)	2oo3			7	X	F	X		X	X	X			X		X	X	X
					8														
					9														
950-SDZ-06204 950-SDZ-06205 950-SDZ-06206	SMOKE DETECTION SINGLE	1oo3	X		10	X	F												
	SMOKE DETECTION CONFIRMED	2oo3			11	X	F		X	X	X			X			X	X	X
					12														
					13														
950-SDZ-06201 950-SDZ-06202 950-SDZ-06203	AIR INTAKE - SMOKE DETECTION SINGLE	1oo3	X		14	X	F												
	AIR INTAKE - SMOKE DETECTION CONFIRMED	2oo3			15	X	F		X	X	X	X			X		X	X	X
					16														
79-XA-001	ASD PUSH BUTTON ACTIVATION FROM SIS SYSTEM			NOTE 3	17												X	X	X
					18														
					19														
					20														
					21														
					22														
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					41														

NOTES:

1. Logic activation only in case of 2ooN H2 confirmed is caused by H2 detectors inside B-100 container and at least one of platform H2 detectors (excluded inside B-100 container) is Alarmed/Failed.

2. Logic activation only in case of 2ooN H2 confirmed is caused by H2 detectors inside B-100 container and all the others platform H2 detectors (excluded inside B-100 container) shall not be Alarmed/Failed.

3. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE Vnet/IP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

4. INTERNAL WIRING ISOLATION INSIDE FGS CABINETS.

LEGEND

TEST COMPLETED
GIANDONATO DEL MISSIER
15-03-2025
[signature]

PUNCH LIST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE TO BE RESOLVED. ALL OTHER TESTING ACKNOWLEDGED BY CROSSWIND 15/03/25
[signature] MARTIN [illegible]

REFERENCE DOCUMENTS	
TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
F&G detectors Layout - Lower deck and Upper deck	123A90-DDL-SAF-DL-30027
F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

Rev.	Date	Status	Description	DRN	CHKD	APPD
00	08/03/2024	IFA	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	12/06/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND — ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: B-100 (HV CONTAINER)

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

DATE 11/02/2025

Sheet. 5 of 17 | 03

FIRE ZONE 04
B-200 (LV CONTAINER)

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

EFFECT

No.	SYS	NOTES	DESCRIPTION	TAG No.
1	AUDIO / VISUAL ALERT		OPERATOR WORKSTATION DISPLAY - EVENT/ALARM	
2	AUDIO / VISUAL ALERT			
3	AUDIO / VISUAL ALERT		F&G ALARM ON CAP ONSHORE	
4	AUDIO / VISUAL ALERT			
5	AUDIO / VISUAL ALERT	TO SHEET 17	GAS BEACON ACTIVATION - AMBER	
6	AUDIO / VISUAL ALERT			
7	AUDIO / VISUAL ALERT	TO SHEET 17	FIRE BEACON ACTIVATION - RED	
8	AUDIO / VISUAL ALERT			
9	AUDIO / VISUAL ALERT	TO SHEET 17	SOUNDER ACTIVATION	
10	AUDIO / VISUAL ALERT			
11	AUDIO / VISUAL ALERT		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS	72-XS-001
12	AUDIO / VISUAL ALERT			
13	AUDIO / VISUAL ALERT			
14	AUDIO / VISUAL ALERT			
15	AUDIO / VISUAL ALERT			
16	AUDIO / VISUAL ALERT			
17	SIS SYSTEM	1	ESD-1D TO SIS SYTEM	70-XS-002
18	SIS SYSTEM			
19	SIS SYSTEM	1	H2/SMOKE INSIDE B-200 (ELECT. ISOLATION) TO SIS SYTEM	70-XS-007
20	SIS SYSTEM			
21	SIS SYSTEM	1	H2/SMOKE INTAKE B-200 TO SIS SYTEM	70-XS-016
22	SIS SYSTEM			
23	SIS SYSTEM			
24	SIS SYSTEM			
25	SIS SYSTEM			
26	SIS SYSTEM			
27	ELECTRIC ISOLATION	2	ELECTR. ISOLATION LIMIT SWITCHES FGS DAMPERS B-200 (77-ZSL-004/005/006)	70-XS-012
28	ELECTRIC ISOLATION			
29	ELECTRIC ISOLATION			
30	ELECTRIC ISOLATION			
31	ELECTRIC ISOLATION			
32	ELECTRIC ISOLATION			
33	OTHER			
34	OTHER		CLOSE F&G DAMPER 77-HFD-004 B-200 (LV CONTAINER)	77-HY-004
35	OTHER		CLOSE F&G DAMPER 77-HFD-005 B-200 (LV CONTAINER)	77-HY-005
36	OTHER		CLOSE F&G DAMPER 77-HFD-006 B-200 (LV CONTAINER)	77-HY-006
37	OTHER			
38	OTHER			
39	OTHER			
40	OTHER			
41	OTHER			
42	OTHER			
43	OTHER			
44	OTHER			
45	OTHER			
46	OTHER			
47	OTHER			
48	OTHER			
49	OTHER			
50	OTHER			
51	OTHER			
52	OTHER			
53	OTHER			

CAUSE (effect columns 2, 4, 6, 8, 10, 12–16, 18, 20, 22–26, 28–33, 37–53 carry no entries)

TAG Nos	DESCRIPTION	VOTING	INHIBITION	REMARK	No.	1	3	5	7	9	11	17	19	21	27	34	35	36
950-GDZ-04216 950-GDZ-04217 950-GDZ-04218	H2 GAS LOW (ELECTROCHEM. POINT 5% LFL)	1oo3	X		1	X	F											
	H2 GAS HIGH (ELECTROCHEM. POINT 10% LFL)	1oo3	X		2	X	F											
	H2 GAS HIGH CONFIRMED (ELECTROCHEM. POINT 10% LFL)	2oo3			3	X	F	X		X	X		X		X	X	X	X
					4													
950-GDZ-04213 950-GDZ-04214 950-GDZ-04215	AIR INTAKE-H2 GAS LOW (ELECTROCHEM. POINT 5% LFL)	1oo3	X		5	X	F											
	AIR INTAKE -H2 GAS HIGH (ELECTROCHEM. POINT 10% LFL)	1oo3	X		6	X	F											
	AIR INTAKE -H2 GAS HIGH CONFIRMED (ELECT. POINT 10% LFL)	2oo3			7	X	F	X		X	X	X		X		X	X	X
					8													
					9													
950-SDZ-04216 950-SDZ-04217 950-SDZ-04218	SMOKE DETECTION SINGLE	1oo3	X		10	X	F											
	SMOKE DETECTION CONFIRMED	2oo3			11	X	F		X	X	X		X			X	X	X
					12													
					13													
950-SDZ-04213 950-SDZ-04214 950-SDZ-04215	AIR INTAKE - SMOKE DETECTION SINGLE	1oo3	X		14	X	F											
	AIR INTAKE - SMOKE DETECTION CONFIRMED	2oo3			15	X	F		X	X	X	X		X		X	X	X
					16													
79-XA-001	ASD PUSH BUTTON ACTIVATION FROM SIS SYSTEM			NOTE 1	17											X	X	X
					18													
					19													
					20													
					21													
					22													
					23													
					24													
					25													
					26													
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					31													
					32													
					33													
					34													
					35													
					36													
					37													
					38													
					39													
					40													
					41													

NOTES:

1. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE VnetIP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

2. INTERNAL WIRING ISOLATION INSIDE FGS CABINETS.

LEGEND

GERRY MCCANN
CROSSWIND
15/3/25

TEST COMPLETED
GIANDONATO R.U.
15-03-2025

REFERENCE DOCUMENTS	
TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
F&G detectors Layout - Lower deck and Upper deck	123A90-DDL-SAF-DL-30027
F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

Rev.	Date	Status	Description	DRN	CHKD	APPD
00	08/03/2024	IFA	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	12/06/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND — ROSETTI MARINO

Fire & Gas Cause & Effect Matrix : B-200 (LV CONTAINER)

DATE 11/02/2025

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

FIRE ZONE 04
B-300 (UPS CONTAINER)

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

CAUSE

No.	TAG Nos	DESCRIPTION	VOTING	INHIBITION	REMARK
1	950-GDZ-04210 950-GDZ-04211 950-GDZ-04212	H2 GAS LOW (ELECTROCHEM. POINT 5% LFL)	1oo3	X	
2		H2 GAS HIGH (ELECTROCHEM. POINT 10% LFL)	1oo3	X	
3		H2 GAS HIGH CONFIRMED (ELECTROCHEM. POINT 10% LFL)	2oo3		
4					
5	950-GDZ-04207 950-GDZ-04208 950-GDZ-04209	AIR INTAKE-H2 GAS LOW (ELECTROCHEM. POINT 5% LFL)	1oo3	X	
6		AIR INTAKE -H2 GAS HIGH (ELECTROCHEM. POINT 10% LFL)	1oo3	X	
7		AIR INTAKE -H2 GAS HIGH CONFIRMED (ELECT. POINT 10% LFL)	2oo3		
8					
9					
10	950-SDZ-04210 950-SDZ-04211 950-SDZ-04212	SMOKE DETECTION SINGLE	1oo3	X	
11		SMOKE DETECTION CONFIRMED	2oo3		
12					
13					
14	950-SDZ-04207 950-SDZ-04208 950-SDZ-04209	AIR INTAKE - SMOKE DETECTION SINGLE	1oo3	X	
15		AIR INTAKE - SMOKE DETECTION CONFIRMED	2oo3		
16					
17	79-XA-001	ASD PUSH BUTTON ACTIVATION FROM SIS SYSTEM			NOTE 3
18					
19					
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21					
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27					
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EFFECT

No.	SYS	NOTES	DESCRIPTION	TAG No.
1	AUDIO / VISUAL ALERT		OPERATOR WORKSTATION DISPLAY - EVENT/ALARM	
2	AUDIO / VISUAL ALERT			
3	AUDIO / VISUAL ALERT		F&G ALARM ON CAP ONSHORE	
4	AUDIO / VISUAL ALERT			
5	AUDIO / VISUAL ALERT	TO SHEET 17	GAS BEACON ACTIVATION - AMBER	
6	AUDIO / VISUAL ALERT			
7	AUDIO / VISUAL ALERT	TO SHEET 17	FIRE BEACON ACTIVATION - RED	
8	AUDIO / VISUAL ALERT			
9	AUDIO / VISUAL ALERT	TO SHEET 17	SOUNDER ACTIVATION	
10	AUDIO / VISUAL ALERT			
11	AUDIO / VISUAL ALERT		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS	72-XS-001
12	AUDIO / VISUAL ALERT			
13	AUDIO / VISUAL ALERT			
14	AUDIO / VISUAL ALERT			
15	AUDIO / VISUAL ALERT			
16	AUDIO / VISUAL ALERT			
17	SIS SYSTEM	Note 1,3	ASD TO SIS SYTEM	70-XS-001
18	SIS SYSTEM			
19	SIS SYSTEM	Note 2, 3	INHIBIT BATTERY CHARGING B-300 TO SIS	70-XS-004
20	SIS SYSTEM			
21	SIS SYSTEM	3	ESD-1D TO SIS SYTEM	70-XS-002
22	SIS SYSTEM			
23	SIS SYSTEM	3	H2/SMOKE INTAKE B-300 TO SIS SYTEM	70-XS-017
24	SIS SYSTEM			
25	SIS SYSTEM			
26	SIS SYSTEM			
27	ELECTRIC ISOLATION			
28	ELECTRIC ISOLATION			
29	ELECTRIC ISOLATION			
30	ELECTRIC ISOLATION			
31	ELECTRIC ISOLATION			
32	ELECTRIC ISOLATION			
33	OTHER			
34	OTHER		CLOSE F&G DAMPER 77-HFD-007 B-300 (UPS CONTAINER)	77-HY-007
35	OTHER		CLOSE F&G DAMPER 77-HFD-008 B-300 (UPS CONTAINER)	77-HY-008
36	OTHER		CLOSE F&G DAMPER 77-HFD-009 B-300 (UPS CONTAINER)	77-HY-009
37	OTHER		CLOSE F&G DAMPER 77-HFD-010 B-300 (UPS CONTAINER)	77-HY-010
38	OTHER		CLOSE F&G DAMPER 77-HFD-011 B-300 (UPS CONTAINER)	77-HY-011
39	OTHER			
40	OTHER			
41	OTHER			
42	OTHER			
43	OTHER			
44	OTHER			
45	OTHER			
46	OTHER			
47	OTHER			
48	OTHER			
49	OTHER			
50	OTHER			
51	OTHER			
52	OTHER			
53	OTHER			

Cause No.	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
1	X		F																																																		
2	X		F																																																		
3	X		F		X				X		(1)						(1)		(2)															(1)	(1)	(1)	(1)	(1)															
4																																																					
5	X		F																																																		
6	X		F																																																		
7	X		F		X				X		X										X		X											X	X	X	X	X															
8																																																					
9																																																					
10	X		F																																																		
11	X		F				X		X		X						X																	X	X	X	X	X															
12																																																					
13																																																					
14	X		F																																																		
15	X		F				X		X		X										X		X											X	X	X	X	X															
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NOTES:

1. Logic activation only in case of 2ooN H2 confirmed is caused by H2 detectors inside UPS container and at least one of platform H2 detectors (excluded inside UPS container) is Alarmed/Failed.

2. Logic activation only in case of 2ooN H2 confirmed is caused by H2 detectors inside UPS container and all the others platform H2 detectors (excluded inside UPS container) shall not be Alarmed/Failed.

3. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE VnetIP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

LEGEND

[signature]
GERRY MCCANN
15/3/25
CROSSWIND

TEST COMPLETED
GIANDOMASTO R.U.
15-03-2025
[signature]

REFERENCE DOCUMENTS	
TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
F&G detectors Layout - Lower deck and Upper deck	123A90-DDL-SAF-DL-30027
F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

Rev.	Date	Status	Description	DRN	CHKD	APPD
00	08/03/2024	IFA	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	12/06/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND — ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: B-300 (UPS CONTAINER)

DATE 11/02/2025

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

Sheet 7 of 17 — 03

FIRE ZONE 04
B-400 (ITER CONTAINER)

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

EFFECT

No.	SYS	NOTES	DESCRIPTION	TAG No.
1	AUDIO / VISUAL ALERT		OPERATOR WORKSTATION DISPLAY - EVENT/ALARM	
3	AUDIO / VISUAL ALERT		F&G ALARM ON CAP ONSHORE	
5	AUDIO / VISUAL ALERT	TO SHEET 17	GAS BEACON ACTIVATION - AMBER	
7	AUDIO / VISUAL ALERT	TO SHEET 17	FIRE BEACON ACTIVATION - RED	
9	AUDIO / VISUAL ALERT	TO SHEET 17	SOUNDER ACTIVATION	
11	AUDIO / VISUAL ALERT		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS	72-XS-001
2, 4, 6, 8, 10, 12–16	AUDIO / VISUAL ALERT			
17	SIS SYSTEM	1	ASD TO SIS SYTEM	70-XS-001
19	SIS SYSTEM	1	ESD-1D TO SIS SYTEM	70-XS-002
21	SIS SYSTEM	1	H2/SMOKE INTAKE B-400 TO SIS SYTEM	70-XS-018
18, 20, 22–26	SIS SYSTEM			
27–32	ELECTRIC ISOLATION			
33–34	OTHER			
35	OTHER		CLOSE F&G DAMPER 77-HFD-012 B-400 (ITER CONTAINER)	77-HY-012
36	OTHER		CLOSE F&G DAMPER 77-HFD-013 B-400 (ITER CONTAINER)	77-HY-013
37	OTHER		CLOSE F&G DAMPER 77-HFD-014 B-400 (ITER CONTAINER)	77-HY-014
38	OTHER		CLOSE F&G DAMPER 77-HFD-015 B-400 (ITER CONTAINER)	77-HY-015
39	OTHER		CLOSE F&G DAMPER 77-HFD-016 B-400 (ITER CONTAINER)	77-HY-016
40–53	OTHER			

CAUSE

TAG Nos	DESCRIPTION	VOTING	INHIBITION	REMARK	No.	1	3	5	7	9	11	17	19	21	35	36	37	38	39
950-GDZ-04204 950-GDZ-04205 950-GDZ-04206	H2 GAS LOW (ELECTROCHEM. POINT 5% LFL)	1oo3	X		1	X	F												
	H2 GAS HIGH (ELECTROCHEM. POINT 10% LFL)	1oo3	X		2	X	F												
	H2 GAS HIGH CONFIRMED (ELECTR. POINT 10% LFL)	2oo3			3	X	F	X		X	X	X			X	X	X	X	X
					4														
950-GDZ-04201 950-GDZ-04202 950-GDZ-04203	AIR INTAKE-H2 GAS LOW (ELECTROCHEM. POINT 5% LFL)	1oo3	X		5	X	F												
	AIR INTAKE -H2 GAS HIGH (ELECTROCHEM. POINT 10% LFL)	1oo3	X		6	X	F												
	AIR INTAKE -H2 GAS HIGH CONFIRMED (ELECT. POINT 10% LFL)	2oo3			7	X	F	X		X	X		X	X	X	X	X	X	X
					8														
					9														
950-SDZ-04204 950-SDZ-04205 950-SDZ-04206	SMOKE DETECTION SINGLE	1oo3	X		10	X	F												
	SMOKE DETECTION CONFIRMED	2oo3			11	X	F		X	X	X	X			X	X	X	X	X
					12														
					13														
950-SDZ-04201 950-SDZ-04202 950-SDZ-04203	AIR INTAKE - SMOKE DETECTION SINGLE	1oo3	X		14	X	F												
	AIR INTAKE - SMOKE DETECTION CONFIRMED	2oo3			15	X	F		X	X	X		X	X	X	X	X	X	X
					16														
79-XA-001	ASD PUSH BUTTON ACTIVATION FROM SIS SYSTEM			NOTE 1	17										X	X	X	X	X
					18–41														

NOTES:

1. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE VnetIP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

LEGEND

Gerry McCann (signature)
GERRY McCANN
15/3/25
CROSSWIND

TEST COMPLETED
GIANDOVATO R.M.
15-03-2025
(signature)

REFERENCE DOCUMENTS	
TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
F&G detectors Layout - Lower deck and Upper deck	123A90-DDL-SAF-DL-30027
F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

Rev.	Date	Status	Description	DRN	CHKD	APPD
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02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND | ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: B-400 (ITER CONTAINER)

DATE 11/02/2025

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

 03

FIRE ZONE 01
FUEL CELL

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

EFFECT

No.	SYS	NOTES	DESCRIPTION	TAG No.
1	AUDIO / VISUAL ALERT		OPERATOR WORKSTATION DISPLAY - EVENT/ALARM	
2	AUDIO / VISUAL ALERT			
3	AUDIO / VISUAL ALERT		F&G ALARM ON CAP ONSHORE	
4	AUDIO / VISUAL ALERT			
5	AUDIO / VISUAL ALERT	TO SHEET 17	GAS BEACON ACTIVATION - AMBER	
6	AUDIO / VISUAL ALERT			
7	AUDIO / VISUAL ALERT	TO SHEET 17	FIRE BEACON ACTIVATION - RED	
8	AUDIO / VISUAL ALERT			
9	AUDIO / VISUAL ALERT	TO SHEET 17	SOUNDER ACTIVATION	
10	AUDIO / VISUAL ALERT			
11	AUDIO / VISUAL ALERT		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS	72-XS-001
12–16	AUDIO / VISUAL ALERT			
17	SIS SYSTEM	1	ESD-1D TO SIS SYTEM	70-XS-002
18–26	SIS SYSTEM			
27–32	ELECTRIC ISOLATION			
33–53	OTHER			

TAG Nos	CAUSE DESCRIPTION	VOTING	INHIBITION	REMARK	No.	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
80-XA-001	GAS CONFIRMED IN FUEL CELL				1	X		F		X				X		X						X																																				
					2																																																					
80-XA-002	SMOKE CONFIRMED IN FUEL CELL				3	X		F				X		X		X						X																																				
					4																																																							
					5																																																							
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NOTES:
1. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE VnetIP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

LEGEND

TEST COMPLETED
GIANDONATO R.M.
19-03-2025
[signature]
PUNCH LIST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE STILL TO BE RESOLVED. ALL OTHER TESTING ACKNOWLEDGED BY CROSSWIND [signature]
MARTIN TAYLOR
CROSSWIND

REFERENCE DOCUMENTS

TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
F&G detectors Layout - Lower deck and Upper deck	123A90-DDL-SAF-DL-30027
F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

Rev.	Date	Status	Description	DRN	CHKD	APPD
00	08/03/2024	IFA	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	12/06/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: FUEL CELL

DATE 11/02/2025

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

Sheet. 9 of 17 | 03

FIRE ZONE 05
BESS

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

EFFECT

Column	SYS	NOTES	DESCRIPTION	TAG No.
1	AUDIO / VISUAL ALERT		OPERATOR WORKSTATION DISPLAY - EVENT/ALARM	
3	AUDIO / VISUAL ALERT		F&G ALARM ON CAP ONSHORE	
5	AUDIO / VISUAL ALERT	TO SHEET 17	GAS BEACON ACTIVATION - AMBER	
7	AUDIO / VISUAL ALERT	TO SHEET 17	FIRE BEACON ACTIVATION - RED	
9	AUDIO / VISUAL ALERT	TO SHEET 17	SOUNDER ACTIVATION	
11	AUDIO / VISUAL ALERT		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS	72-XS-001
17	SIS SYSTEM	1	ESD-1D TO SIS SYTEM	70-XS-002

AUDIO / VISUAL ALERT: columns 1–16; SIS SYSTEM: columns 17–26; ELECTRIC ISOLATION: columns 27–32; OTHER: columns 33–53.

CAUSE

TAG Nos	DESCRIPTION	VOTING	INHIBITION	REMARK		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
85-XA-001	GAS CONFIRMED IN BESS				1	X		F		X				X		X						X																																				
					2																																																						
85-XA-002	SMOKE CONFIRMED IN BESS				3	X		F				X		X		X						X																																				
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NOTES:
1. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE Vnet/IP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

LEGEND

TEST COMPLETED
GIANDONATO R.M.
13-03-2025

PUNCH LIST HAS BEEN RAISED TO REFLECT REMOTE ACCESS RESET ISSUE STILL TO BE RESOLVED. ALL OTHER TESTING IS ACKNOWLEDGED BY CROSSWIND
MARTIN TAYLOR
CROSSWIND
13/03/25

REFERENCE DOCUMENTS

TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
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F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

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02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND — ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: BESS

DATE 11/02/2025

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

Sheet. 10 of 17 — 03

FIRE ZONE 03
ELECTROLYZER

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

EFFECT

Column	SYS	NOTES	DESCRIPTION	TAG No.
1	AUDIO / VISUAL ALERT		OPERATOR WORKSTATION DISPLAY - EVENT/ALARM	
3	AUDIO / VISUAL ALERT		F&G ALARM ON CAP ONSHORE	
5	AUDIO / VISUAL ALERT	TO SHEET 17	GAS BEACON ACTIVATION - AMBER	
7	AUDIO / VISUAL ALERT	TO SHEET 17	FIRE BEACON ACTIVATION - RED	
9	AUDIO / VISUAL ALERT	TO SHEET 17	SOUNDER ACTIVATION	
11	AUDIO / VISUAL ALERT		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS	72-XS-001
17	SIS SYSTEM	1	ESD-1D TO SIS SYTEM	70-XS-002
27–32	ELECTRIC ISOLATION			
33–53	OTHER			

TAG Nos	CAUSE DESCRIPTION	VOTING	INHIBITION	REMARK		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
20-XA-001	GAS CONFIRMED IN ELECTROLYZER				1	X		F		X				X		X						X																																				
					2																																																					
20-XA-002	SMOKE CONFIRMED IN ELECTROLYZER				3	X		F				X		X		X						X																																				
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NOTES:

1. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE Vnet/IP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

LEGEND

TEST COMPLETED
GANDOLFATO R.H.
13-03-2025
[signature]

PUNCH LIST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE NOT RESOLVED. ALL OTHER TESTING ACKNOWLEDGED BY CROSSWIND 15/04/25
[signature] MARTIN TAYLOR

REFERENCE DOCUMENTS

TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
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02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND — ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: ELECTROLYZER

DATE: 11/02/2025

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

Sheet 11 of 17 | 03

FIRE ZONE 05
WATER TREATMENT

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

TAG Nos	CAUSE: DESCRIPTION	VOTING	INHIBITION	REMARK	EFFECT	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
					SYS	AUDIO / VISUAL ALERT																SIS SYSTEM										ELECTRIC ISOLATION						OTHER																				
					NOTES					TO SHEET 17		TO SHEET 17		TO SHEET 17								1																																						
					DESCRIPTION	OPERATOR WORKSTATION DISPLAY - EVENT/ALARM		F&G ALARM ON CAP ONSHORE		GAS BEACON ACTIVATION - AMBER		FIRE BEACON ACTIVATION - RED		SOUNDER ACTIVATION		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS						H2/SMOKE IN WATER TREAT. (ELECT. ISOLATION) TO SIS SYTEM																																						
					TAG No.											72-XS-001						70-XS-010																																						
50-XA-001	GAS CONFIRMED IN WATER TREATMENT PKG				1	X		F		X				X		X						X																																						
					2																																																					
50-XA-002	SMOKE CONFIRMED IN WATER TREATMENT PKG				3	X		F				X		X		X						X																																						
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LEGEND

TEST COMPLETED
GIANDONATO R.M.
13.03.2025
[signature]
PUNCH LIST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE STILL TO RESOLVE. ALL OTHER TESTING 15/03/25 ACKNOWLEDGED BY CWD
[signature] MARTIN TAYLOR

REFERENCE DOCUMENTS

TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
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02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND — ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: WATER TREATMENT

DATE 11/02/2025

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

Sheet 12 of 17 — 03

FIRE ZONE 01/02/03/05
HYDROGEN OPEN AREA

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

EFFECT

Column	SYS	Notes	Description	Tag No.
1	AUDIO / VISUAL ALERT		OPERATOR WORKSTATION DISPLAY - EVENT/ALARM	
2	AUDIO / VISUAL ALERT			
3	AUDIO / VISUAL ALERT		F&G ALARM ON CAP ONSHORE	
4	AUDIO / VISUAL ALERT			
5	AUDIO / VISUAL ALERT	TO SHEET 17	GAS BEACON ACTIVATION - AMBER	
6	AUDIO / VISUAL ALERT			
7	AUDIO / VISUAL ALERT	TO SHEET 17	FIRE BEACON ACTIVATION - RED	
8	AUDIO / VISUAL ALERT			
9	AUDIO / VISUAL ALERT	TO SHEET 17	SOUNDER ACTIVATION	
10	AUDIO / VISUAL ALERT			
11	AUDIO / VISUAL ALERT		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS	72-XS-001
12–16	AUDIO / VISUAL ALERT			
17	SIS SYSTEM	1	H2 IN OPEN AREA TO SIS SYST. (TRIP EQ. NOT FOR ZONE 1 IN OPEN AREA)	70-XS-005
18–26	SIS SYSTEM			
27	ELECTRIC ISOLATION		ELECTRICAL ISOLATION VISIBILITY METER NOT SUITABLE FOR ZONE IIC or (IIB+H2)	72-XS-002
28–32	ELECTRIC ISOLATION			
33–53	OTHER			

CAUSE

TAG Nos	Row	DESCRIPTION	VOTING	INHIBITION	REMARK
950-GDZ-02101 950-GDZ-02102 950-GDZ-02103 950-GDZ-02104 950-GDZ-02105 950-GDZ-02106 950-GDZ-02107 950-GDZ-02108 950-GDZ-02109 950-GDZ-02110 950-GDZ-02111 950-GDZ-02112 950-GDZ-02113 950-GDZ-02114 950-GDZ-02115 950-GDZ-02116 950-GDZ-02117 (ULTRAS.) 950-GDZ-02118 (ULTRAS.) 950-GDZ-02119 (ULTRAS.) 950-GDZ-02120 (ULTRAS.)	1	FZ-02 - H2 GAS LOW (ELECT./ ULTRAS. POINT 5% LFL)	1oo20	X	
	2	FZ-02 - H2 GAS HIGH (ELECT./ ULTRAS. POINT 10% LFL)	1oo20	X	
	3	FZ-02 - H2 GAS HIGH CONFIRMED (ELECT./ ULTRAS. POINT 10% L	2oo20		
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
950-GDZ-01101 (ULTRAS.) 950-GDZ-01102 (ULTRAS.) 950-GDZ-01103 (POINT)	13	FZ-01 - H2 GAS LOW (ULTRAS. POINT 5% LFL)	1oo3	X	
	14	FZ-01 - H2 GAS HIGH (ULTRAS. POINT 10% LFL)	1oo3	X	
	15	FZ-01 - H2 GAS HIGH CONFIRMED (ULTRAS. POINT 10% LFL)	2oo3		
	16				
950-GDZ-03101 (ULTRAS.) 950-GDZ-03102 (ULTRAS.) 950-GDZ-03103 (ULTRAS.) 950-GDZ-03104 (POINT) 950-GDZ-03105 (POINT)	17	FZ-03 - H2 GAS LOW (ULTRAS. POINT 5% LFL)	1oo5	X	
	18	FZ-03 - H2 GAS HIGH (ULTRAS POINT 10% LFL)	1oo5	X	
	20	FZ-03 - H2 GAS HIGH CONFIRMED (ULTRAS POINT 10% LFL)	2oo5		
	21				
950-GDZ-05101 950-GDZ-05102 950-GDZ-05103 950-GDZ-05104 950-GDZ-05105 950-GDZ-05106	22	FZ-05 - H2 GAS LOW (ELECTROCHEM. POINT 5% LFL)	1oo6	X	
	23	FZ-05 - H2 GAS HIGH (ELECTROCHEM. POINT 10% LFL)	1oo6	X	
	24	FZ-05 - H2 GAS HIGH CONFIRMED (ELECTROCHEM. POINT 10% LFL)	2oo6		
	25				
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	39				
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	41				

Effect matrix (columns 1–27; columns 28–53 contain no entries)

Row	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
1	X		F																								
2	X		F																								
3	X		F		X				X		X						X										X
13	X		F																								
14	X		F																								
15	X		F		X				X		X						X										X
17	X		F																								
18	X		F																								
20	X		F		X				X		X						X										X
22	X		F																								
23	X		F																								
24	X		F		X				X		X						X										X

NOTES:
1. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE VnetIP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

LEGEND

TEST COMPLETED
GIANDONATO R.M.
14-03-2025
[signature]
PUNCH LIST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE STILL TO RESOLVE. ALL OTHER TESTING ACKNOWLEDGED BY CROSSWIND. 15/04/25
[signature] MARTIN TAYLOR
CROSSWIND

TITLE	NUMBER

REFERENCE DOCUMENTS

TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
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F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

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03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND — ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: HYDROGEN OPEN AREA

DATE 11/02/2025

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

FIRE ZONE 03
OXYGEN OPEN AREA

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

EFFECT

Col.	SYS	NOTES	DESCRIPTION	TAG No.
1	AUDIO / VISUAL ALERT		OPERATOR WORKSTATION DISPLAY - EVENT/ALARM	
2	AUDIO / VISUAL ALERT			
3	AUDIO / VISUAL ALERT		F&G ALARM ON CAP ONSHORE	
4	AUDIO / VISUAL ALERT			
5	AUDIO / VISUAL ALERT	TO SHEET 17	GAS BEACON ACTIVATION - AMBER	
6	AUDIO / VISUAL ALERT			
7	AUDIO / VISUAL ALERT	TO SHEET 17	FIRE BEACON ACTIVATION - RED	
8	AUDIO / VISUAL ALERT			
9	AUDIO / VISUAL ALERT	TO SHEET 17	SOUNDER ACTIVATION	
10	AUDIO / VISUAL ALERT			
11	AUDIO / VISUAL ALERT		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS	72-XS-001
12–16	AUDIO / VISUAL ALERT			
17	SIS SYSTEM	1	SHUT-DOWN ELECTROLYZER TO SIS SYSTEM	70-XS-003
18–26	SIS SYSTEM			
27–32	ELECTRIC ISOLATION			
33–53	OTHER			

CAUSE

	TAG Nos	DESCRIPTION	VOTING	INHIBITION	REMARK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1																						
2	950-GDZ-03107 950-GDZ-03108 950-GDZ-03109	O2 GAS HIGH (ELECTROCHEM. POINT 23 % VOL)	1oo3	X		X		F														
3		O2 GAS HIGH CONFIRMED (ELECTROCHEM. POINT 23% VOL)	2oo3			X		F		X				X		X						X

Rows 4–41 of the cause table and effect columns 18–53 are empty.

NOTES:
1. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE VnetIP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

LEGEND

TEST COMPLETED
GIANDONATO R.U.
12-03-2025
[signature]
PUNCH LIST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE STILL TO RESOLVE. ALL OTHER TESTING ACKNOWLEDGED BY CROSSWIND 15/04/25
[signature] MARTIN TAYLOR

REFERENCE DOCUMENTS

TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
F&G detectors Layout - Lower deck and Upper deck	123A90-DDL-SAF-DL-30027
F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

Rev.	Date	Status	Description	DRN	CHKD	APPD
00	08/03/2024	IFA	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	12/06/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND | ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: OXYGEN OPEN AREA

DATE: 11/02/2025

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

FIRE ZONE 01/02/03/04/05/06
FIRE OPEN AREA

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

EFFECT

Column	SYS	NOTES	DESCRIPTION	TAG No.
1	AUDIO / VISUAL ALERT		OPERATOR WORKSTATION DISPLAY - EVENT/ALARM	
2	AUDIO / VISUAL ALERT			
3	AUDIO / VISUAL ALERT		F&G ALARM ON CAP ONSHORE	
4	AUDIO / VISUAL ALERT			
5	AUDIO / VISUAL ALERT	TO SHEET 17	GAS BEACON ACTIVATION - AMBER	
6	AUDIO / VISUAL ALERT			
7	AUDIO / VISUAL ALERT	TO SHEET 17	FIRE BEACON ACTIVATION - RED	
8	AUDIO / VISUAL ALERT			
9	AUDIO / VISUAL ALERT	TO SHEET 17	SOUNDER ACTIVATION	
10	AUDIO / VISUAL ALERT			
11	AUDIO / VISUAL ALERT		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS	72-XS-001
12–16	AUDIO / VISUAL ALERT			
17	SIS SYSTEM	1	ESD-1D TO SIS SYTEM	70-XS-002
18–26	SIS SYSTEM			
27–32	ELECTRIC ISOLATION			
33–53	OTHER			

TAG Nos	CAUSE DESCRIPTION	VOTING	INHIBITION	REMARK	#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
950-FDZ-01101 950-FDZ-01102 950-FDZ-01103 950-FDZ-01104	FZ-01 - FLAME (UV/IR)	1oo4	X		1	X		F														
	FZ-01 - FLAME CONFIRMED (UV/IR)	2oo4			2	X		F				X		X		X						X
					3																	
950-FDZ-02101 950-FDZ-02102 950-FDZ-02103 950-FDZ-02104	FZ-02 - FLAME (UV/IR)	1oo4	X		4	X		F														
	FZ-02 - FLAME CONFIRMED (UV/IR)	2oo4			5	X		F				X		X		X						X
					6																	
950-FDZ-03101 950-FDZ-03102 950-FDZ-03103 950-FDZ-03104	FZ-03 (ELECTROLYZER AREA) - FLAME (UV/IR)	1oo4	X		7	X		F														
	FZ-03 (ELECTROLYZER AREA) - FLAME CONFIRMED (UV/IR)	2oo4			8	X		F				X		X		X						X
					9																	
950-FDZ-04101 950-FDZ-04102 950-FDZ-04103 950-FDZ-04104	FZ-04 - FLAME (UV/IR)	1oo4	X		10	X		F														
	FZ-04 - FLAME CONFIRMED (UV/IR)	2oo4			11	X		F				X		X		X						X
					12																	
950-FDZ-05101 950-FDZ-05102 950-FDZ-05103 950-FDZ-05104	FZ-05 - FLAME (UV/IR)	1oo4	X		13	X		F														
	FZ-05 - FLAME CONFIRMED (UV/IR)	2oo4			14	X		F				X		X		X						X
					15																	
950-FDZ-06101 950-FDZ-06102	FZ-06 - FLAME (UV/IR)	1oo2			16	X		F														
	FZ-06 - FLAME CONFIRMED (UV/IR)	2oo2			17	X		F				X		X		X						X
					18																	
					19																	
					20																	
					21																	
					22																	
					23																	
					24																	
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					36																	
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					39																	
					40																	
					41																	

NOTES:
1. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE Vnet/IP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

LEGEND

TEST COMPLETED
GIANDONATO R.M.
14.03-2025

GERRY MCCANN
CROSSWIND
14/3/25

REFERENCE DOCUMENTS	
TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
F&G detectors Layout - Lower deck and Upper deck	123A90-DDL-SAF-DL-30027
F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

Rev.	Date	Status	Description	DRN	CHKD	APPD
00	08/03/2024	IFA	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	12/06/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
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CROSSWIND | ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: FIRE OPEN AREA

DATE 11/02/2025

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

FIRE ZONE 01/02/03/04/05/06/7
MFA PUSH BUTTONS

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

NOTES:
1. THE FLASHING ALARM ON CAP ONSHORE IS A CUMULATIVE OF ALL ASD PUSH BUTTONS ACTIVATION.

EFFECT

SYS	Effect columns	NOTES	DESCRIPTION
AUDIO / VISUAL ALERT	1		OPERATOR WORKSTATION DISPLAY - EVENT/ALARM
	2		
	3		F&G ALARM ON CAP ONSHORE
	4		
	5	TO SHEET 17	GAS BEACON ACTIVATION - AMBER
	6		
	7	TO SHEET 17	FIRE BEACON ACTIVATION - RED
	8		
	9	TO SHEET 17	SOUNDER ACTIVATION
	10–16		
SIS SYSTEM	17–26		
ELECTRIC ISOLATION	27–32		
OTHER	33–53		

TAG Nos	CAUSE DESCRIPTION	VOTING	INHIBITION	REMARK		1	2	3	4	5	6	7	8	9
					1									
950-MFA-01101	FZ-01 MFA ACTIVATION		X	1	2	X		F				X		X
950-MFA-01102	FZ-01 MFA ACTIVATION		X	1	3	X		F				X		X
950-MFA-01103	FZ-01 MFA ACTIVATION		X	1	4	X		F				X		X
					5									
950-MFA-02101	FZ-02 MFA ACTIVATION		X	1	6	X		F				X		X
					7									
950-MFA-03101	FZ-03 MFA ACTIVATION		X	1	8	X		F				X		X
950-MFA-03102	FZ-03 MFA ACTIVATION		X	1	9	X		F				X		X
950-MFA-03103	FZ-03 MFA ACTIVATION		X	1	10	X		F				X		X
950-MFA-03104	FZ-03 MFA ACTIVATION		X	1	11	X		F				X		X
					12									
950-MFA-04101	FZ-04 MFA ACTIVATION		X	1	13	X		F				X		X
950-MFA-04102	FZ-04 MFA ACTIVATION		X	1	14	X		F				X		X
					15									
950-MFA-04201	FZ-04 MFA ACTIVATION - B-400 INDOOR		X	1	16	X		F				X		X
950-MFA-04202	FZ-04 MFA ACTIVATION - B-400 INDOOR		X	1	17	X		F				X		X
950-MFA-04203	FZ-04 MFA ACTIVATION - B-400 INDOOR		X	1	18	X		F				X		X
					19									
950-MFA-05101	FZ-05 MFA ACTIVATION		X	1	20	X		F				X		X
950-MFA-05102	FZ-05 MFA ACTIVATION		X	1	21	X		F				X		X
950-MFA-05103	FZ-05 MFA ACTIVATION		X	1	22	X		F				X		X
950-MFA-05104	FZ-05 MFA ACTIVATION		X	1	23	X		F				X		X
					24									
950-MFA-05201	FZ-05 MFA ACT. - WATER TREAT. PK INDOOR		X	1	25	X		F				X		X
					26									
950-MFA-06101	FZ-06 MFA ACTIVATION		X	1	27	X		F				X		X
950-MFA-06102	FZ-06 MFA ACTIVATION		X	1	28	X		F				X		X
					29									
950-MFA-06201	FZ-06 MFA ACTIVATION - B-100 INDOOR		X	1	30	X		F				X		X
					31									
950-MFA-07101	FZ-07 MFA ACTIVATION		X	1	32	X		F				X		X
					33									
					34									
					35									
					36									
					37									
					38									
					39									
					40									
					41									

LEGEND

Gerry McCann (signature)
GERRY MCCANN
CROSSWIND
12/3/2025

TEST COMPLETED
12-03-2025
GIANDONATO R.U.
(signature)

REFERENCE DOCUMENTS	
TITLE	NUMBER
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03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND | ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: MFA PUSH BUTTONS

DATE 11/02/2025

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

FIRE ZONE 01/02/03/04/05/06/7
SOUNDERS AND BEACONS

FZ-01= FUEL CELL AREA
FZ-02= H2 STORAGE VESSELS AREA
FZ-03= ELECTROLYZER AREA
FZ-04= B-200/B-300/B-400 CONTAINERS AREA
FZ-05= BESS AREA
FZ-06= B-100 CONTAINER AREA
FZ-07= MASTER POINT AREA
FZ-08= TRANSITION PIECE AREA

TAG Nos	CAUSE				EFFECT																
					SYS	GAS VISUAL ALERT BEACONS (AMBER)															
					NOTES																
					DESCRIPTION		FZ-01 GAS BEACON ACTIVATION	FZ-02 GAS BEACON ACTIVATION	FZ-03 GAS BEACON ACTIVATION	FZ-03 GAS BEACON ACTIVATION	FZ-04 GAS BEACON ACTIVATION	FZ-04 GAS BEACON ACTIVATION	FZ-04 GAS BEACON ACT. - B-400 INDOOR	FZ-04 GAS BEACON ACT. - B-300 INDOOR	FZ-04 GAS BEACON ACT. - B-200 INDOOR	FZ-05 GAS BEACON ACT. - WATER T. INDOOR	FZ-06 GAS BEACON ACTIVATION	FZ-06 GAS BEACON ACTIVATION	FZ-06 GAS BEACON ACT. - B-100 INDOOR	FZ-07 GAS BEACON ACTIVATION	
					TAG No.		950-XL-01101	950-XL-02101	950-XL-03101	950-XL-03103	950-XL-04101	950-XL-04103	950-XL-04201	950-XL-04203	950-XL-04205	950-XL-05201	950-XL-06101	950-XL-06103	950-XL-06201	950-XL-07101	
	DESCRIPTION	VOTING	INHIBITION	REMARK		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	GAS CONFIRMED IN B-100 (HV CONTAINER)			From sheet 5	1		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	GAS CONFIRMED B-200 IN (LV CONTAINER)			From sheet 6	2		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	GAS CONFIRMED IN B-300 (UPS CONTAINER)			From sheet 7	3		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	GAS CONFIRMED IN B-400 (ITER CONTAINER)			From sheet 8	4		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	GAS CONFIRMED IN FUEL CELL			From sheet 9	5		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	GAS CONFIRMED IN BESS			From sheet 10	6		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	GAS CONFIRMED IN ELECTROLYZER			From sheet 11	7		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	GAS CONFIRMED IN WATER TREAT. PKG			From sheet 12	8		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	HYDROGEN OPEN AREA			From sheet 13	9		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
					10																
	SMOKE CONFIRMED IN B-100 (HV CONTAINER)			From sheet 5	11																
	SMOKE CONFIRMED B-200 IN (LV CONTAINER)			From sheet 6	12																
	SMOKE CONF. IN B-300 (UPS CONTAINER)			From sheet 7	13																
	SMOKE CONF. IN B-400 (ITER CONTAINER)			From sheet 8	14																
	SMOKE CONFIRMED IN FUEL CELL			From sheet 9	15																
	SMOKE CONFIRMED IN BESS			From sheet 10	16																
	SMOKE CONFIRMED IN ELECTROLYZER			From sheet 11	17																
	SMOKE CONFIRMED IN WATER TREAT. PKG			From sheet 12	18																
	FIRE OPEN AREA			From sheet 15	19																
					20																
	O2 GAS HIGH CONFIRMED			From sheet 14	21		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
					22																
	MFA PUSH BUTTONS ACTIVATION FZ 01/02/03/04/05/06/7			From sheet 16	23																
					24																
79-XA-001	ASD ACTIVATION FROM SIS SYSTEM			NOTE 1	25		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
79-XA-002	ESD-1D ACTIVATION FROM SIS SYSTEM			NOTE 1	26		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
79-XA-003	ESD-1 ACTIVATION FROM SIS SYSTEM			NOTE 1	27		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
					28																
79-XA-004	MOB PUSH BUTTONS ACTIVATION FROM SIS SYSTEM			NOTE 1	29		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
					30																
					31																
					32																
					33																
					34																
					35																
					36																
					37																
					38																
					39																
					40																
					41																

SYS	FIRE VISUAL ALERT BEACONS (RED)																
DESCRIPTION		FZ-01 FIRE BEACON ACTIVATION	FZ-02 FIRE BEACON ACTIVATION	FZ-03 FIRE BEACON ACTIVATION	FZ-03 FIRE BEACON ACTIVATION	FZ-04 FIRE BEACON ACTIVATION	FZ-04 FIRE BEACON ACTIVATION	FZ-04 FIRE BEACON ACT. - B-400 INDOOR	FZ-04 FIRE BEACON ACT. - B-300 INDOOR	FZ-04 FIRE BEACON ACT. - B-200 INDOOR	FZ-05 FIRE BEACON ACT. - WATER T. INDOOR	FZ-06 FIRE BEACON ACTIVATION	FZ-06 FIRE BEACON ACTIVATION	FZ-06 FIRE BEACON ACT. - B-100 INDOOR	FZ-07 FIRE BEACON ACTIVATION		
TAG No.		950-XL-01102	950-XL-02102	950-XL-03102	950-XL-03104	950-XL-04102	950-XL-04104	950-XL-04202	950-XL-04204	950-XL-04206	950-XL-05202	950-XL-06102	950-XL-06104	950-XL-06202	950-XL-07102		
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
12		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
13		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
14		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
15		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
16		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
17		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
18		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
19		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
20																	
21																	
22																	
23		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
24																	
25		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
26		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
27		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
28																	
29		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
30																	
31																	
32																	
33																	
34																	
35																	
36																	
37																	
38																	
39																	
40																	
41																	

SYS	AUDIO ALERT SOUNDERS																			
NOTES																	2			
DESCRIPTION	FZ-01 SOUNDER ACTIVATION	FZ-01 SOUNDER ACTIVATION	FZ-02 SOUNDER ACTIVATION	FZ-03 SOUNDER ACTIVATION	FZ-03 SOUNDER ACTIVATION	FZ-04 SOUNDER ACTIVATION	FZ-04 SOUNDER ACTIVATION	FZ-04 SOUNDER ACT. - B-400 INDOOR	FZ-04 SOUNDER ACT. - B-300 INDOOR	FZ-04 SOUNDER ACT. - B-200 INDOOR	FZ-05 SOUNDER ACTIVATION	FZ-05 SOUNDER ACTIVATION	FZ-05 SOUNDER ACTIVATION	FZ-05 SOUNDER ACTIVATION	FZ-05 SOUNDER ACTIVATION - WTER T. INDOOR	FZ-06 SOUNDER ACTIVATION	FZ-06 SOUNDER ACT. - B-100 INDOOR	FZ-07 SOUNDER ACTIVATION		WAVE-OFF LIGHT ACTIVATION TO NAVAIDS
TAG No.	950-XZ-01101	950-XZ-01102	950-XZ-02101	950-XZ-03101	950-XZ-03102	950-XZ-04101	950-XZ-04102	950-XZ-04201	950-XZ-04202	950-XZ-04203	950-XZ-05101	950-XZ-05102	950-XZ-05103	950-XZ-05104	950-XZ-05201	950-XZ-06101	950-XZ-06201	950-XZ-07101		72-XS-001
	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
10																				
11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
13	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
16	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
17	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
20																				
21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
22																				
23	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
24																				
25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
26	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
27	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
28																				
29	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
30																				
31																				
32																				
33																				
34																				
35																				
36																				
37																				
38																				
39																				
40																				
41																				

NOTES:
1. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE Vnet/IP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP
2. It will be possible to deactivate the sounder 950-XZ-07101 (installed in Master Area) from CAP onshore.

LEGEND

TEST COMPLETED
GIANDONATO R.M.
19-03-2025

WITNESSED

PAUL WILLIAMSON
CROSSWIND
19-MAR-2025

REFERENCE DOCUMENTS	
TITLE	NUMBER
Process Safety Cause and Effect Matrix	123A90-DDL-IN-CE-40000
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000
F&G detectors Layout - Lower deck and Upper deck	123A90-DDL-SAF-DL-30027
F&G detectors Layout - Below Lower deck	123A90-DDL-SAF-DL-30028

Rev.	Date	Status	Description	DRN	CHKD	APPD
00	08/03/2024	IFA	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	12/06/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
02	08/10/2024	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO
03	11/02/2025	AFC	Accepted for Construction (AFC)	LCA	MGA	DLO

CROSSWIND — ROSETTI MARINO

Fire & Gas Cause & Effect Matrix: SOUNDERS AND BEACONS

DATE 11/02/2025

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

Sheet 17 of 17 | 03

Base Load Power Hub (BLPH)

Process Safety Cause & Effect Matrix

Document Number: 123A90-DDL-IN-CE-40000

Document Class: 1

04	11/02/2025	Accepted For Construction (AFC)	LCA	MGA	DLO
03	08/10/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
02	12/06/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
01	08/03/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
00	24/11/2023	Issue for Acceptance (IFA)	LCA	MGA	DLO
Rev.	Date	Description	Prepared	Reviewed	Approved

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SH.	DESCRIPTION	REVISIONS							
		00	01	02	03	04			
1	Cover	X	X	X	X	X			
2	Table of Contents	X	X	X	X	X			
3	Revision / Change Log	X	X	X	X	X			
4	Notes	X	X	X	X	X			
5	ASD: ABANDON	X	X	X	X	X			
6	ESD-1D: EMERGENCY SHUT DOWN WITH DEPRESSURIZATION	X	X	X	X	X			
7	ESD-1: EMERGENCY SHUT DOWN WITHOUT DEPRESSURIZATION	X	X	X	X	X			
8	PSD: PROCESS SHUT DOWN	X	X	X	X	X			
9	MOB PUSH BUTTONS		X	X	X	X			

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Revision / Change Log

Rev.	Description
00	ISSUE FOR ACCEPTANCE (IFA)
01	ACCEPTED FOR CONSTRUCTION (AFC)
02	ACCEPTED FOR CONSTRUCTION (AFC)
03	ACCEPTED FOR CONSTRUCTION (AFC)
04	ACCEPTED FOR CONSTRUCTION (AFC)

HOLDS LIST

No.	Description
1.	
2.	
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5.	

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NOTES

1. Delay times are:

T1= 1439 min 55 sec
T2= 5 sec.
T3= 30 sec.
T4= 15 sec. (T4<T3)
T5= 24 hours (T1+ T2)

2. Abbreviation

CCR = CENTRAL CONTROL ROOM (ONSHORE)
OER = ONSHORE EQUIPMENT ROOM
ITER = OFFSHORE CONTROL ROOM
R = RESET
EL = EVENT LOG
F = FLASHING LIGHT INDICATION ON CAP
T = TIME DELAY

ASD=ABANDON
ESD=EMERGENCY SHUTDOWN
MOB= MAN OVERBORD
FGS=FIRE & GAS SYSTEM
HMI=HUMAN MACHINE INTERFACE
SIS=SAFETY INSTRUMENTED SYSTEM

PKG=PACKGE
UPS=Uninterruptible Power Supply
P&ID=Piping and Instrument Diagram
HVAC=Heating, Ventilation and Air Condition.
BLPH=Base Load Power Hub
ITER=Instrument & Telecoms Equipment Room

3. Digital Input/Output on SIS System TAGs legend:

Digital Output from SIS	Digital Input to Fire & Gas System
79-XS-001 (ASD activation)	79-XA-001 (ASD activation)
79-XS-002 (ESD-1D activation)	79-XA-002 (ESD-1D activation)
79-XS-003 (ESD-1 activation)	79-XA-003 (ESD-1 activation)
79-XS-004 (MOB activation)	79-XA-004 (MOB activation)
79-XS-005 (Loss on-shore communication)	

4. Digital Input/Output on SIS System TAGs legend:

Digital Output from FGS	Digital Input to SIS
70-XS-001 (ASD activation)	70-XA-001 (ASD activation)
70-XS-002 (ESD-1D activation)	70-XA-002 (ESD-1D activation)
70-XS-003 (S/D Electrolyzer)	70-XA-003 (S/D Electrolyzer)
70-XS-004 (Inhibit battery Charging B-300)	70-XA-004 (Inhibit battery Charging B-300)
70-XS-005 (H2 Open Area)	70-XA-005 (H2 Open Area)
70-XS-006 (H2/SMOKE B-100)	70-XA-006 (H2/SMOKE B-100)
70-XS-007 (H2/SMOKE B-200)	70-XA-007 (H2/SMOKE B-200)
70-XS-008 (Inhibit battery Charging B-100)	70-XA-008 (Inhibit battery Charging B-100)
70-XS-010 (H2/Smoke in water Treat.)	70-XA-010 (H2/Smoke in water Treat.)
70-XS-015 (H2/Smoke intake B-100)	70-XA-015 (H2/Smoke intake B-100)
70-XS-016 (H2/Smoke intake B-200)	70-XA-016 (H2/Smoke intake B-200)
70-XS-017 (H2/Smoke intake B-300)	70-XA-017 (H2/Smoke intake B-300)
70-XS-018 (H2/Smoke intake B-400)	70-XA-018 (H2/Smoke intake B-400)

5. Internal wiring isolation between SIS and Network cabinets.

79-XS-010 (ELECT. ISOLATION SOFT. CABLES COMMUNICATION CAT 6A)	CAT 6a Cables isolation

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CAUSE AND EFFECT CHARTS

ASD

CAUSE

EFFECT

ESD Level	DESCRIPTION	TAG NO.	FUNC.	By-Pass / Reset	P&ID NO.	NOTE	TAG. NO.	ACTION	ESD LEVEL	DESCRIPTION	P&ID	To sheet
										ALARM / INTERFACE		
										BATTERIES DISCONNECTED		
										PROCESS/POWER PACKAGES		
										INCOMING CIRCUIT BREAKERS POWER GENERATION		
										HVAC SYSTEM		
										ELECTRICAL ISOLATION UPS POWERS		
ASD	ASD ACTIVATION FROM FGS SYSTEM	70-XA-001				4				OPERATOR WORKSTATION DISPLAY - EVENT/ALARM		
ASD	FZ-01 ABANDON SHUTDOWN ACTIVATION PUSH BUTTON	950-ASD-01101		X		3				ALARM ON CAP ONSHORE		
ASD	FZ-03 ABANDON SHUTDOWN ACTIVATION PUSH BUTTON	950-ASD-03101		X		3				ESD-1D ACTIVATION		6
ASD	FZ-04 ABANDON SHUTDOWN ACTIVATION PUSH BUTTON	950-ASD-04101		X		3				ASD ACTIVATION TO FGS SYSTEM		NOTE 4
ASD	FZ-06 ABANDON SHUTDOWN ACTIVATION PUSH BUTTON	950-ASD-06101		X		3				DISCONNECT AC UPS UP-200F3 BATTERIES A/B (B-300 CONTAINER)		
ASD	FZ-07 ABANDON SHUTDOWN ACTIVATION PUSH BUTTON	950-ASD-07101		X		3				DISCONNECT AC UPS UP-200F4 BATTERIES A/B (B-300 CONTAINER)		
										DISCONNECT DC UPS (B-100 CONTAINER)		
										SHUTDOWN ELECTROLYZER PACKAGE A-20000	80011	
										SHUTDOWN BESS PACKAGE A-85000		
										SHUTDOWN SOLAR FARM PACKAGE (NOTE 1)		
										SHUTDOWN FUEL CELL PACKAGE A-80000	80012	
										SHUTDOWN WATER TREATMENT PACKAGE A-50000	80022/23	
										SHUTDOWN INSTRUMENT AIR PACKAGE A-63000	80027	
										SHUTDOWN NITROGEN PACKAGE A-84000	80027	
										OPEN BESS A-85000 INCOMING CIRCUIT BREAKERS		
										OPEN FUEL CELL A-80000 INCOMING CIRCUIT BREAKERS		
										OPEN SOLAR INCOMING CIRCUIT BREAKERS		
										OPEN WIND FARM INCOMING CIRCUIT BREAKERS		
										SHUTDOWN HVAC SYSTEM OF B-100 (HV CONTAINER)		
										SHUTDOWN HVAC SYSTEM OF B-200 (LV CONTAINER)		
										SHUTDOWN HVAC SYSTEM OF B-300 (UPS CONTAINER)		
										SHUTDOWN HVAC SYSTEM OF B-400 (ITER CONTAINER)		
										ELECT. ISOLATION UPS POWER UCP (WATER TREAT. A-50000)		
										ELECT. ISOLATION UPS POWER UCP (INSTRUMENT AIR A-63000)		
										ELECT. ISOLATION UPS POWER UCP (NITROGEN A-84000)		
										ELECT. ISOLATION UPS POWER UCP HVAC B-100		
										ELECT. ISOLATION UPS POWER UCP HVAC B-200		
							79-XS-001		7			
							84-XS-007A/B	ISOLATE	9			
							84-XS-008A/B	ISOLATE	11			
							84-XS-006	ISOLATE	13			
							20-XS-001		15			
							85-XS-001		17			
							83-XS-001		19			
							80-XS-001		21			
							50-XS-001		23			
							63-XS-001		25			
							64-XS-001		27			
							82-XS-002		29			
							82-XS-003		31			
							82-XS-001		33			
							81-XS-001		35			
							77-XS-001		37			
							77-XS-002		39			
							77-XS-003		41			
							77-XS-004		43			
							84-XS-001		45			
							84-XS-003		47			
							84-XS-002		49			
							84-XS-004		51			
							84-XS-005		53			

NOTES

1. SERIAL SIGNALS THROUGH FIBER OPTIC CABLE.
2. T4= 1 sec. (PROPOSED delay time).
3. THE FLASHING ALARM ON CAP ONSHORE IS A CUMULATIVE OF ALL ASD PUSH BUTTONS ACTIVATION.
4. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE VnetVIP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

TEST COMPLETED
GRASSOWIND 19.03.2025
R.H.
PUNCH LIST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE STILL TO RESOLVE. ALL OTHER TESTING ACKNOWLEDGED BY GRASSOWIND
MARTIN TAYLOR

HOLDS

GRASSOWIND 15/04/25

1. T1= 1439 min 55 sec
2. T2= 5 sec.
3. T3= 30 sec.
4. T4= 15 sec. (T4<T3)
5. T5= 24 hours (T1+ T2)

Reference

Document Title	Document Number
Fire & Gas Cause & Effect Matrix	123A90-DDL-IN-CE-40002
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000

LEGEND

CCR	CENTRAL CONTROL ROOM (ONSHORE)
OER	ONSHORE EQUIPMENT ROOM
ITER	OFFSHORE CONTROL ROOM
R	RESET
EL	EVENT LOG
F	FLASHING LIGHT INDICATION ON CAP
T	TIME DELAY

Rev.	Date	Description	Issued by	Checked by	Approved by
00	24/11/2023	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	08/03/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
02	12/06/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
04	11/02/2025	Accepted For Construction (AFC)	LCA	MGA	DLO

Process Safety Cause & Effect Matrix

ASD: ABANDON

Document Reference: 123A90-DDL-IN-CE-40000
Rev. 04 | Status: AFC
Contract No. CW-I-WP4-2023-05
Sheet 5 of 9

CAUSE AND EFFECT CHARTS

ESD-1D

CAUSE / EFFECT

ESD Level	DESCRIPTION	TAG NO.	FUNC.	By-Pass / Reset	P&ID NO.	NOTE
ASD	ESD-1D ACTIVATION IN CASCADE FROM ASD					
ESD-1D	LOW LOW PRESSURE ON NITROGEN MANIFOLD	64-PT-002	LO_LO	X	80027	
ESD-1D	HIGH HIGH PRESSURE ON H2 STORAGE TANK V-25001A	25-PT-004	HI_HI	X	80015	
ESD-1D	HIGH HIGH PRESSURE ON H2 STORAGE TANK V-25001B	25-PT-006	HI_HI	X	80016	
ESD-1D	HIGH HIGH PRESSURE ON H2 STORAGE TANK V-25001C	25-PT-008	HI_HI	X	80017	
ESD-1D	HIGH HIGH PRESSURE ON H2 STORAGE TANK V-25001D	25-PT-009	HI_HI	X	80018	
ESD-1D	HIGH HIGH PRESSURE ON H2 STORAGE TANK V-25001E	25-PT-011	HI_HI	X	80019	
ESD-1D	HIGH HIGH PRESSURE ON H2 STORAGE TANK V-25001F	25-PT-012	HI_HI	X	80020	
ESD-1D	ESD-1D ACTIVATION FROM FGS SYSTEM	70-XA-002				3
ESD-1D	HYDROGEN CONFIRMED IN OPEN AREA FROM F&G SYSTEM (ISOLATE EQUIP. NOT SUITABLE FOR ZONE 1)	70-XA-005				3
ESD-1D	INHIBIT BATTERY CHARGING B-100	70-XA-008				3
ESD-1D	INHIBIT BATTERY CHARGING B-300	70-XA-004				3
ESD-1D	FZ-01 ESD-1D PUSH BUTTON ACTIVATION	950-ESDD-01101		X		2
ESD-1D	FZ-03 ESD-1D PUSH BUTTON ACTIVATION	950-ESDD-03101		X		2
ESD-1D	FZ-04 ESD-1D PUSH BUTTON ACTIVATION	950-ESDD-04101		X		2
ESD-1D	FZ-06 ESD-1D PUSH BUTTON ACTIVATION	950-ESDD-06101		X		2
ESD-1D	FZ-07 ESD-1D PUSH BUTTON ACTIVATION	950-ESDD-07101		X		2
ESD-1D	ESD-1D PUSH BUTTONS ONSHORE	950-ESDD-00001		X		2
ESD-1D	H2/SMOKE INSIDE B-100 (ELECT. ISOLATION) FROM FGS SYSTEM	70-XA-006				3
ESD-1D	H2/SMOKE INSIDE B-200 (ELECT. ISOLATION) FROM FGS SYSTEM	70-XA-007				3
ESD-1D	H2/SMOKE IN WATER TREATM. PKG (ELECT. ISOLATION) FROM FGS SYSTEM	70-XA-010				3
ESD-1D	LOSS OF ON-SHORE COMMUNICATION	79-XS-005				
ESD-1	LOW LOW PRESSURE ON INSTRUMENT AIR MANIFOLD	63-PT-004	LO_LO	X	80027	
	H2/SMOKE INTAKE B-100 FROM FGS SYTEM	70-XA-015				3
	H2/SMOKE INTAKE B-200 FROM FGS SYSTEM	70-XA-016				3
	H2/SMOKE INTAKE B-300 FROM FGS SYSTEM	70-XA-017				3
	H2/SMOKE INTAKE B-400 FROM FGS SYSTEM	70-XA-018				3

TAG. NO.	ACTION	ESD LEVEL	DESCRIPTION	P&ID	To sheet
			ALARM / INTERFACE		
			WORKSTATION HMIs - EVENT/ALARM		
			ALARM ON CAP ONSHORE		
			ESD-1 ACTIVATION		7
79-XS-002			ESD-1D ACTIVATION TO FGS SYSTEM		NOTE 3
			DEPRESSURIZATION		
25-BDV-005		ESD-1D	OPEN 25-BDV-005 ON H2 STORAGE TANKS V-25001A	80015	
25-BDV-007		ESD-1D	OPEN 25-BDV-007 ON H2 STORAGE TANKS V-25001B	80016	
25-BDV-010		ESD-1D	OPEN 25-BDV-010 ON H2 STORAGE TANKS V-25001C	80017	
25-BDV-013		ESD-1D	OPEN 25-BDV-013 ON H2 STORAGE TANKS V-25001D	80018	
25-BDV-016		ESD-1D	OPEN 25-BDV-016 ON H2 STORAGE TANKS V-25001E	80019	
25-BDV-019		ESD-1D	OPEN 25-BDV-019 ON H2 STORAGE TANKS V-25001F	80020	
25-BDV-022		ESD-1D	OPEN 25-BDV-022 ON OUTLET H2 HEADER TO FUEL CELL PGK	80014	
			HVAC SYSTEM		
77-XS-001		ESD-1D	SHUTDOWN HVAC SYSTEM OF B-100 (HV CONTAINER)		
77-XS-003			SHUTDOWN HVAC SYSTEM OF B-300 (UPS CONTAINER)		
77-XS-002		ESD-1D	SHUTDOWN HVAC SYSTEM OF B-200 (LV CONTAINER)		
77-XS-004			SHUTDOWN HVAC SYSTEM OF B-400 (ITER CONTAINER)		
			BATTERY INHIBITION (B-100 AND B-300)		
84-XS-009			INHIBIT. BATTERY CHARGING B-100		
84-XS-010			INHIBIT. BATTERY CHARGING B-300 AC UPS UP-200F3 BATTERIES		
84-XS-011			INHIBIT. BATTERY CHARGING B-300 AC UPS UP-200F4 BATTERIES		
79-XS-010			ELECT. ISOLATION SOFT. CABLES COMMUNICATION CAT 6A		4
84-XS-004			ELECT. ISOLATION UPS POWER UCP HVAC B-100		
84-XS-005			ELECT. ISOLATION UPS POWER UCP HVAC B-200		
84-XS-003			ELECT. ISOLATION UPS POWER UCP (INSTRUMENT AIR A-63000)		
84-XS-002			ELECT. ISOLATION UPS POWER UCP (NITROGEN A-64000)		
84-XS-001			ELECT. ISOLATION UPS POWER UCP (WATER TREAT. A-50000)		
84-XS-006	ISOLATE		DISCONNECT DC UPS (B-100 CONTAINER)		
			PROCESS/POWER PACKAGES		
20-XS-001			SHUTDOWN ELECTROLYZER PACKAGE A-20000	80011	
85-XS-001		1	SHUTDOWN BESS PACKAGE A-85000		
83-XS-001		1	SHUTDOWN SOLAR FARM PACKAGE		
80-XS-001		1	SHUTDOWN FUEL CELL PACKAGE A-80000	80012	
50-XS-001		1	SHUTDOWN WATER TREATMENT PACKAGE A-50000	80022/23	
63-XS-001		1	SHUTDOWN INSTRUMENT AIR PACKAGE A-63000	80027	
64-XS-001		1	SHUTDOWN NITROGEN PACKAGE A-64000	80027	
			INCOMING CIRCUIT BREAKERS POWER GENERATION		
82-XS-002			OPEN BESS A-85000 INCOMING CIRCUIT BREAKERS		
82-XS-003			OPEN FUEL CELL A-80000 INCOMING CIRCUIT BREAKERS		
82-XS-001			OPEN SOLAR INCOMING CIRCUIT BREAKERS		
81-XS-001			OPEN WIND FARM INCOMING CIRCUIT BREAKERS		

NOTES

1. SERIAL SIGNALS THROUGH FIBER OPTIC CABLE.
2. THE FLASHING ALARM ON CAP ONSHORE IS A CUMULATIVE OF ALL ESD-1D PUSH BUTTONS ACTIVATION.
3. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE VneVIP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.
4. INTERNAL WIRING ISOLATION BETWEEN SIS AND NETWORK CABINETS.

TEST COMPLETED
GIVEN OVER TO CROSSWIND 19-03-2025
R.H.
PUNCH LST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE STILL TO RESOLVE. ALL OTHER TESTING ACKNOWLEDGED BY CROSSWIND
MARTIN TAYLOR

HOLDS
CROSSWIND 15/04/25

1. T1= 1439 min 55 sec
2. T2= 5 sec.
3. T3= 30 sec.
4. T4= 15 sec. (T4<T3)
5. T5= 24 hours (T1+ T2)

Reference

Document Title	Document Number
Fire & Gas Cause & Effect Matrix	123A90-DDL-IN-CE-40002

LEGEND

CCR	CENTRAL CONTROL ROOM (ONSHORE)
OER	ONSHORE EQUIPMENT ROOM
ITER	OFFSHORE CONTROL ROOM
R	RESET
EL	EVENT LOG
F	FLASHING LIGHT INDICATION ON CAP
T	TIME DELAY

Rev.	Date	Description	Issued by	Checked by	Approved by
00	24/11/2023	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	08/03/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
02	12/06/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
04	11/02/2025	Accepted For Construction (AFC)	LCA	MGA	DLO

Process Safety Cause & Effect Matrix

ESD-1D: EMERGENCY SHUT DOWN WITH DEPRESSURIZATION

Document Reference: 123A90-DDL-IN-CE-40000
Rev: 04 Status: AFC
Contract No. CW4-WP4-2023-05
Sheet 6 of 9

CAUSE AND EFFECT CHARTS

ESD-1

EFFECT

Col.	Group	To sheet	P&ID	Description	ESD Level	Action	Tag No.
1	ALARM / INTERFACE			WORKSTATION HMIs - EVENT/ALARM	1		
	ALARM / INTERFACE			ALARM ON CAP ONSHORE			
3	ALARM / INTERFACE	8		PSD ACTIVATION	PSD		
5	ALARM / INTERFACE	NOTE 2		ESD-1 ACTIVATION TO FGS SYSTEM	1		79-XS-003
7	PROCESS/POWER PACKAGES		80011	SHUTDOWN ELECTROLYZER PACKAGE A-20000			20-XS-001
13	PROCESS/POWER PACKAGES		80012	SHUTDOWN FUEL CELL PACKAGE A-80000	1		80-XS-001
15	PROCESS/POWER PACKAGES		80022/23/2	SHUTDOWN WATER TREATMENT PACKAGE A-50000	1		50-XS-001
21	SHUT-DOWN VALVES		80027	CLOSE 64-SDV-001 NITROGEN TO H2 STORAGE TANKS	1		64-SDY-001
23	SHUT-DOWN VALVES		80014	CLOSE 25-SDV-023 ON OUTLET H2 HEADER TO FUEL CELL PKG			25-SDY-023
25	SHUT-DOWN VALVES		80013	CLOSE 25-SDV-001 ON H2 HEADER TO STORAGE TANKS			25-SDY-001

CAUSE

ESD Level	DESCRIPTION	TAG NO.	FUNC.	By-Pass / Reset	P&ID NO 123A90-DDL-PR-PID-.	NOTE	Row	1	Alarm	3	5	7	13	15	21	23	25
ESD-1D	ESD-1 ACTIVATION IN CASCADE FROM ESD-1D						2			X					X	X	X
ESD-1	FZ-01 ESD-1 PUSH BUTTON ACTIVATION	950-ESD-01101		X		1	10	X	F	X	X	X	X	X		X	X
ESD-1	FZ-03 ESD-1 PUSH BUTTON ACTIVATION	950-ESD-03101		X		1	12	X	F	X	X	X	X	X		X	X
ESD-1	FZ-04 ESD-1 PUSH BUTTON ACTIVATION	950-ESD-04101		X		1	14	X	F	X	X	X	X	X		X	X
ESD-1	FZ-06 ESD-1 PUSH BUTTON ACTIVATION	950-ESD-06101		X		1	16	X	F	X	X	X	X	X		X	X
ESD-1	FZ-07 ESD-1 PUSH BUTTON ACTIVATION	950-ESD-07101		X		1	18	X	F	X	X	X	X	X		X	X
ESD-1	ESD-1 PUSH BUTTONS ONSHORE	950-ESD-00001				1	20	X	F	X	X	X	X	X		X	X
ESD-1	BESS ALARM THERMAL RUN AWAY	85-XA-004					22	X	F	X	X	X	X	X		X	X

NOTES

1. THE FLASHING ALARM ON CAP ONSHORE IS A CUMULATIVE OF ALL ESD-1 PUSH BUTTONS ACTIVATION.

2. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE Vnet/IP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

TEST COMPLETED

GIANDONATO 19-03-2025

[signature] R.U.

PUNCH LIST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE STILL TO BE RESOLVED. ALL OTHER TESTING ACKNOWLEDGED BY CROSSWIND.

[signature] MARTIN TAYLOR

HOLDS

15/04/25

1. T1= 1439 min 55 sec
2. T2= 5 sec.
3. T3= 30 sec.
4. T4= 15 sec. (T4<T3)
5. T5= 24 hours (T1+ T2)

Reference

Document Title	Document Number
Fire & Gas Cause & Effect Matrix	123A90-DDL-IN-CE-40002
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000

LEGEND

CCR	CENTRAL CONTROL ROOM (ONSHORE)
OER	ONSHORE EQUIPMENT ROOM
ITER	OFFSHORE CONTROL ROOM
R	RESET
EL	EVENT LOG
F	FLASHING LIGHT INDICATION ON CAP
T	TIME DELAY

Rev.	Date	Description	Issued by	Checked by	Approved by
00	24/11/2023	Issue for Acceptance (IFA)	LCA	MGA	DLO
01	08/03/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
02	12/06/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
04	11/02/2025	Accepted For Construction (AFC)	LCA	MGA	DLO

Process Safety Cause & Effect Matrix

ESD-1: EMERGENCY SHUT DOWN WITHOUT DEPRESSURIZATION

Document Reference: 123A90-DDL-IN-CE-40000

Rev. 04 Status: AFC

Contract No. CW-I-WP4-2023-05

Sheet 7 of 9

CAUSE AND EFFECT CHARTS

PSD

EFFECT

Col.	Group	Description	P&ID	PSD	Tag No.
1	ALARM / INTERFACE	WORKSTATION HMIs - EVENT/ALARM			
3	ALARM / INTERFACE	ALARM ON CAP ONSHORE			
8	SHUT-DOWN VALVES	CLOSE 25-SDV-001 ON H2 HEADER TO STORAGE TANKS	80013	PSD	25-SDY-001
10	SHUT-DOWN VALVES	CLOSE 64-SDV-001 NITROGEN TO H2 STORAGE TANKS	80027	PSD	64-SDY-001
12	SHUT-DOWN VALVES	CLOSE 25-SDV-023 ON OUTLET H2 HEADER TO FUEL CELL PGK	80014	PSD	25-SDY-023
14	PROCESS/POWER PACKAGES	SHUTDOWN WATER TREATMENT PACKAGE A-50000	80022/23/2	PSD	50-XS-001
16	PROCESS/POWER PACKAGES	SHUTDOWN ELECTROLYZER PACKAGE A-20000	80011	PSD	20-XS-001
18	PROCESS/POWER PACKAGES	SHUTDOWN FUEL CELL PACKAGE A-80000	80012	PSD	80-XS-001
20	PROCESS/POWER PACKAGES	SHUTDOWN BESS PACKAGE A-85000		PSD	85-XS-001
22	PROCESS/POWER PACKAGES	SHUTDOWN INSTRUMENT AIR PACKAGE A-63000	80027	PSD	63-XS-001
24	PROCESS/POWER PACKAGES	SHUTDOWN NITROGEN PACKAGE A-64000	80027	PSD	64-XS-001
26	PROCESS/POWER PACKAGES	SHUTDOWN SOLAR (Note 1) NOT SEEN			83-XS-001
28	PROCESS/POWER PACKAGES	SHUTDOWN SEAWATER LIFT PUMP P-50001A			83-XS-001A
30	PROCESS/POWER PACKAGES	SHUTDOWN SEAWATER LIFT PUMP P-50001B			83-XS-001B
32	HVAC SYSTEM	SHUTDOWN HVAC SYSTEM OF B-100 (HV CONTAINER)			77-XS-001
34	HVAC SYSTEM	SHUTDOWN HVAC SYSTEM OF B-200 (LV CONTAINER)			77-XS-002
36	HVAC SYSTEM	SHUTDOWN HVAC SYSTEM OF B-300 (UPS CONTAINER)			77-XS-003
38	HVAC SYSTEM	SHUTDOWN HVAC SYSTEM OF B-400 (ITER CONTAINER)			77-XS-004

CAUSE

PSD	DESCRIPTION	TAG NO.	FUNC.	By-Pass / Reset	P&ID NO 123A90-DDL-PR-PID-.	NOTE	Row	1	3	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
ESD-1	PSD ACTIVATION IN CASCADE FROM ESD-1					Sh.7	2													X	X				
PSD	LOW PRESSURE ON NITROGEN MANIFOLD	64-PT-002	LO	X	80027		4	X			X														
PSD	LOW LOW PRESSURE ON OUTLET H2 HEADER TO FUEL CELL PACKAGE	80-PT-002	LO_LO	X	80012		6	X	F	X		X	X	X	X					X	X				
PSD	HIGH HIGH PRESSURE ON INLET H2 HEADER TO STORAGE TANKS	25-PT-002	HI_HI	X	80013		8	X	F	X			X	X						X	X				
PSD	HIGH HIGH PRESSURE ON OUTLET H2 HEADER TO FUEL CELL PACKAGE	80-PT-002	HI_HI	X	80012		10	X	F	X		X	X	X	X					X	X				
PSD	S/D ELECTROLYZER PKG FROM FGS SYSTEM FOR O2 CONFIRMED	70-XA-003				2	12						X	X						X	X				
PSD	HIGH LEVEL H2 VENT KO DRUM	43-LT-001	HI	X	80029		14	X					X	X						X	X				
	F&G UCP PANEL FAULT WATER TREATMENT PKG	50-XA-003					16	X					X	X						X	X				
	ELECTROLYZER PACKAGE CUMULATIVE CRITICAL FAULT	20-XA-003					18	X					X	X						X	X				
	FUEL CELL PACKAGE CUMULATIVE CRITICAL FAULT	80-XA-003					20	X				X			X										
	BESS PACKAGE CUMULATIVE CRITICAL FAULT	85-XA-003					22	X								X									
	INSTRUMENT PACKAGE CUMULATIVE CRITICAL FAULT	63-XA-003					24	X									X								
	NITROGEN PACKAGE CUMULATIVE CRITICAL FAULT	64-XA-003					26	X										X							
	HVAC PACKAGE CUMULATIVE CRITICAL FAULT B-100 (HV CONTAINER)	77-XA-001					28	X														X			
	HVAC PACKAGE CUMULATIVE CRITICAL FAULT B-200 (LV CONTAINER)	77-XA-002					30	X															X		
	HVAC PACKAGE CUMULATIVE CRITICAL FAULT B-300 (UPS CONTAINER)	77-XA-003					32	X																X	
	HVAC PACKAGE CUMULATIVE CRITICAL FAULT B-400 (ITER CONTAINER)	77-XA-004					34	X																	X
	NAVAIDS PACKAGE CUMULATIVE CRITICAL FAULT	72-XA-001					36	X																	
	SOLAR PACKAGE CUMULATIVE CRITICAL FAULT					Note 1	38	X											X						

NOTES

1. SERIAL SIGNALS THROUGH FIBER OPTIC CABLE.

2. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE Vnet/IP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

TEST COMPLETED
GIANDONATO 19·03·2025
[signature] R.M.

PUNCH LIST HAS BEEN RAISED TO REFLECT REMOTE RESET ISSUE STILL TO BE RESOLVED. ALL OTHER TESTING ACKNOWLEDGED BY CROSSWIND

HOLDS

1. T1= 1439 min 55 sec
2. T2= 5 sec.
3. T3= 30 sec.
4. T4= 15 sec. (T4<T3)
5. T5= 24 hours (T1+ T2)

[signature]
MARTIN TAYLOR
CROSSWIND
15/04/25

Reference

Document Title	Document Number
Fire & Gas Cause & Effect Matrix	123A90-DDL-IN-CE-40002
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000

LEGEND

CCR	CENTRAL CONTROL ROOM (ONSHORE)
OER	ONSHORE EQUIPMENT ROOM
ITER	OFFSHORE CONTROL ROOM
R	RESET
EL	EVENT LOG
F	FLASHING LIGHT INDICATION ON CAP
T	TIME DELAY

Rev.	Date	Description	Issued by	Checked by	Approved by
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04	11/02/2025	Accepted For Construction (AFC)	LCA	MGA	DLO

Process Safety Cause & Effect Matrix

PSD: PROCESS SHUT DOWN

Document Reference: 123A90-DDL-IN-CE-40000

Rev: 04 Status: AFC

Contract No. CW-I-YIP4-2023-05

CAUSE AND EFFECT CHARTS

MOB PUSH BUTTONS

CAUSE / EFFECT

PSD	DESCRIPTION	TAG NO.	FUNC.	By-Pass / Reset	P&ID NO 123A90-DDL-PR-PID-.	NOTE
	FZ-01 MAN OVER BOARD ACTIVATION	950-MOB-01101		X		1
	FZ-03 MAN OVER BOARD ACTIVATION	950-MOB-03101		X		1
	FZ-04 MAN OVER BOARD ACTIVATION	950-MOB-04101		X		1
	FZ-06 MAN OVER BOARD ACTIVATION	950-MOB-06101		X		1
	FZ-07 MAN OVER BOARD ACTIVATION	950-MOB-07101		X		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	57	58	59	60	61	62	63	64	65	66	67	68	69	70
TAG. NO.					79-XS-004																																																																																								
ACTION					ALARM																																																																																																					
DESCRIPTION	WORKSTATION HMIs - EVENT/ALARM		ALARM ON CAP ONSHORE		MOB PUSH BUTTONS ALARM ACTIVATION TO FGS SYSTEM																																																																																																					
P&ID																																																																																																									
To sheet					NOTE 2																																																																																																					

NOTES

1. The Flahing Alarm on CAP onshore is a cumulative of all Man Onverboard (MOB) push buttons activation.

2. FGS AND SIS SYSTEM EXCHANGE DATA BETWEEN THEM BY USING THE Vnet/IP NETWORK. THIS IS IMPLEMENTED AS REDUNDANT SAFETY COMMUNICATION, APPROVED FOR SIL 3 LOOP.

TEST COMPLETED
14-03-2025 GIANDONATO
R.M.

GERRY McCANN
CROSSWIND
14/3/25

HOLDS

1. T1= 1439 min 55 sec
2. T2= 5 sec.
3. T3= 30 sec.
4. T4= 15 sec. (T4<T3)
5. T5= 24 hours (T1+ T2)

Reference

Document Title	Document Number
Fire & Gas Cause & Effect Matrix	123A90-DDL-IN-CE-40002
Process Safety Cause and Effect Block Diagram	123A90-DDL-PR-DG-80000

LEGEND

CCR	CENTRAL CONTROL ROOM (ONSHORE)
OER	ONSHORE EQUIPMENT ROOM
ITER	OFFSHORE CONTROL ROOM
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EL	EVENT LOG
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T	TIME DELAY

Rev.	Date	Description	Issued by	Checked by	Approved by
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01	08/03/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
02	12/06/2024	Accepted For Construction (AFC)	LCA	MGA	DLO
04	11/02/2025	Accepted For Construction (AFC)	LCA	MGA	DLO

Process Safety Cause & Effect Matrix

MOB PUSH BUTTONS

Document Reference: 123A90-DDL-IN-CE-40008

Rev. 04 Status: AFC

Contract No. CW4-WP4-2023-05

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

NOT APPLICABLE

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)

NOT APPLICABLE

Section 7.3 Vendor Spares & Special Tools lists references

ROSETTI MARINO

SPARE PARTS LIST

CROSSWIND

Document Title	SPARE PART INDEX REGISTER (COMMISSIONING, 2-YEAR's) - FIRE AND GAS FIELD EQUIPMENT				
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°	1724000821-COM-LIS-00011	Rev. Issued for review	Rev. Date 22-Oct-24 / Status IFR / 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: FORES ENGINEERING srl
Address: VIA SECONDO CASADEI 12
47122 Forlì
ITALY

PO Number: 1721002632

PO description: FIRE AND GAS FIELD EQUIPMENT
Supplier telephone no: +39.0543.813811
E-mail: Fores@fores.it

Contact name: MRS MATTEO OSSANI
Contact mobile no:
WEBSITE http://www.fores.it/

General Information:

Item Number	Total number of identical spares installed	MATERIALS DATA: Description of recommended spare parts	Parts/drawing ref.: Project Datasheet no.	Parts/drawing ref.: Project Detail dwg. no.	Parts/drawing ref.: 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.	Manufacturename	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	24	SMOKE DETECTOR ZETTLER MR601TEx	1724000821-IN-DS-00004	1724000821-IN-DA-00003		FR110 "Bayblend" fire resistant												MR601TEx	ZETTLER	0	1	
2	49	GAS DETECTOR HYDROGEN Dräger Polytron® 8200 CAT DQ	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												Polytron® 8200 CAT DQ d S	Dräger	0	1	
3	9	GAS DETECTOR ULTRASONIC Dräger Polytron® 8900 UGLD	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												Polytron® 8900 UGLD d S 4-	Dräger	0	1	
4	3	GAS DETECTOR OXYGEN Dräger Polytron 8100 EC d S 4-	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												Polytron 8100 EC d S 4-	Dräger	0	1	
5	22	FLAME DETECTOR FGD FlameSpec FLS-UV-IR-AS11	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												FlameSpec FLS-UV-IR-AS11	FGD	0	1	
6	21	PUSH BUTTON MEDC SM87PBL MANUAL FIRE ALARM	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												SM87PB	MEDC	0	1	
7	20	PUSH BUTTON MEDC SM87PBL PUSH BUTTON TO SIS	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												SM87PB	MEDC	0	1	
8	13	GAS FLASH BEACON (AMBER) MEDC SM87LEDS	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												SM87LEDS	MEDC	0	1	
9	13	FIRE FLASH BEACON (RED) MEDC SM87LEDS	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												SM87LEDS	MEDC	0	1	
10	17	SOUNDER MEDC DB3B	1724000821-IN-DS-00004	1724000821-IN-DA-00003		AISI 316												DB3B	MEDC	0	1	
11	32	PUSH BUTTON DPDT CONTACT EATON GHG 432	1724000821-IN-DS-00004	1724000821-IN-DA-00003		Polyamide												GHG 432	EATON	0	0	
12																						
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45																						

Section 7.4 Vendor Data / Operations / Maintenance Manuals References

CAE EPLAN Electric P8

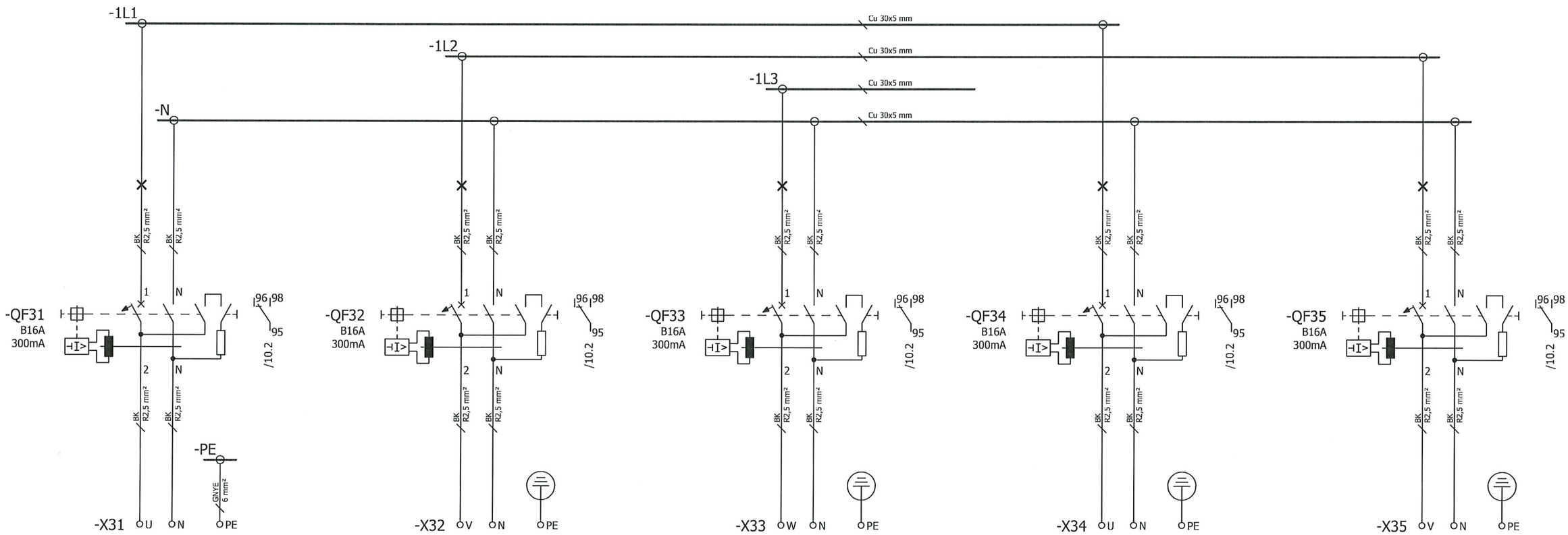
This document is property of AEG Power Solutions and must not be displayed or duplicated to any third party without the consent of the company

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: MATCH FIRST
24/3/25



Load
230V/N/PE~50Hz

B400-FGS-001
FGS PANEL LINE A
2KW

Load
230V/N/PE~50Hz

B400-FGS-001
FGS PANEL LINE B
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

Load
230V/N/PE~50Hz

SPARE
2KW

1000007888_080

				Date	28.05.2024
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 20 kVA
Circuit diagram

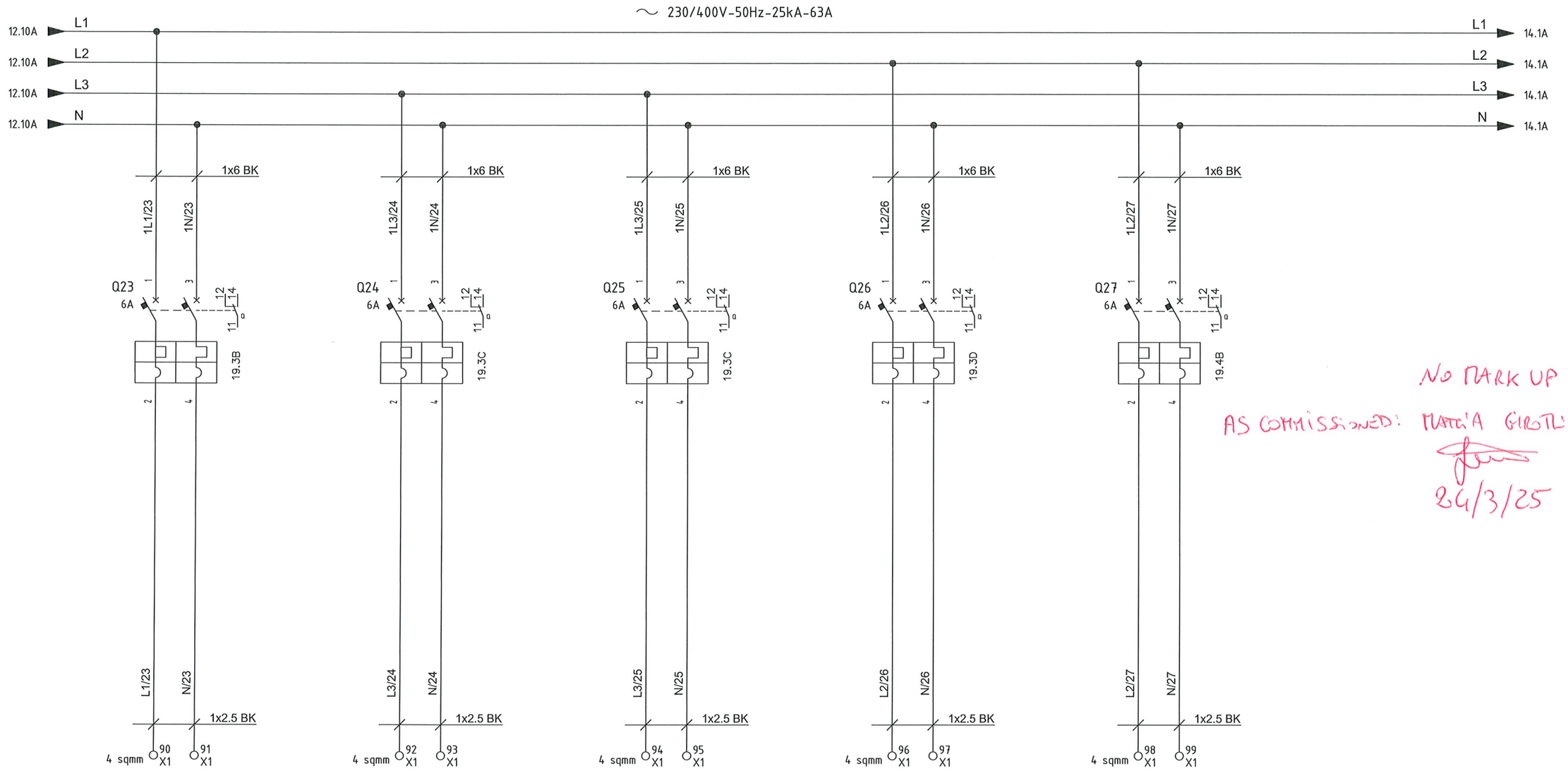
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=
+ MBC1
& EFS

A3

sheet 7
sheets 11



B400-SIS-001
SIS - Controller and I/O Cabinet - Auxiliary
(3G2.5 sqmm)

B400-PCS-001
PCS - Controller and I/O Cabinet - Auxiliary
(3G2.5 sqmm)

B400-EMCS-001
EMCS - Controller and I/O Cabinet - Auxiliary
(3G2.5 sqmm)

B400-FGS-001
FGS Fire & Gas Panel - Auxiliary
(3G2.5 sqmm)

B400-NET-001
System Server / Network Cabinet - Auxiliary
(3G2.5 sqmm)

NO MARK UP
AS COMMISSIONED: MATTIA GIROTTI
24/3/25

VALID FOR CONSTRUCTION
VENDOR DOCUMENT - FDL DWG:
123A90-FDL-1724002197-EL-DG-00033
REV.: 3_A | DATE: 18/03/25 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

CROSSWIND

IMESA ELECTRICAL ENGINEERING

ROSETTI MARINO

DWG n° : 231298/SD/33
Item n° : PF1002888/101

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	12/03/2025	Santinelli	Flamminio	Sigismondi	Replaced Twiligh Switch TW1
2	19/08/2024	Santinelli	Flamminio	Sigismondi	As Built (ASB)
1	05/07/2024	Santinelli	Flamminio	Sigismondi	Accepted for construction (AFC)
0	29/05/2024	Santinelli	Flamminio	Sigismondi	Issued for review (IFR)

TITLE : "DP-200N1"
LV SWBD FUNCTIONAL DIAGRAMS
Functional Drawing

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

A3 | DRAWING NO. 1723002197-EL-DG-00033 | SHEET 13 | REV. 03

F.to UNI A3: 420mmx297mm

File Name : 1723002197-EL-DG-00033 Rev. 03

Section 8 LIST OF MODIFICATIONS

NOT APPLICABLE

Section 8.1 List of changes

NOT APPLICABLE

Section 9 SUPPORTING DOCUMENTS

NOT APPLICABLE