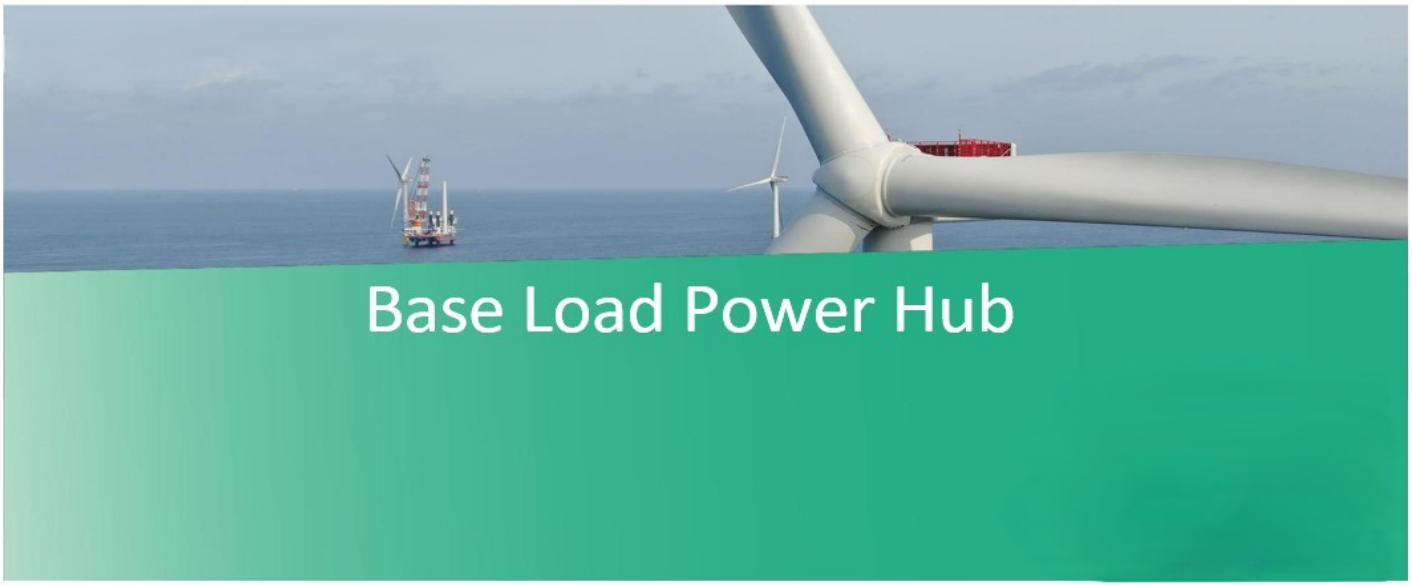
CROSSWIND

ROSETTI MARINO

PROVERLIS

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



MECHANICAL COMPLETION DOSSIER (ONSHORE)

SYSTEM	82 Main Power Distribution Medium Voltage 6.6 kV
SUBSYSTEM	82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

CROSSWIND	123A90 - HOLLANDSE KUST NOORD WIND PARK BLPH Project MECHANICAL COMPLETION DOSSIER INDEX	ROSETTI MARINO

Sub System N°:	82-50	Tick as appropriate	ONSHORE	O
Description:	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		OFFSHORE	NA

1.	***READY FOR COMMISSIONING CERTIFICATE*** *Ready For Commissioning Certificate (RFC)*	O
2.	***CONSOLIDATED PUNCH LISTS*** *Cleared and Residual Items*	O
3.	***SYSTEM/SUB-SYSTEM LIMIT DRAWINGS*** *Mark-up drawings showing the limits of the relevant System/Sub-System*	O
4.	***MECHANICAL COMPLETION STATUS INDEX – BUILDING DISCIPLINE*** *Building Sub-System Status Index (Print out) and Check/Test sheets*	NA
5.	***MECHANICAL COMPLETION STATUS INDEX – ELECTRICAL DISCIPLINE*** *Electrical Sub-System Status Index (Print out) and Check/Test Sheets* *Hazardous Area Equipment Detailed Inspection*	O
6.	***MECHANICAL COMPLETION STATUS INDEX - INSTRUMENTAL DISCIPLINE*** *Instrumental Sub-System Status Index (Print out) and Check/Test Sheets*	NA
7.	***MECHANICAL COMPLETION STATUS INDEX - MECHANICAL DISCIPLINE*** *Mechanical SubSystem Status Index (Print out) and Check/Test Sheets*	NA
8.	***MECHANICAL COMPLETION STATUS INDEX - TELECOMMUNICATION DISCIPLINE*** *Telecommunication Sub-System Status Index (Print out) and Check/Test Sheets*	NA
9.	***MECHANICAL COMPLETION STATUS INDEX - HVAC DISCIPLINE*** *HVAC Sub-System Status Index (Print out) and Check/Test Sheets*	NA
10.	***MECHANICAL COMPLETION STATUS INDEX - PIPING DISCIPLINE*** *Piping Sub-System Status Index and Check/Test Sheets*	NA
11.	***MECHANICAL COMPLETION INDEX - SAFETY DISCIPLINE*** *Safety Sub-System Status Index (Print out) and Check/Test Sheets*	NA
12.	***FAT / VENDOR REPORTS*** *Fat reports issued by vendors and/or vendor reports*	NA
13.	***MECHANICAL COMPLETION CHANGES / MARK-UPS*** *A copy of the changes initiated during the Mechanical Completion process pertaining to the relevant Sub-System will be incorporated in this section*	NA

Note: Under the generic terminology “Building” are also covered the following disciplines: **Structural, Painting**

Under the generic terminology “Instrumental” is also covered the following discipline: **Fire & Gas**

ROSETTI MARINO

123A90 - HOLLANDSE KUST NOORD WIND PARK
BLPH Project

CROSSWIND

Ready For Commissioning (RFC) Certificate

COMPLETE	●	PARTIAL	

Revision:	1		Issued on:	2024-12-12	
System:	82	/	Main Power Distribution Medium Voltage 6.6 kV		
SubSystem:	82-50	/	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		

1	COMPANY has, at its option and if required, reviewed the mechanical completion associated with the above-named system/sub-system of the SCOPE and observed that such functional sub-system has been brought into readiness for commencement of the associated pre-commissioning and commissioning activities, but for the outstanding punch list items, if any, attached and referred in this Certificate.
2	Issuance of this Certificate shall not release CONTRACTOR from any of his obligations, responsibilities or liabilities under the CONTRACT.
3	Mechanical Completion Status Index attached (per Discipline) Punch List report attached (Outstanding and Cleared)

PUNCH LIST	PENDING POINTS	
Note: All Category "A" Items must be cleared prior to issue a Ready For Commissioning (RFC) Certificate	A: 1	B: 22

REMARKS: A.IVESON: ALL 6,6kV AND 400V CABLE CONNECTIONS ON THE TRANSFORMER, 6,6kV SWITCHBOARD AND 400V SWITCHBOARD WILL BE MANAGED DIRECTLY BY THE COMMISSIONING TEAM.

	CONTRACTOR Construction Manager	**CONTRACTOR** Commissioning Manager	**COMPANY** Construction Lead (if required)	**COMPANY** Commissioning Lead (if required)
Name	Wolmer Borghi	Anthony Iveson	CPY NOT PRESENT	CPY NOT PRESENT
Date	2024-12-13	2024-12-16	2024-12-16	2024-12-16
Signature	PROVERLIS Digitaly signed by Wolmer Borghi 2024-12-13T09:39:30.667Z	PROVERLIS Digitaly signed by Anthony Iveson 2024-12-16T13:32:10.262Z	PROVERLIS Digitaly signed by CPY NOT PRESEN 2024-12-16T13:37:00.952Z	PROVERLIS Digitaly signed by CPY NOT PRESEN 2024-12-16T13:37:12.899Z

CROSSWIND

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Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 82-50 & process: MC

Electrical	82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
82006-CEM-1-L1	6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer	ONSHORE	C10000488	CPX08	100	2024-11-20	RFC 1
82006-CEM-1-L2	6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer	ONSHORE	C10000489	CPX08	100	2024-11-20	RFC 1
82006-CEM-1-L3	6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer	ONSHORE	C10000490	CPX08	100	2024-11-20	RFC 1
83003-CEL-L1	LV SWBD 800/460V / 6.6/0.8 kV Transformer	ONSHORE	C10001826	CPX09	100	2024-12-05	RFC 1
83003-CEL-L2	LV SWBD 800/460V / 6.6/0.8 kV Transformer	ONSHORE	C10001827	CPX09	100	2024-12-05	RFC 1
83003-CEL-L3	LV SWBD 800/460V / 6.6/0.8 kV Transformer	ONSHORE	C10001828	CPX09	100	2024-12-05	RFC 1
83011-CEC	Solar transformer / 6.6KV HV Switchgear	ONSHORE	C10002138	CPX10	100	2024-12-09	RFC 1
83012-CEC	Solar transformer / 6.6KV HV Switchgear	ONSHORE	C10002139	CPX10	100	2024-12-09	RFC 1
83013-CEC	Solar transformer / 6.6KV HV Switchgear	ONSHORE	C10002140	CPX10	100	2024-12-09	RFC 1
83014-CEC	Solar transformer / 6.6KV HV Switchgear	ONSHORE	C10002141	CPX10	100	2024-12-09	RFC 1
83117-CEL	Lighting & Small Power DB BoP / Auxiliary Trafo SOLAR 0,5MVA	ONSHORE	C10000636	CPX09	100	2024-12-09	RFC 1
TR-200ED1	6,6 / 0,8 kV 0,5 MVA Transformer	ONSHORE	C10000869	CPX02	100	2024-09-13	RFC 1

CROSSWIND

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Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	82	Main Power Distribution Medium Voltage 6.6 kV
SUBSYSTEM	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000674	A	82006-CEM-1-L1 C10000488	Cable to be connected both side. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3	.		Pschintu 2024-11-20			
C30001555	A	83014-CEC C10002141	the cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30001558	A	83013-CEC C10002140	The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30001562	A	83012-CEC C10002139	The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30001566	A	83011-CEC C10002138	The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30000672	B	82006-CEM-1-L1 C10000488	Missing cable cleats stainless steel with TPE cable protection. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3	.		Pschintu 2024-11-20			
C30000673	B	82006-CEM-1-L1 C10000488	Missing cable tags on external routing. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3	.		Pschintu 2024-11-20			
C30001404	B	83003-CEL-L1 C10001826	Missing cable tags both side .	.		Gtangianu 2024-12-05			
C30001405	B	83003-CEL-L1 C10001826	Identification tag wires missing both side.	.		Gtangianu 2024-12-05			

CROSSWIND

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Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 82 Main Power Distribution Medium Voltage 6.6 kV

SUBSYSTEM 82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001406	B	83003-CEL-L2 C10001827	Identification tag wires missing both side .	.		Gtangianu 2024-12-05			
C30001407	B	83003-CEL-L2 C10001827	Missing cable tags both side.	.		Gtangianu 2024-12-05			
C30001408	B	83003-CEL-L3 C10001828	Identification tag wires missing both side .	.		Gtangianu 2024-12-05			
C30001409	B	83003-CEL-L3 C10001828	Missing cable tags both side.	.		Gtangianu 2024-12-05			
C30001547	B	83117-CEL C10000636	Identification tag wire missing both side the cable (83117-CEL).	.		Gtangianu 2024-12-09			
C30001548	B	83117-CEL C10000636	Missing cable tags both side.(83117-CEL)	.		Gtangianu 2024-12-09			
C30001553	B	83014-CEC C10002141	Missing cable tags on routing, inside and outside the panels (TR-200ED1/SG-100D1)	.		Gtangianu 2024-12-09			
C30001554	B	83014-CEC C10002141	Spare cores to be properly isolated both side the cable. (RR-100D1/SG-100D1 Panel A2)	.		Gtangianu 2024-12-09			
C30001556	B	83014-CEC C10002141	Identification tag wire missing both side the cable (TR-200ED1/SG-100D1 Panel A2).	,		Gtangianu 2024-12-09			

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Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 82 Main Power Distribution Medium Voltage 6.6 kV

SUBSYSTEM 82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001557	B	83013-CEC C10002140	Identification tag wire missing both side the cable (TR-200ED1/SG-100D1 Panel A2).	.		Gtangianu 2024-12-09			
C30001559	B	83013-CEC C10002140	Spare cores to be properly isolated both side the cable. (TR-200ED1/SG-100D1 Panel A2)	.		Gtangianu 2024-12-09			
C30001560	B	83013-CEC C10002140	Missing cable tags on routing, inside and outside the panels (TR-200ED1/SG-100D1)	.		Gtangianu 2024-12-09			
C30001561	B	83012-CEC C10002139	Identification tag wire missing both side the cable (CP-200E2/SG-100D1 Panel A2).	.		Gtangianu 2024-12-09			
C30001563	B	83012-CEC C10002139	Spare cores to be properly isolated both side the cable. (CP-200E2/SG-100D1 Panel A2). See attached photo.	.		Gtangianu 2024-12-09			
C30001564	B	83012-CEC C10002139	Missing cable tags on routing, inside and outside the panels CP-200E2/SG-100D1)	.		Gtangianu 2024-12-09			
C30001565	B	83011-CEC C10002138	Identification tag wire missing both side the cable (CP-200E2/SG-100D1 Panel A2).	.		Gtangianu 2024-12-09			
C30001567	B	83011-CEC C10002138	Spare cores to be properly isolated both side the cable. (CP-200E2/SG-100D1 Panel A2). See attached photo.	.		Gtangianu 2024-12-09			
C30001568	B	83011-CEC C10002138	Missing cable tags on routing, inside and outside the panels CP-200E2/SG-100D1)	.		Gtangianu 2024-12-09			

Section 2 CONSOLIDATED PUNCH LISTS

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	82	Main Power Distribution Medium Voltage 6.6 kV
SUBSYSTEM	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30000674	A	82006-CEM-1-L1 C10000488	Cable to be connected both side. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3	.		Pschintu 2024-11-20	2024-12-16	Ecarotenuto 2024-12-16	2024-12-16
C30001555	A	83014-CEC C10002141	the cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30001558	A	83013-CEC C10002140	The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30001562	A	83012-CEC C10002139	The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30001566	A	83011-CEC C10002138	The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-	.		Gtangianu 2024-12-09	2024-12-12	Ecarotenuto 2024-12-12	2024-12-12
C30000672	B	82006-CEM-1-L1 C10000488	Missing cable cleats stainless steel with TPE cable protection. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3	.		Pschintu 2024-11-20	2025-01-03	Ecarotenuto 2025-01-03	2025-01-03
C30000673	B	82006-CEM-1-L1 C10000488	Missing cable tags on external routing. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3	.		Pschintu 2024-11-20	2025-02-07	Pschintu 2025-02-07	2025-02-07
C30001404	B	83003-CEL-L1 C10001826	Missing cable tags both side .	.		Gtangianu 2024-12-05	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30001405	B	83003-CEL-L1 C10001826	Identification tag wires missing both side.	.		Gtangianu 2024-12-05	2025-02-15	AAndreani 2025-02-15	2025-02-15

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 82 Main Power Distribution Medium Voltage 6.6 kV

SUBSYSTEM 82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001406	B	83003-CEL-L2 C10001827	Identification tag wires missing both side .	.		Gtangianu 2024-12-05	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001407	B	83003-CEL-L2 C10001827	Missing cable tags both side.	.		Gtangianu 2024-12-05	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30001408	B	83003-CEL-L3 C10001828	Identification tag wires missing both side .	.		Gtangianu 2024-12-05	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30001409	B	83003-CEL-L3 C10001828	Missing cable tags both side.	.		Gtangianu 2024-12-05	2025-02-04	Gtangianu 2025-02-04	2025-02-04
C30001547	B	83117-CEL C10000636	Identification tag wire missing both side the cable (83117-CEL).	.		Gtangianu 2024-12-09	2025-01-30	APolo 2025-01-30	2025-01-30
C30001548	B	83117-CEL C10000636	Missing cable tags both side.(83117-CEL)	.		Gtangianu 2024-12-09	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001553	B	83014-CEC C10002141	Missing cable tags on routing, inside and outside the panels (TR-200ED1/SG-100D1)	.		Gtangianu 2024-12-09	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001554	B	83014-CEC C10002141	Spare cores to be properly isolated both side the cable. (RR-100D1/SG-100D1 Panel A2)	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001556	B	83014-CEC C10002141	Identification tag wire missing both side the cable (TR-200ED1/SG-100D1 Panel A2).	,		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM 82 Main Power Distribution Medium Voltage 6.6 kV

SUBSYSTEM 82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30001557	B	83013-CEC C10002140	Identification tag wire missing both side the cable (TR-200ED1/SG-100D1 Panel A2).	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001559	B	83013-CEC C10002140	Spare cores to be properly isolated both side the cable. (TR-200ED1/SG-100D1 Panel A2)	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001560	B	83013-CEC C10002140	Missing cable tags on routing, inside and outside the panels (TR-200ED1/SG-100D1)	.		Gtangianu 2024-12-09	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001561	B	83012-CEC C10002139	Identification tag wire missing both side the cable (CP-200E2/SG-100D1 Panel A2).	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001563	B	83012-CEC C10002139	Spare cores to be properly isolated both side the cable. (CP-200E2/SG-100D1 Panel A2). See attached photo.	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001564	B	83012-CEC C10002139	Missing cable tags on routing, inside and outside the panels CP-200E2/SG-100D1)	.		Gtangianu 2024-12-09	2025-02-21	Gtangianu 2025-02-21	2025-02-21
C30001565	B	83011-CEC C10002138	Identification tag wire missing both side the cable (CP-200E2/SG-100D1 Panel A2).	.		Gtangianu 2024-12-09	2025-02-15	AAndreani 2025-02-15	2025-02-15
C30001567	B	83011-CEC C10002138	Spare cores to be properly isolated both side the cable. (CP-200E2/SG-100D1 Panel A2). See attached photo.	.		Gtangianu 2024-12-09	2025-04-11	Gtangianu 2025-04-11	2025-04-11
C30001568	B	83011-CEC C10002138	Missing cable tags on routing, inside and outside the panels CP-200E2/SG-100D1)	.		Gtangianu 2024-12-09	2025-04-29	Gtangianu 2025-04-29	2025-04-29

ROSETTI MARINO CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001554

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002141	1.4 Discipline	Electrical
1.2 Item	83014-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Spare cores to be properly isolated both side the cable.
(RR-100D1/SG-100D1 Panel A2)

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001555

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002141	1.4 Discipline	Electrical
1.2 Item	83014-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

the cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

MCT of panel installed. Cable is dressed unde the panel rooftop cover.

Name: Eleonora Carotenuto

Date: 2024-12-12

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001556

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002141	1.4 Discipline	Electrical
1.2 Item	83014-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Identification tag wire missing both side the cable (TR-200ED1/SG-100D1 Panel A2).

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001557

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002140	1.4 Discipline	Electrical
1.2 Item	83013-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Identification tag wire missing both side the cable (TR-200ED1/SG-100D1 Panel A2).

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001558

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002140	1.4 Discipline	Electrical
1.2 Item	83013-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

MCT of panel installed. Cable is dressed unde the panel rooftop cover

Name: Eleonora Carotenuto

Date: 2024-12-12

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001559

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002140	1.4 Discipline	Electrical
1.2 Item	83013-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Spare cores to be properly isolated both side the cable.
(TR-200ED1/SG-100D1 Panel A2)

Name: Giovanni Tangianu
Date: 2024-12-09
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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:
Date:
Signature:

5 - CLEARANCE CHECK

DONE

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

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001560

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002140	1.4 Discipline	Electrical
1.2 Item	83013-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Missing cable tags on routing, inside and outside the panels (TR-200ED1/SG-100D1)

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-02-21

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001561

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002139	1.4 Discipline	Electrical
1.2 Item	83012-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Identification tag wire missing both side the cable (CP-200E2/SG-100D1 Panel A2).

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001562

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002139	1.4 Discipline	Electrical
1.2 Item	83012-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

MCT of panel installed. Cable is dressed unde the panel rooftop cover

Name: Eleonora Carotenuto

Date: 2024-12-12

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001563

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002139	1.4 Discipline	Electrical
1.2 Item	83012-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Spare cores to be properly isolated both side the cable. (CP-200E2/SG-100D1 Panel A2). See attached photo.

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001564

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002139	1.4 Discipline	Electrical
1.2 Item	83012-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Missing cable tags on routing, inside and outside the panels CP-200E2/SG-100D1)

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-02-21

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001565

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002138	1.4 Discipline	Electrical
1.2 Item	83011-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Identification tag wire missing both side the cable (CP-200E2/SG-100D1 Panel A2).

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001566

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002138	1.4 Discipline	Electrical
1.2 Item	83011-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

The cable is not protected before entering the panel . (SG-100D1 panel A2) See attached photo-

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

MCT of panel installed. Cable is dressed unde the panel rooftop cover

Name: Eleonora Carotenuto

Date: 2024-12-12

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001567

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002138	1.4 Discipline	Electrical
1.2 Item	83011-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Spare cores to be properly isolated both side the cable. (CP-200E2/SG-100D1 Panel A2). See attached photo.

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done.

Name: Giovanni Tangianu

Date: 2025-04-11

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:



ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001568

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002138	1.4 Discipline	Electrical
1.2 Item	83011-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Missing cable tags on routing, inside and outside the panels CP-200E2/SG-100D1)

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	PRE-COMM	Signature	

4 - PERFORMED ACTION

Name:

Date: 2025-04-29

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-04-29

Signature:

6- CLEARANCE APPROVAL

Name:

Date: 2025-04-29

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000672

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000488	1.4 Discipline	Electrical
1.2 Item	82006-CEM-1-L1		6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Missing cable cleats stainless steel with TPE cable protection.
Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3

Name: Paolo Schintu
Date: 2024-11-20
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Paolo Schintu
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: 2025-01-03
Signature:

6- CLEARANCE APPROVAL

Name:
Date:
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000673

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000488	1.4 Discipline	Electrical
1.2 Item	82006-CEM-1-L1		6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Missing cable tags on external routing. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3

Name: Paolo Schintu

Date: 2024-11-20

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Paolo Schintu
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: Paolo Schintu

Date: 2025-02-07

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30000674

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000488	1.4 Discipline	Electrical
1.2 Item	82006-CEM-1-L1		6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Cable to be connected both side. Point valid also for 82006-CEM-1-L2 and 82006-CEM-1-L3

Name: Paolo Schintu

Date: 2024-11-20

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	A PL A	Name	Paolo Schintu
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

Cables will be reconnected by commissioning team

Name: Eleonora Carotenuto

Date: 2024-12-16

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001404

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001826	1.4 Discipline	Electrical
1.2 Item	83003-CEL-L1		LV SWBD 800/460V / 6.6/0.8 kV Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Missing cable tags both side .

Name: Giovanni Tangianu

Date: 2024-12-05

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	2024-12-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001405

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001826	1.4 Discipline	Electrical
1.2 Item	83003-CEL-L1		LV SWBD 800/460V / 6.6/0.8 kV Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Identification tag wires missing both side.

Name: Giovanni Tangianu

Date: 2024-12-05

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	2024-12-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001406

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001827	1.4 Discipline	Electrical
1.2 Item	83003-CEL-L2		LV SWBD 800/460V / 6.6/0.8 kV Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Identification tag wires missing both side .

Name: Giovanni Tangianu

Date: 2024-12-05

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	2024-12-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Andrea Andreani

Date: 2025-02-15

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001407

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001827	1.4 Discipline	Electrical
1.2 Item	83003-CEL-L2		LV SWBD 800/460V / 6.6/0.8 kV Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Missing cable tags both side.

Name: Giovanni Tangianu

Date: 2024-12-05

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	2024-12-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001408

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001828	1.4 Discipline	Electrical
1.2 Item	83003-CEL-L3		LV SWBD 800/460V / 6.6/0.8 kV Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Identification tag wires missing both side .

Name: Giovanni Tangianu

Date: 2024-12-05

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	2024-12-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001409

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10001828	1.4 Discipline	Electrical
1.2 Item	83003-CEL-L3		LV SWBD 800/460V / 6.6/0.8 kV Transformer
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Missing cable tags both side.

Name: Giovanni Tangianu

Date: 2024-12-05

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	2024-12-05
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-02-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001547

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000636	1.4 Discipline	Electrical
1.2 Item	83117-CEL		Lighting & Small Power DB BoP / Auxiliary Trafo SOLAR 0,5MVA
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Identification tag wire missing both side the cable (83117-CEL).

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

DONE

Name: Alessio Polo

Date: 2025-01-30

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001548

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10000636	1.4 Discipline	Electrical
1.2 Item	83117-CEL		Lighting & Small Power DB BoP / Auxiliary Trafo SOLAR 0,5MVA
1.3 Subsystem	82-50		Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)

2 - OBSERVATION

Missing cable tags both side.(83117-CEL)

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-02-21

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30001553

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002141	1.4 Discipline	Electrical
1.2 Item	83014-CEC	Solar transformer / 6.6KV HV Switchgear	
1.3 Subsystem	82-50	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	

2 - OBSERVATION

Missing cable tags on routing, inside and outside the panels (TR-200ED1/SG-100D1)

Name: Giovanni Tangianu

Date: 2024-12-09

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	2024-12-09
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Installed.

Name: Giovanni Tangianu

Date: 2025-02-21

Signature:

6- CLEARANCE APPROVAL

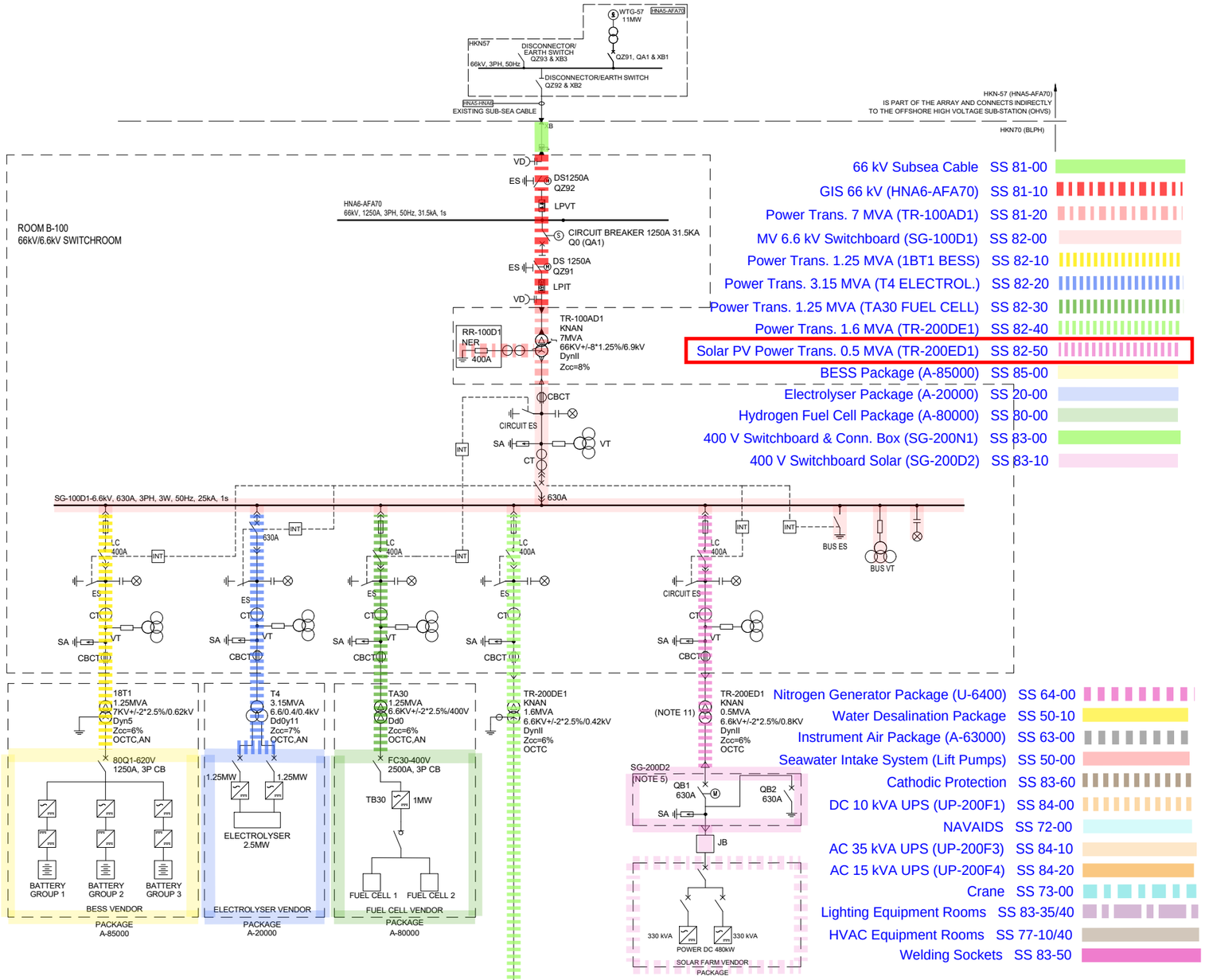
Name:

Date:

Signature:

Section 3 SYSTEM,SUB-SYSTEM LIMIT DRAWINGS

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



SYMBOL LEGEND:

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

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

NOTES:

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

REFERENCES:

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

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

CROSSWIND

ROSETTI MARINO

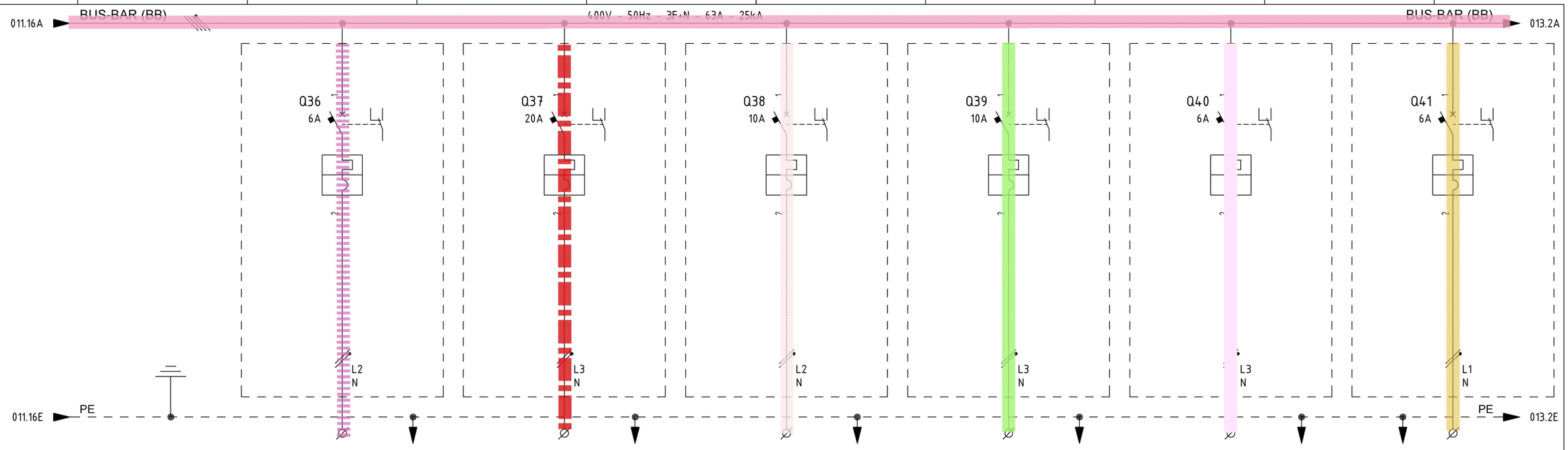
TITLE :

OVERALL/KEY SINGLE LINE DIAGRAM

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

01

File Name : 123A90-DDL-EL-DG-20158_REV01.dwg



ITEM			1	CP-200E2	CP-100E1	SG-100D1	SG-200N1	SG-200D2	UP-200F3
UTILITY			2	AUXILIARY TRAFO SOLARE 0.5MVA	AUXILIARY GIS	AUXILIARY 6.6KV SWITCHBOARD	AUXILIARY LV SWITCHBOARD	AUXILIARY LV SWITCHBOARD 800/460V	AC UPS PAS AUXILIARY
CUBICLE			3	+03	+03	+03	+03	+03	+03
RATED POWER | RATED CURRENT			4/5	0.5 KW | 2.72 A	3 KW | 16.3 A	1 KW | 5.43 A	1 KW | 5.43 A	0.5 KW | 2.72 A	0.2 KW | 0.82 A
TYPICAL FUNCTIONAL			6	-	-	-	-	-	-
CIRCUIT BREAKER (ABB)	TYPE		7	S302P-C6	S302P-C20	S302P-C10	S302P-C10	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=20A - Curve C	In=10A - Curve C	In=10A - 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 / 6	SCREW / 4	SCREW / 4	SCREW / 4	SCREW / 4
POWER CONDUCTOR		mm²	31	3G2.5	3G6	3G2.5	3G2.5	3G2.5	3G2.5

SUBSYSTEM 82-50 | SUBSYSTEM 81-10 | SUBSYSTEM 82-00 | SUBSYSTEM 83-00 | SUBSYSTEM 83-10 | SUBSYSTEM 84-10

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)

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

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 012

REV. 03

F.to UNI A3: 420mmx297mm

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

Section 4 MECHANICAL COMPLETION STATUS INDEX - BUILDING DISCIPLINE

NOT APPLICABLE

Section 5 MECHANICAL COMPLETION STATUS INDEX - ELECTRICAL DISCIPLINE

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 82-50 & process: MC & discipline : E

Electrical	82-50 Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
82006-CEM-1-L1	6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer	ONSHORE	C10000488	CPX08	100	2025-04-18	RFC 1
82006-CEM-1-L2	6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer	ONSHORE	C10000489	CPX08	100	2025-04-18	RFC 1
82006-CEM-1-L3	6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer	ONSHORE	C10000490	CPX08	100	2025-04-18	RFC 1
83003-CEL-L1	LV SWBD 800/460V / 6.6/0.8 kV Transformer	ONSHORE	C10001826	CPX09	100	2024-12-05	RFC 1
83003-CEL-L2	LV SWBD 800/460V / 6.6/0.8 kV Transformer	ONSHORE	C10001827	CPX09	100	2024-12-05	RFC 1
83003-CEL-L3	LV SWBD 800/460V / 6.6/0.8 kV Transformer	ONSHORE	C10001828	CPX09	100	2024-12-05	RFC 1
83011-CEC	Solar transformer / 6.6KV HV Switchgear	ONSHORE	C10002138	CPX10	100	2024-12-09	RFC 1
83012-CEC	Solar transformer / 6.6KV HV Switchgear	ONSHORE	C10002139	CPX10	100	2024-12-09	RFC 1
83013-CEC	Solar transformer / 6.6KV HV Switchgear	ONSHORE	C10002140	CPX10	100	2024-12-09	RFC 1
83014-CEC	Solar transformer / 6.6KV HV Switchgear	ONSHORE	C10002141	CPX10	100	2024-12-09	RFC 1
83117-CEL	Lighting & Small Power DB BoP / Auxiliary Trafo SOLAR 0,5MVA	ONSHORE	C10000636	CPX09	100	2024-12-09	RFC 1
TR-200ED1	6,6 / 0,8 kV 0,5 MVA Transformer	ONSHORE	C10000869	CPX02	100	2024-09-13	RFC 1

ITEM	Tag	82006-CEM-1-L1	:	6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer	Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	:	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	Module	LD_B-100/LD	
TASK	code	C10000488	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX08	HV Power Cable

CABLE DATA

Type	Cores/Size mm²	Color
CU/EPR/CTS/LSZH/CWB/LSZH	1X70 mm2	RED

From SG-100D1 To TR-200ED1

1	Confirm cable is as specified in project cable schedule	OK
2	Visual Check cable physical integrity.	OK
3	Check is installed in accordance with layout drawing (segregation, distance…).	OK
4	Check cable is supported and fixed to rack according to project specification.	OK
5	Check bending radius is within the specified limits.	OK
6	Confirm cable glands suit for cable type, correctly mounted and tightened.	OK
7	Check gland plate for single core cables is non ferrous (non -magnetic).	OK
8	Confirm cable labelling is in accordance with specifications.	OK
9	Check cable is correctly loomed and segregated in accordance with specification.	OK
10	Check cable earthing against lastest drawings.	OK
11	Check cores marking are in accordance with termination diagram	OK
12	Check terminations are in accordance with latest termination diagram	OK
13	If required produce Red Line Mark Up for "AS BUILT"	

REFER TO FINAL SHEET FOR ACCEPTANCE

ROSETTI MARINO PROVERLIS CROSSWIND

ITEM	Tag	82006-CEM-1-L1	: 6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer		Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		Module	LD_B-100/LD	
TASK	code	C10000488	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity CCK	Discipline Electrical	Form	CPX08	HV Power Cable

	CONTINUITY TESTS			
1	CORE CONTINUITY	500	mΩ	OK
2	SCREEN CONTINUITY	500	mΩ	OK
3	ARMOUR CONTINUITY	500	mΩ	OK
	1st INSULATION TEST			
	Voltage applied:	500	kV	
4	Ph1 / Ph2-Ph3-screen-armour-Earth :	>999	MΩ	OK
5	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	MΩ	OK
6	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	MΩ	OK
	HV TEST 15 min			
	Voltage applied:	11,5	kV	
7	Ph1 / Ph2-Ph3-screen-armour-Earth :	48	µA	OK
8	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	µA	
9	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	µA	
	2nd INSULATION TEST			
	Voltage applied:	500	kV	
10	Ph1 / Ph2-Ph3-screen-armour-Earth :	>999	MΩ	OK
11	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	MΩ	OK
12	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	MΩ	OK
	RE-CONNECT TERMINATIONS			
13	Tightening torque		N.m	Note

TESTING INSTRUMENTS USED

TYPE / SERIAL N°	Mod:KEW3125A S/N: W8330207	TYPE / SERIAL N°	Mod:HVA45 S/N:GH5219.16C010
Calibration certificate N° and date:	N°7722/24 _ 10/07/2024	Calibration certificate N° and date:	LAT04200772/24 _ 02.2024
TYPE / SERIAL N°	VOLCRAFT 1000V - ET-200 S/N:H240103023	TYPE / SERIAL N°	
Calibration certificate N° and date:	N°LAT 042 00768/24 _ 12/10/2024	Calibration certificate N° and date:	

Comments:

	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Michele Tartaglia	Giovanni Tangianu	
Date	2025-04-05	2025-04-18	
Signature	PROVERLIS Digitaly signed by Michele Tartaglia 2025-04-05T08:14:53.295Z	PROVERLIS Digitaly signed by Giovanni Tangianu 2025-04-18T10:14:34.882Z	

Base Load Power Hub (BLPH)

Work Instruction – VLF Testing of Installed 6/10 kV Cables

Document Number: 123A90-PML-QHSE-WI-0001

Document Class: 2

0	01/04/2025	Issue for Review	R.Degli Esposti	G. Tassinari	A.Iveson
Rev.	Date	Description	Prepared	Reviewed	Approved

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Revision / Change Log

Rev.	Description
0	Issue for Review (IFR)

HOLDS LIST

No.	Description
1	
2	
3	
4	

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2 Applicable Standards 4

3 Equipment Required 4

4 Safety Precautions 4

5 Procedure 4

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1 SCOPE

This work instruction describes the procedure for Very Low Frequency (VLF) withstand testing on installed 6/10 (12) kV cables in accordance with IEC 60502-2:2014, clause 20.3.1(c).

2 APPLICABLE STANDARDS

- IEC 60502-2:2014 – Power cables with extruded insulation from 6 kV to 30 kV

3 EQUIPMENT REQUIRED

- VLF test set capable of generating 18 kV RMS at 0.1 Hz
- Voltage and current monitoring equipment
- Grounding and discharge rods
- Insulation resistance tester (Megger)
- Safety barriers and warning signs

4 SAFETY PRECAUTIONS

- All personnel must be trained and authorized
- Area must be barricaded with proper warning signs
- Only test personnel shall remain inside the zone during testing
- Confirm absence of voltage and ensure cable is grounded before and after testing
- Issue of work permit

5 PROCEDURE

5.1 TEST VOLTAGE

With reference to the IEC 60502-2:2014, clause 20.3.1(c), according to the Engineering department's instruction, the VLF test voltage is based on the system operational voltage of 6.6 kV.

Therefore, the value of U_0 is derived as:

$U_0 = 6.6\ kV / \sqrt{3} \approx 3.81\ kV$

Following this interpretation, the VLF withstand test shall be performed using:

- Test Voltage: $3 \times U_0 = 3 \times 3.81 \approx 11.43$ kV RMS
- Frequency: 0.1 Hz
- Duration: 15 minutes

5.2 VISUALLY INSPECT THE CABLE AND TERMINATIONS.

Inspect the entire length of the cable, joints, and terminations for visible damage, proper preparation, cleanliness, and conformance with installation standards. Check that no mechanical stress, sharp bends, or contamination is present.

5.3 VERIFY CABLE IS PROPERLY IDENTIFIED AND TAGGED.

Confirm that the cable is correctly labeled according to project documentation. Identification tags should match drawing references and be securely attached.

5.4 PERFORM INSULATION RESISTANCE MEASUREMENT.

Use a calibrated insulation resistance tester (Megger) at 500V for 1 minute to measure the resistance between conductor(s) and earth. Record values and ensure they meet project or manufacturer's criteria prior to proceeding with VLF test.

5.5 PREPARE TERMINATIONS, ENSURING CLEANLINESS AND DRYNESS.

Remove any temporary protection, clean the terminations with approved cleaning agents, and ensure the surfaces are dry and free of debris or moisture. Verify correct assembly of stress control components.

5.6 CONNECT VLF TEST SET BETWEEN CONDUCTOR AND METALLIC SCREEN (EARTH).

Connect the high-voltage output of the VLF generator to the conductor under test. Connect the return path to the metallic screen or grounding system. Ensure all connections are secure and that the test equipment is rated for the test voltage.

5.7 APPLY 11.43 KV RMSAT 0.1 HZ FOR 15 MINUTES.

Gradually ramp up the voltage 11.43 kV RMS. Maintain the voltage for the full duration of 15 minutes while monitoring the test equipment for current, voltage stability, and signs of insulation failure.

5.8 MONITOR FOR BREAKDOWNS, DISCHARGES OR CURRENT SPIKES.

Visually observe the test set and cable terminations. Monitor the current for any sharp increases or instability, which may indicate partial discharges or breakdowns.

5.9 DISCHARGE AND GROUND CABLE AFTER TEST COMPLETION.

After the test, slowly decrease the voltage to zero. Use a grounding rod to safely discharge any residual voltage from the conductor before handling.

5.10 REPEAT POINT 5.4

5.11 DOCUMENT ALL RESULTS IN THE ATTACHED TEST REPORT.

Complete the test report form, including all pre-checks, insulation readings, test parameters, observations, and results. Sign and submit the document for recordkeeping.

TEST REPORT

Cable Tag/ID: _____

Cable Type: _____

Voltage Rating: 6/10 kV

5.12 PRE-TEST CHECKLIST

☐ Cable properly tagged and identified

☐ Visual inspection of terminations completed

☐ Insulation resistance test performed

☐ Clean and dry termination surfaces

☐ Metallic screen continuity verified

Client representative present during inspection: Yes ☐/ No ☐

5.13 TEST DETAILS

Megger before test: ☐

Test Method: VLF – 0.1 Hz

Test Voltage: 11.43 kV RMS

Duration: 15 minutes

Megger after test: ☐

Equipment Used: _____

Serial Number: _____

Operator: _____

5.14 OBSERVATIONS

Partial Discharge observed: Yes ☐/ No ☐

Breakdown occurred: Yes ☐/ No ☐

Final Result: PASS ☐/ FAIL ☐

NOTES: _____

_____

5.15 SIGNATURES

Tested by: _____ Signature: _____ Date: _____

Witnessed by: _____ Signature: _____ Date: _____

82006-CEM-1-L1

VLF Withstand Report
82006-CEM-1-L1 - Maintenance Test
Auto Test
Test finished successfully

Report Information

Date	4/5/2025 10:36 AM
Company Name	ICS
Region	---
Station	---
Operator Name	RECHICHI
Work Order	---

Device Under Test (Cable XLPE)

Voltage Rating	11.5 kV
Insulation	XLPE
Line Length	80 Meter
Size	1X150
Phase	A
Manufacturer Name	---

Equipment:

HVA45	GH5219.16C010

Test Setup

Test Purpose	Maintenance
Arc Management Mode	Trip out on Arc

#	Test Voltage	Waveform	Frequency	Duration
1	11.5 kV•	Sine	0.1 Hz (A)	15 min

Measurements:

Test finished successfully

#	Voltage	Current	Cap.	Res.	Frequency
1	11.5 kV•	48 µA•	6.7 nF	> 20 GΩ	0.1 Hz

- RMS value

TEST REPORT

Cable Tag/ID: 82006-CEM-1-L1

Cable Type: 1X70mm²

Voltage Rating: 6/10 kV

5.12 PRE-TEST CHECKLIST

☑ Cable properly tagged and identified

☑ Visual inspection of terminations completed

☑ Insulation resistance test performed

☑ Clean and dry termination surfaces

☑ Metallic screen continuity verified

Client representative present during inspection: Yes ☑/ No ☐ CABLE NOT INSPECTED TEST RESULT ACCEPTABLE

5.13 TEST DETAILS

Megger before test: ☑

Test Method: VLF – 0.1 Hz

Test Voltage: 11.43 kV RMS

Duration: 15 minutes

Megger after test: ☑

Equipment Used: HVA45

Serial Number: GH 5219.16C010

Operator: FAUSTO RECHICHI

5.14 OBSERVATIONS

Partial Discharge observed: Yes ☐/ No ☑

Breakdown occurred: Yes ☐/ No ☑

Final Result: PASS ☑/ FAIL ☐

NOTES: _____

5.15 SIGNATURES

Tested by: FAUSTO RECHICHI Signature: _____ Date: 05/04/2025

Witnessed by: GIOVANNI TANGIANU Signature: _____ Date: 05/04/2025

DAVE MUSGROVE 05/04/2025

ITEM	Tag	82006-CEM-1-L1	: 6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer			Dwg	123A90-DDL-EL-LIS-20148
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)			Module	LD
TASK	code	C10000488		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX08 HV Power Cable

CABLE DATA

Type	CU/EPR/CTS/LSZH/CWB/LSZH	Cores/Size mm²	1X70 mm2	Color	RED
From	SG-100D1	To	TR-200ED1		

1	Confirm cable is as specified in project cable schedule	OK
2	Visual Check cable physical integrity.	OK
3	Check is installed in accordance with layout drawing (segregation, distance…).	OK
4	Check cable is supported and fixed to rack according to project specification.	PL
5	Check bending radius is within the specified limits.	OK
6	Confirm cable glands suit for cable type, correctly mounted and tightened.	OK
7	Check gland plate for single core cables is non ferrous (non -magnetic).	OK
8	Confirm cable labelling is in accordance with specifications.	PL
9	Check cable is correctly loomed and segregated in accordance with specification.	OK
10	Check cable earthing against lastest drawings.	OK
11	Check cores marking are in accordance with termination diagram	OK
12	Check terminations are in accordance with latest termination diagram	PL
13	If required produce Red Line Mark Up for "AS BUILT"	

REFER TO FINAL SHEET FOR ACCEPTANCE

ROSETTI MARINO PROVERLIS CROSSWIND

ITEM	Tag	82006-CEM-1-L1	: 6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer		Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		Module	LD	
TASK	code	C10000488	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity CCK	Discipline Electrical	Form	CPX08	HV Power Cable

	CONTINUITY TESTS			
1	CORE CONTINUITY	500	mΩ	OK
2	SCREEN CONTINUITY	500	mΩ	OK
3	ARMOUR CONTINUITY	500	mΩ	OK
	1st INSULATION TEST			
	Voltage applied:	2500	kV	
4	Ph1 / Ph2-Ph3-screen-armour-Earth :	>999	MΩ	OK
5	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	MΩ	OK
6	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	MΩ	OK
	HV TEST 15 min			
	Voltage applied:		kV	
7	Ph1 / Ph2-Ph3-screen-armour-Earth :		µA	Note
8	Ph2 / Ph1-Ph3-screen-armour-Earth:		µA	Note
9	Ph3 / Ph2-Ph1-screen-armour-Earth:		µA	Note
	2nd INSULATION TEST			
	Voltage applied:	2500	kV	
10	Ph1 / Ph2-Ph3-screen-armour-Earth :	>999	MΩ	OK
11	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	MΩ	OK
12	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	MΩ	OK
	RE-CONNECT TERMINATIONS			
13	Tightening torque		N.m	PL

TESTING INSTRUMENTS USED

TYPE / SERIAL N°	Mod:KEW3125A S/N: W8330207	TYPE / SERIAL N°	Mod:HVA45 S/N:GH5219.16C010
Calibration certificate N° and date:	N°7722/24 _ 10/07/2024	Calibration certificate N° and date:	LAT04200772/24 _ 02.2024
TYPE / SERIAL N°	Mod:FLUKE 175 S/N:(AW1/018-17140769)	TYPE / SERIAL N°	
Calibration certificate N° and date:	N°7715/24 _ 10/07/2024	Calibration certificate N° and date:	

Comments:

Note HV TEST: See attached certificate

	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM (Rosetti Marino)	
Name	Carmelo Bongiovanni	Paolo Schintu	
Date	2024-11-04	2024-11-20	
Signature	PROVERLIS Digitaly signed by Carmelo Bongiovanni 2024-11-04T17:05:58.983Z	PROVERLIS Digitaly signed by Paolo Schintu 2024-11-20T15:27:07.965Z	

82006-CEM-L1
VLF Diagnostic Report

Manual Test
Test finished successfully

Report Information

Date	11/8/2024 7:14 PM
Company Name	ICS
Region	EMILIA ROMAGNA
Station	---
Operator Name	RIELA
Work Order	MT-MISURE

Device Under Test (Cable XLPE)

Voltage Rating	10.0 kV
Insulation	XLPE
Line Length	80 Meter
Size	1X70
Phase	C
Manufacturer Name	ICS

Equipment:

HVA45TD	GH5219.16C010

Test Setup

Arc Management Mode: Trip out on Arc

#	first Voltage	Waveform	Frequency	Duration
1	10.0 kV•	Sine	0.1 Hz	5 min

Manual max. Voltage 10.0 kV

Measurements:

Test finished successfully

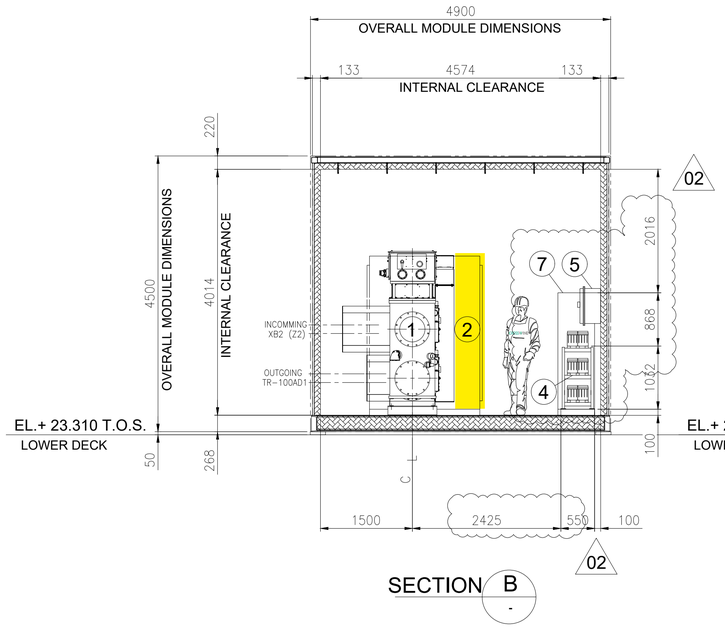
#	Voltage	Current	Cap.	Res.	Frequency
1	10.0 kV•	35 µA•	5.5 nF	1.9 GΩ	0.1 Hz

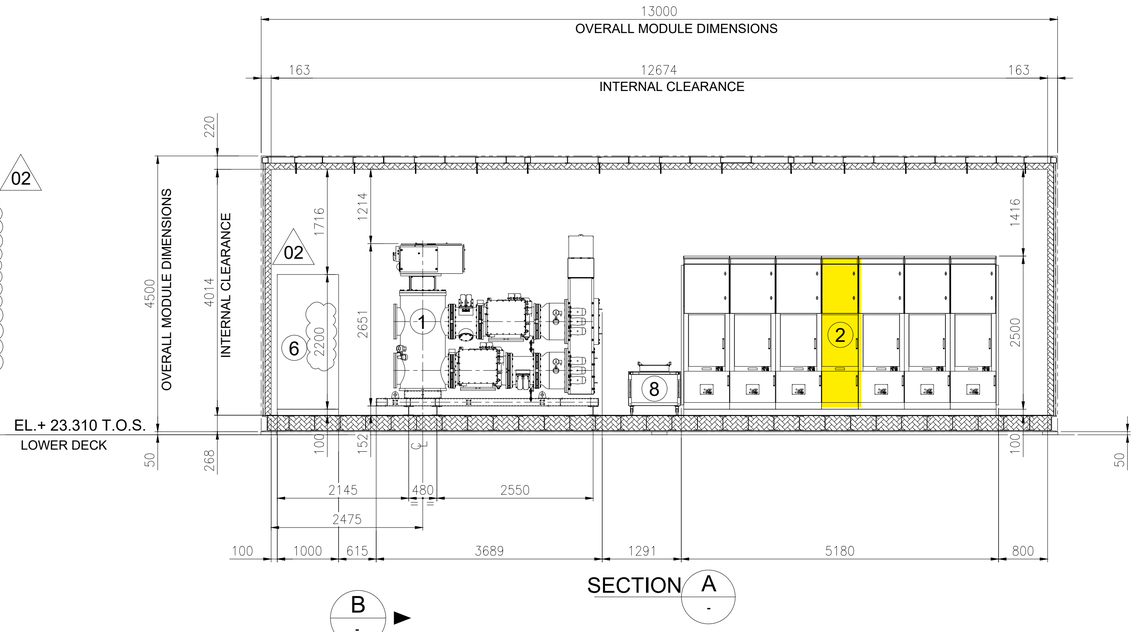
#	Voltage	TD [E-3]	Std.Dev. [E-3]
1	10.0 kV•	166	1.68

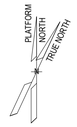
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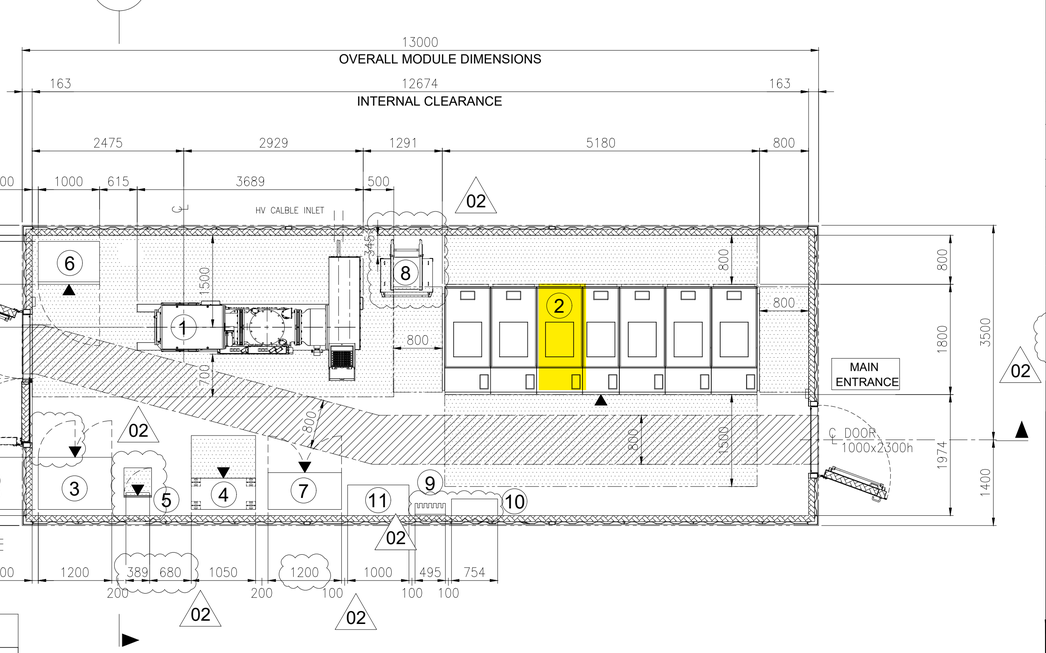
20/11/24
I.C.S. IMPIANTI
BONGIOVANNI CARMELO

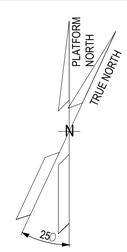
DRAWING NO. 123A90-DDL-EL-DL-20104 REV. 02

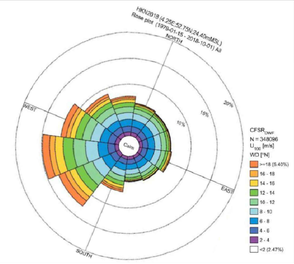












NOTES

1. U.N.O. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DELETED
3. DOCUMENT VALID ONLY FOR ELECTRICAL COMPONENT.
4. FOR OTHER ITEMS, CORRECT LOCATION AND INFROMATION, PLEASE REFER TO VENDORS AND DEDICATED PROJECT DOCUMENTATION.
5. HEIGHT OF ALL PANELS IN THE EQUIPMENT LIST TABLE IS WITHOUT THE BASE FRAME (100mm)

02

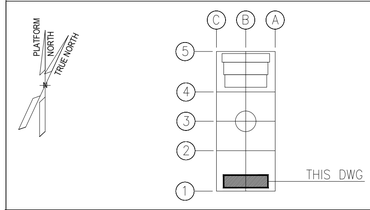
LEGEND

U.N.O. _____ UNLESS NOTED OTHERWISE
T.O.S. _____ TOP OF STEEL
_____ ESCAPE CORRIDOR - WIDTH 800mm.
_____ MAINTENANCE AREA - VENDOR REQUIREMENT
_____ SWITCHGEAR ROOM ENCLOUSURE
_____ FRONT OF EQUIPMENT

REFERENCES

DOCUMENT TITLE	DOCUMENT NUMBER
66kV SWITCHGEAR (GIS) GENERAL ARRANGEMENT DRAWING	1723001595-EL-DA-00006
CIRCUIT AND WIRING DIAGRAM	1723001595-EL-DG-00015
SG-100D1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00006
DC UPS – GENERAL ARRANGEMENT AND DIMENSIONAL DRAWINGS	1724000372-EL-DA-00003
DC UPS – BATTERY LAYOUT AND INTERCONNECTING DIAGRAM	1724000372-EL-DG-00010
B-100 - GENERAL ARRANGEMENT DRAWINGS - E&I SHELTER	1724000049-AR-DA-00014

KEY PLAN



EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	NOTE
1	HNA6-AFA70	66kV SWITCHGEAR (GIS)	3689	2025	2651	
2	SG-100D1	6.6kV SWITCHGEAR	5180	1800	2500	
3	UP-200F1	DC UPS PANEL	1200	850	2105	
4	BA-200F1	DC UPS BATTERY RACK	1050	510	1272	
5	CB-200F1 02	ISOLATOR FOR DC UPS	452	377	634	
6	CP-100E1	66 kV SWITCHGEAR LOCAL CONTROL PANEL	1000	700	2200	02
7	B100-HSB-001	DISTRIBUTION & HVAC PANEL - HV MV ROOM	1200	600	1900	
8	-	SERVICE TROLLEY FOR 6.6kV SWITCHGEAR	943	862	874	
9	-	TOOL BOX	495	200	200	
10	-	SUBSTATION LIFE SAVING & INTERVENTION KIT	754	270	840	
11	-	TABLE	1000	500	750	

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20104**

REV.:	DATE:	SIGNATURE:
2_A	08/08/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/05/2024	FMO	LMA/AMA	LMA/MDO	ACCEPTED FOR CONSTRUCTION (AFC)
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	10/11/2023	DSF	CB/AMA	OYFO/MDO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
HV SWITCHROOM

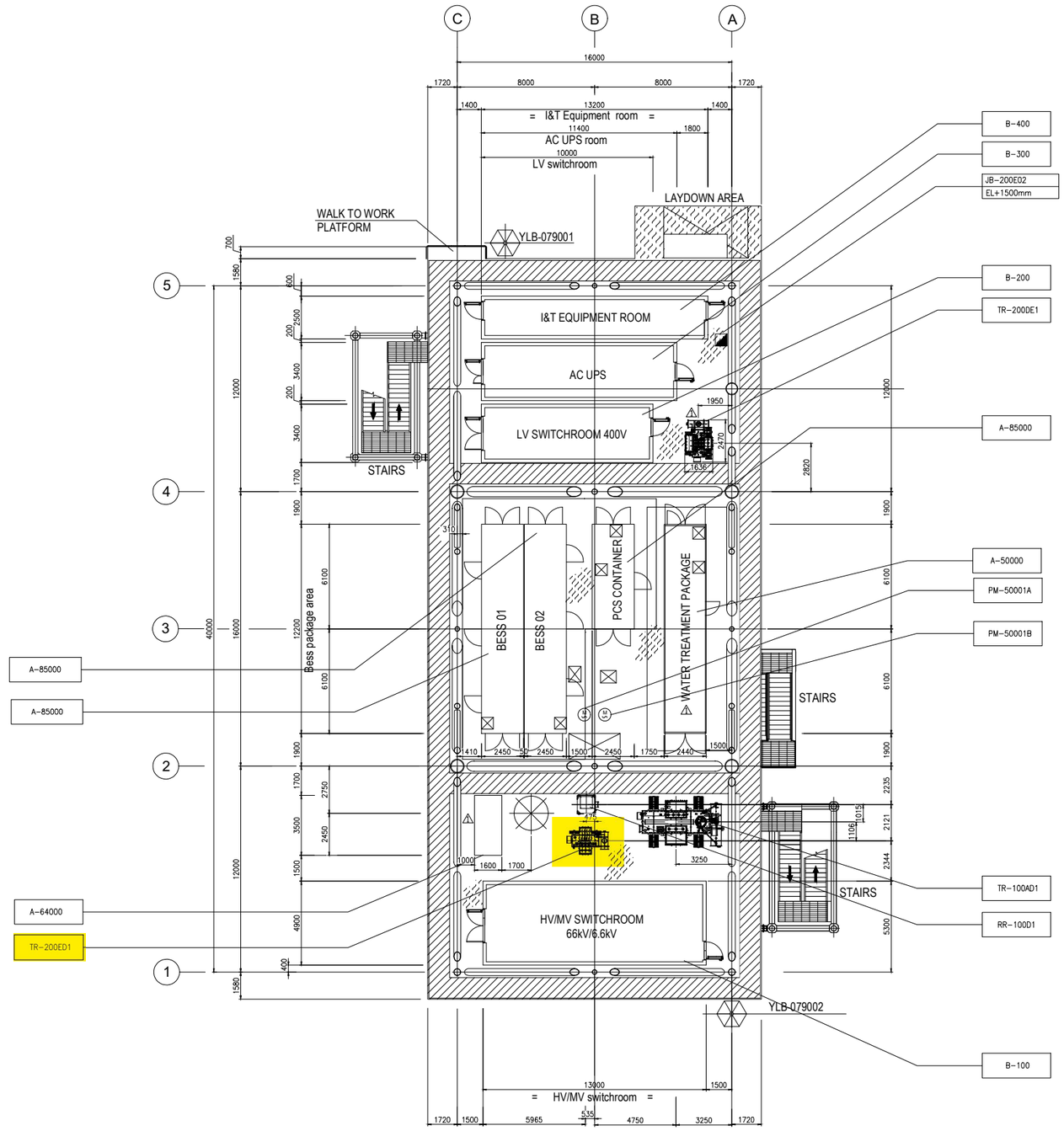
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:50
DRAWN GPA	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 27/05/2024

A1	DRAWING NO. 123A90-DDL-EL-DL-20104	SHEET 001	REV. 02

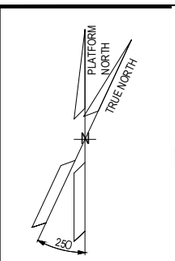
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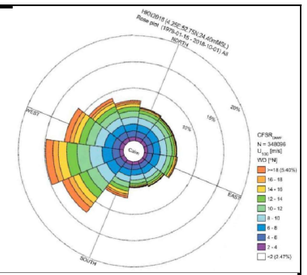
DRAWING NO. 123A90-DDL-EL-DL-20101

REV. 01



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





NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

(M)	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
⚠ 123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DL-20101
REV.: 1_A | DATE: 08/08/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE 1:150
DRAWN SAM | CHECKED FMA/AMA | APPROVED FPA/DLO | DATE 04/03/24
A1 | DRAWING NO. 123A90-DDL-EL-DL-20101 | SHEET 001 | REV. 01

File Name : 123A90-DDL-EL-DL-20101-Electrical Equipment Layout – Lower Deck

FROM	TO

DESCRIPTION: 6.6KV HV SWITCHGEAR
TAG NUMBER: SG-100D1

TAG COLUMN: A4

L1	Arm.	BK	82002-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82002-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82002-CEM-1-L3 1C X 70 mm²	BK

DESCRIPTION: 6.6/0.42 KV, 1.6MVA TRANSFORMER
TAG NUMBER: TR-200DE1

Arm. 1U 1V 1W — HV TERMINAL BOX OF TR-200DE1

TAG COLUMN: A7

L1	Arm.	BK	82003-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82003-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82003-CEM-1-L3 1C X 70 mm²	BK

DESCRIPTION: 6.6/0.4 KV, 1.25MVA TRANSFORMER
TAG NUMBER: TA30

Arm. 1U 1V 1W — HV TERMINAL BOX OF TA30

TAG COLUMN: A1

L1	Arm.	BK	82004-CEM-1-L1 1C X 150 mm²	BK
L2		BK	82004-CEM-1-L2 1C X 150 mm²	BK
L3		BK	82004-CEM-1-L3 1C X 150 mm²	BK

DESCRIPTION: 6.6/0.4/0.4 KV, 3.15MVA TRANSFORMER
TAG NUMBER: T4

Arm. 1U 1V 1W — HV TERMINAL BOX OF T4

TAG COLUMN: A3

L1	Arm.	BK	82005-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82005-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82005-CEM-1-L3 1C X 70 mm²	BK

DESCRIPTION: 6.6/0.62 KV, 1.25MVA TRANSFORMER
TAG NUMBER: 18T1

Arm. 1U 1V 1W — HV TERMINAL BOX OF 18T1

TAG COLUMN: A2

L1	Arm.	BK	82006-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82006-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82006-CEM-1-L3 1C X 70 mm²	BK

DESCRIPTION: 6.6/0.8 KV, 0.5MVA TRANSFORMER
TAG NUMBER: TR-200ED1

Arm. 1U 1V 1W — HV TERMINAL BOX OF TR-200ED1

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

REV.:	DATE:	SIGNATURE:
1_A	17/10/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
6.6KV HV SWITCHGEAR

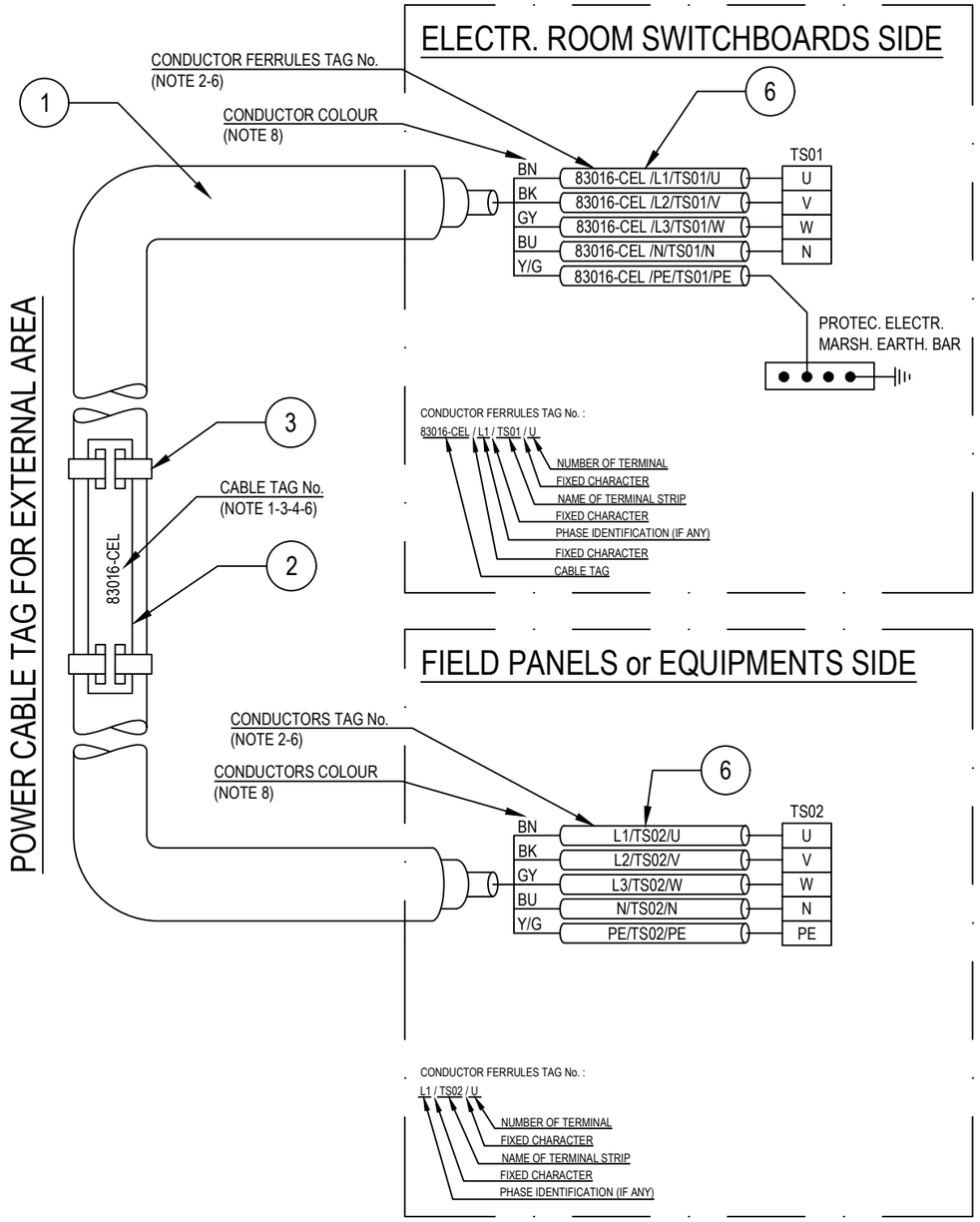
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : 1:X

A3 | DRAWING NO. 123A90-DDL-EL-DG-20149 | SHEET 016 | REV. 01

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DG-20162 Rev. 01

C02



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	UNARMOURED CABLE				
2	CABLE TAG FOR EXTERNAL AREA	HDG/SS			NOTE 1 NOTE 4
3	TIE FOR CABLE TAG IN EXTERNAL AREA	HDG/SS			
4	CABLE TAG FOR INTERNAL AREA	PVC			NOTE 1 NOTE 5
5	TIE FOR CABLE TAG IN INTERNAL AREA	NYLON 6.6			
6	CORE FERRULES	PVC			

NOTES:

1) ALL CABLES SHALL BE IDENTIFIED AT EACH TERMINATION AND EACH SIDE OF ANY OBSTACLE (E.G. CABLE TRANSIT ON WALLS INSIDE SHELTER AND FLOOR DECK CROSSING, BY THEIR RESPECTIVE TAGS/NUMBERS, AS INDICATED ON THE CABLE SCHEDULE.
CABLE IDENTIFICATION SHALL BE ALSO DONE BELOW AND IN THE SWITCHBOARD CABLE COMPARTMENT.

2) CABLE CORE FERRULES SHALL BE FITTED AT EVERY TERMINATION. THESE FERRULES SHALL BE OF ENGRAVED PLASTIC SLIP ON, INTERLOCKED AND SELF GRIP TYPE.

3) ON CABLE TRAYS OR LADDERS, CABLES SHALL BE IDENTIFIED AT EACH END, AND EVERY 25 METERS.

4) THE CABLE TAG FOR EXTERNAL AREA SHALL DONE BY 316L STAINLESS STEEL LABELS, TAG (H=5mm) SHALL BE LASER PRINTED PREFERABLY OR EMBOSSED, LABEL HELD BY TWO 316L STAINLESS STEEL TIES.

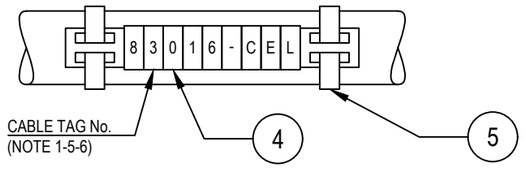
5) THE CABLE TAG FOR INTERNAL AREA SHALL BE DONE BY ENGRAVED PLASTIC SLIP ON CHARACTERS ONTO PLASTIC TIE, BLACK LETTER (H=5mm) ON WHITE.

6) CABLE AND CONDUCTOR TAG ARE INDICATIVE ONLY.

7) WITHIN TECHNICAL BUILDING, PROTECTIVE CONDUCTOR SHALL BE TAGGED BETWEEN FOLLOWING ITEMS:
- PANEL (SWITCHBOARD, SWITCHGEAR, DISTRIBUTION BOARD, ETC) AND EARTH BAR
- EARTH BAR AND EARTH BOSS

8) ONLY IF NECESSARY, SHRINK TUBES OF THE APPROPRIATE COLOR WILL BE INSTALLED TO COVER THE WRONG CONDUCTOR COLOR, THIS WILL BE PERFORMED IN EACH SIDE OF THE CABLES WHERE NECESSARY.

POWER CABLE TAG FOR INTERNAL AREA



VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DD-20092
REV.: 2_A | DATE: 28/08/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	28/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	04/07/24	NLK	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-POWER SYSTEM & CABLE INSTALLATION
CABLES INSTALLATION SYSTEM IDENTIFICATION FOR POWER CABLES

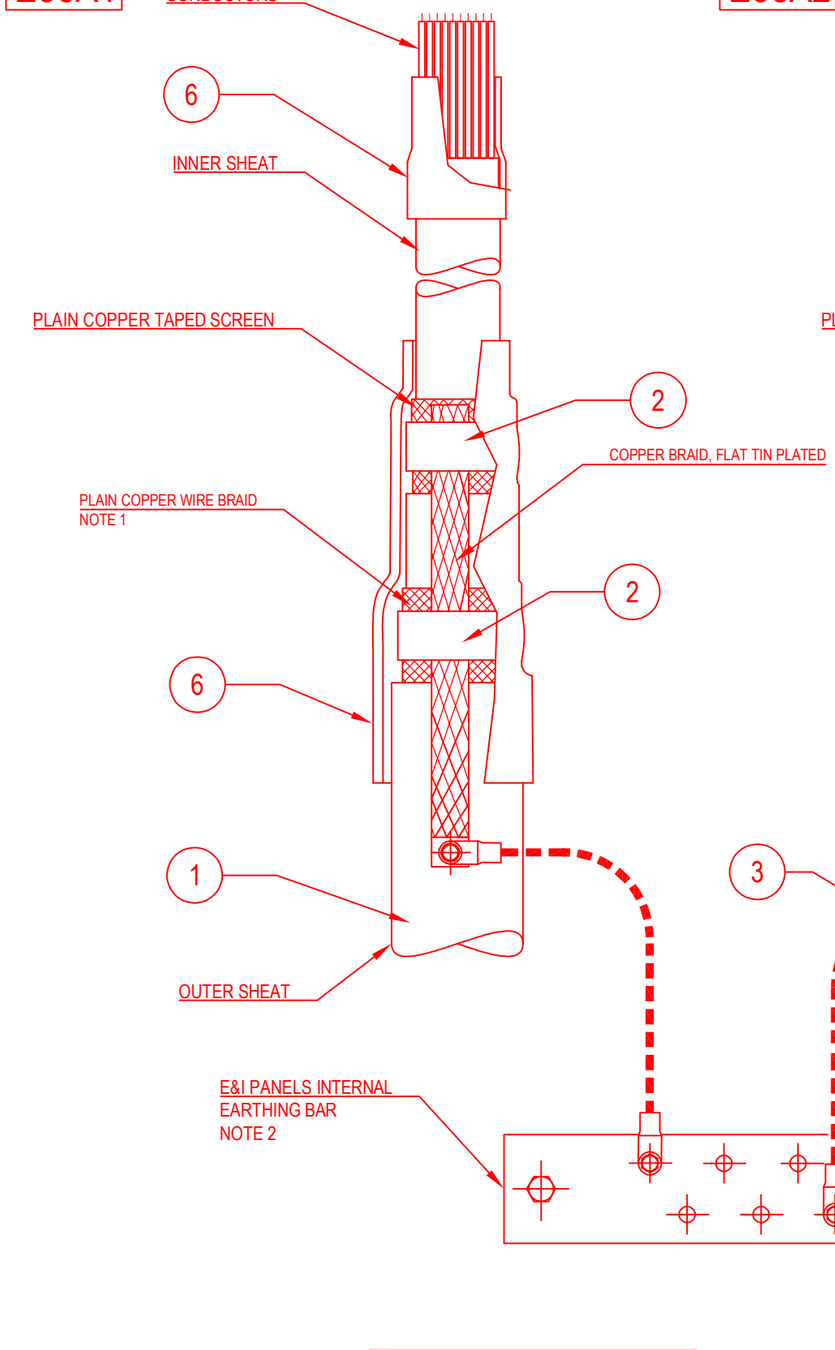
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 123A90-DDL-EL-DD-20092 | SHEET 007 | REV. 02

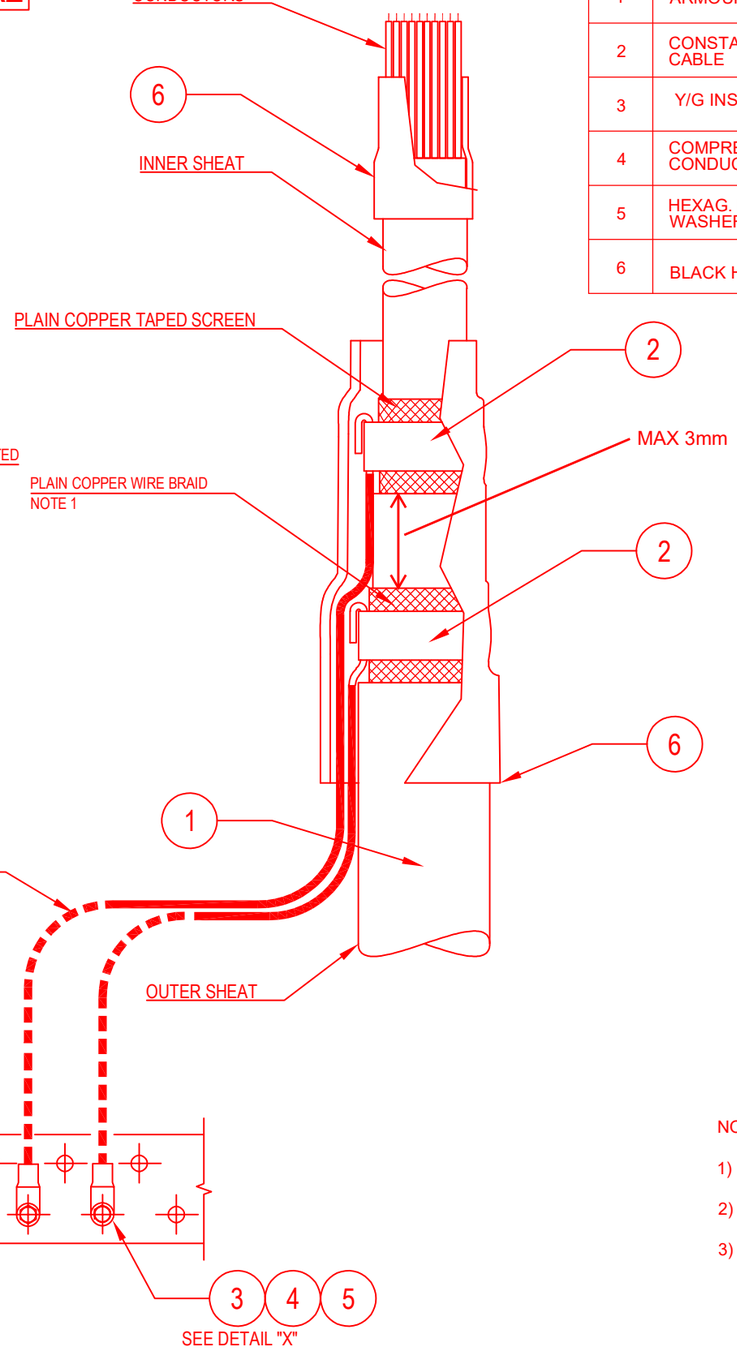
F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20092 REV.02.DWG

E06A1

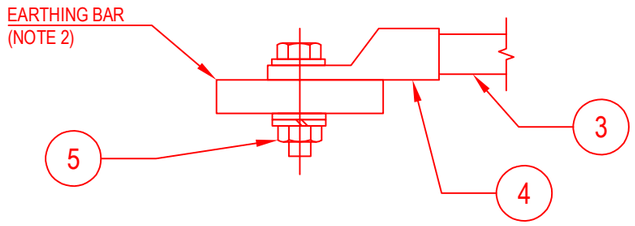


E06A2



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	ARMOURED CABLE				
2	CONSTANT FORCE SPRING FOR EARTHING ARMOUR CABLE	AISI 316L			
3	Y/G INSULATING COPPER CONDUCTOR	COPPER	$16mm^2$		
4	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	$16mm^2$		
5	HEXAG. BOLTS, PLANE WASHERS, GROWER SPRING WASHER AND NUT	AISI 316L	M8X30		
6	BLACK HEAT SHRINKABLE SLEEVE				

DETAIL "X"



NOTES:

1) CABLE ARMOUR SHALL BE EARTHED AT BOTH ENDS.
2) FOR EARTHING BAR INSIDE SWITCHBOARD SEE VENDOR DOCUMENTATION.
3) CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_G	25/10/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-EARTHING SYSTEM
EARTHING FOR CABLE ARMOUR AND SCREEN (MV CABLES)

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

A3 | DRAWING NO. 123A90-DDL-EL-DD-20090 | SHEET 028 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 RLMU MV CABLES.DWG

Tag Number	Category	Discipline	Eng Status	NativeDoc	Parent Tag	Grouping	Main Function	Secondary Function	Area	From Tag	From Main Function	From Area	To Tag	To Main Function	To Area	Material ID	Material Desc.	Gland Standard	From Gland	From Entry	From Fitting	To Gland	To Entry	To Fitting	Routing	Routing Manual
82006-CEM-1-L1	Cable	EL	VFC	123A90-DDL-EL-LIS-20148		Int-Ext				SG-100D1	MV 6,6kV Switchgear	Lower Deck (B-100)	TR-200ED1	6,6 / 0,8 kV 0,5 MVA Transformer	Lower Deck	ELECV36-1X70	Cable CU/EPR/CTS/LSZH/CWB/LSZH 6/10kV 1x70mm²- Red	M40	n.a.			T2_M40_Double				L-150-101-MVT-015 / L-600-101-MVT-008 / L-600-101-MVT-009 / E-MCT-103 / L-450-101-MVT-004 / L-150-101-MVT-003

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO
		Sh: 9 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024
		Rev.: 01

TITLE

DATA SHEET FOR 6.6KV HV CABLE (LSZH, FLAME RETARDANT)

ELECTRICAL SYSTEM CHARACTERISTIC

OPERATING VOLTAGE	6,6	kVac	±	5	%		
FREQUENCE	50	Hz	±	2	%		
NEUTRAL SYSTEM	☐	EARTHED				☐	INSULATED
	☑	EARTHED BY RESISTANCE				☐	
EXPOSITION OF LIGHTNING OVER VOLTAGE						☐ NO	☑ YES

PROJECT SPECIFICATION: 123A90-DDL-EL-SP-20057

CABLE CHARACTERISTIC

GENERAL CHARACT	REFERENCE STD	FOR CONSTRUCTION AND TEST	IEC 60092-350
		FOR SPECIAL CHARACTERISTIC	**IEC-60754-1, IEC-60332-1-2**
			IEC-61034-2

RATED VOLTAGE (Uo/U): 3.6/6(7.2) kV

MAX. OPERATING TEMPERATURE 90 °C TEMP.SHORT CIRCUIT TEMPERATURE 250 °C

POWER FREQUENCY TEST VOLTAGE/IMPULSE WITHSTAND VOLTAGE (Up): (AS PER IEC) 21 kV

COEFFICIEN. K: - FOR CONDUCTOR 143 A $\sqrt{s}$ /mm^2

- FOR SCREEN OR METAL SHEATS 115 A $\sqrt{s}$ /mm^2

SPECIAL CHARACT.	☐ HYDROCARBON RESISTANCE	☐ NON PROPAGATING FIRE	☐ FIRE RESISTANCE	
	☐ BUNCHED CABLES NON PROPAGATING FIRE : TOT. Q.TY OF COMBUSTIBLE MATERIAL			kg/m
	☐ LOW CORROSIVE GAS EMISSION	☐ % HCl ≤ 0,3	☐ % HCl =	
	☐ LOW TOXIC GAS EMISSION (T INDEX)	☐ T ≤ 2	☐ T=	
	☑ LOW SMOKE EMISION (OPTICAL DENSITY)	☐ D ≤ 1,5	☐ D=	
	☐ U.V. RESISTANT	☑ HALOGEN FREE COMPOUND	☑ FLAME RETARDANT	

INSTALL. SPECIAL CONDITION	CABLE LADDER, TREFOIL FORMATION
ACCESS.	

NOTES:

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO Sh: 10 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024 Rev.: 01

TITLE

DATA SHEET FOR 6.6KV HV CABLE (LSZH, FLAME RETARDANT)

MATERIALS

GENERAL DATA	REF.STD N.: IEC 60092-350
CONDUCTOR	MATERIAL: ☑ Cu ☐ Al ☐ Tinned Cu CLASS (1): ☑ CLASS 2 ☐ CLASS 5 (F) ☐ CLASS 6 (H)
INSULATION	MATERIAL: EPR
SEMI-CONDUCTOR LAYER	☑ FORESEEN AS PER IEC 60092-350 MATERIAL: HF EXTRUDED COMPOUND
SCREENS	☑ FORESEEN AS PER IEC 60092-350 MATERIAL: Plain Copper Taped Screen
ARMOUR	☑ REQUIRED TYPE: MATERIAL: Plain Copper Wire Braid
OUTER SHEATING	MATERIAL: SHF1 to IEC 60093.360
COMPONENTS AND SPECIAL CONSTR.	

NOTE: (1) CLASS 1 : SOLID CONDUCOR - (U).
CLASS 2 : STRANDARD CONDUCTOR: CIRCULAR -R-, SHAPED -S-
CLASS 5 : FLEXIBLE CONDUCTOR - (F).
CLASS 6 : HIGHLY FLEXIBLE CONDUCTOR - (H) o (FF).

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO Sh: 11 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024 Rev.: 01

TITLE

DATA SHEET FOR 6.6KV HV CABLE (LSZH, FLAME RETARDANT)

1	**CONSTRUCTIVE DATA**						
2							
3	MR TAG / PART NUMBER			Note-3	Note-3		
4	n° x NOMINAL AREA OF CONDUCTORS		N.xmm^2	1Cx70	1Cx150		
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR		N.xmm	352x0,52	776X0,51		
6	CONDUCTOR CLASS (2)			2	2		
7	RATED CURRENT IN AIR AT 30°		A	285	460		
8	RATED CURRENT IN GROUND AT 20°		A	272	416		
9							
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.		Ω/km	0,345	0,163		
11	PHASE REACTANCE AT 50 Hz		Ω/km	0,110	0,097		
12	MINIMUM INSULATION RESISTANCE AT 20°		MΩ/km	745	567		
13	PHASE CAPACITY		µF/km	0,301	0,396		
14							
15	MINIMUM ORDER Q.TY		m	TBD	TBD		
16	MAX LENGHT OF DRUMS		m	TBD	TBD		
17	DIAMETERS	BARE CONDUCTOR	mm	10	14,3		
18		CORE (INSULATED CORE)	mm	19,6	24		
19		UNDER ARMOUR	mm	23,6	28,3		
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	24,8	29,5		
21							
22							
23		OVERALL	mm	29	34		
24	MASSES	CONDUCTORS	kg/km	640	1350		
25		INSULATION	kg/km	290	410		
26		INNER COVERING	kg/km	180	220		
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	220	250		
28		OUTER SHEATING	kg/km	280	350		
29							
30		TOTAL	kg/km	1610	2580		
31	EXTERNAL COLOUR			RED	RED		
32	CORE IDENTIFICATION (1)			NATURAL	NATURAL		
33							
34							
35							
36							
37							
38							

39

40 NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN

41 (*) TO BE FILLED BY VENDOR

42 NA NOT APPLICABLE

43

44

45

46

47

48

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51

ITEM	Tag	82006-CEM-1-L2	: 6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer			Dwg	123A90-DDL-EL-LIS-20148
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)			Module	LD_B-100/LD
TASK	code	C10000489		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX08 HV Power Cable

CABLE DATA

Type	CU/EPR/CTS/LSZH/CWB/LSZH	Cores/Size mm²	1X70 mm2	Color	RED
From	SG-100D1	To	TR-200ED1		

1	Confirm cable is as specified in project cable schedule	OK
2	Visual Check cable physical integrity.	OK
3	Check is installed in accordance with layout drawing (segregation, distance…).	OK
4	Check cable is supported and fixed to rack according to project specification.	OK
5	Check bending radius is within the specified limits.	OK
6	Confirm cable glands suit for cable type, correctly mounted and tightened.	OK
7	Check gland plate for single core cables is non ferrous (non -magnetic).	OK
8	Confirm cable labelling is in accordance with specifications.	OK
9	Check cable is correctly loomed and segregated in accordance with specification.	OK
10	Check cable earthing against lastest drawings.	OK
11	Check cores marking are in accordance with termination diagram	OK
12	Check terminations are in accordance with latest termination diagram	OK
13	If required produce Red Line Mark Up for "AS BUILT"	

REFER TO FINAL SHEET FOR ACCEPTANCE

ROSETTI MARINO PROVERLIS CROSSWIND

ITEM	Tag	82006-CEM-1-L2	: 6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer		Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		Module	LD_B-100/LD	
TASK	code	C10000489	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity CCK	Discipline Electrical	Form	CPX08	HV Power Cable

	CONTINUITY TESTS			
1	CORE CONTINUITY	500	mΩ	OK
2	SCREEN CONTINUITY	500	mΩ	OK
3	ARMOUR CONTINUITY	500	mΩ	OK
	1st INSULATION TEST			
	Voltage applied:	500	kV	
4	Ph1 / Ph2-Ph3-screen-armour-Earth :	>999	MΩ	OK
5	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	MΩ	OK
6	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	MΩ	OK
	HV TEST 15 min			
	Voltage applied:	11,5	kV	
7	Ph1 / Ph2-Ph3-screen-armour-Earth :	48	µA	OK
8	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	µA	
9	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	µA	
	2nd INSULATION TEST			
	Voltage applied:	500	kV	
10	Ph1 / Ph2-Ph3-screen-armour-Earth :	>999	MΩ	OK
11	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	MΩ	OK
12	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	MΩ	OK
	RE-CONNECT TERMINATIONS			
13	Tightening torque		N.m	Note

TESTING INSTRUMENTS USED

TYPE / SERIAL N°	Mod:KEW3125A S/N: W8330207	TYPE / SERIAL N°	Mod:HVA45 S/N:GH5219.16C010
Calibration certificate N° and date:	N°7722/24 _ 10/07/2024	Calibration certificate N° and date:	LAT04200772/24 _ 02.2024
TYPE / SERIAL N°	VOLCRAFT 1000V - ET-200 S/N:H240103023	TYPE / SERIAL N°	
Calibration certificate N° and date:	N°LAT 042 00768/24 _ 12/10/2024	Calibration certificate N° and date:	

Comments: Note HV TEST: See attached certificate and Test Report.

Note : Tightening torque will be done by the commissioning activity.

	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Michele Tartaglia	Giovanni Tangianu	
Date	2025-04-05	2025-04-18	
Signature	PROVERLIS Digitaly signed by Michele Tartaglia 2025-04-05T08:15:04.308Z	PROVERLIS Digitaly signed by Giovanni Tangianu 2025-04-18T10:16:08.959Z	

Base Load Power Hub (BLPH)

Work Instruction – VLF Testing of Installed 6/10 kV Cables

Document Number: 123A90-PML-QHSE-WI-0001

Document Class: 2

0	01/04/2025	Issue for Review	R.Degli Esposti	G. Tassinari	A.Iveson
Rev.	Date	Description	Prepared	Reviewed	Approved

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Revision / Change Log

Rev.	Description
0	Issue for Review (IFR)

HOLDS LIST

No.	Description
1	
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3 Equipment Required 4

4 Safety Precautions 4

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1 SCOPE

This work instruction describes the procedure for Very Low Frequency (VLF) withstand testing on installed 6/10 (12) kV cables in accordance with IEC 60502-2:2014, clause 20.3.1(c).

2 APPLICABLE STANDARDS

- IEC 60502-2:2014 – Power cables with extruded insulation from 6 kV to 30 kV

3 EQUIPMENT REQUIRED

- VLF test set capable of generating 18 kV RMS at 0.1 Hz
- Voltage and current monitoring equipment
- Grounding and discharge rods
- Insulation resistance tester (Megger)
- Safety barriers and warning signs

4 SAFETY PRECAUTIONS

- All personnel must be trained and authorized
- Area must be barricaded with proper warning signs
- Only test personnel shall remain inside the zone during testing
- Confirm absence of voltage and ensure cable is grounded before and after testing
- Issue of work permit

5 PROCEDURE

5.1 TEST VOLTAGE

With reference to the IEC 60502-2:2014, clause 20.3.1(c), according to the Engineering department's instruction, the VLF test voltage is based on the system operational voltage of 6.6 kV.

Therefore, the value of U_0 is derived as:

$U_0 = 6.6\ kV / \sqrt{3} \approx 3.81\ kV$

Following this interpretation, the VLF withstand test shall be performed using:

- Test Voltage: $3 \times U_0 = 3 \times 3.81 \approx 11.43$ kV RMS
- Frequency: 0.1 Hz
- Duration: 15 minutes

5.2 VISUALLY INSPECT THE CABLE AND TERMINATIONS.

Inspect the entire length of the cable, joints, and terminations for visible damage, proper preparation, cleanliness, and conformance with installation standards. Check that no mechanical stress, sharp bends, or contamination is present.

5.3 VERIFY CABLE IS PROPERLY IDENTIFIED AND TAGGED.

Confirm that the cable is correctly labeled according to project documentation. Identification tags should match drawing references and be securely attached.

5.4 PERFORM INSULATION RESISTANCE MEASUREMENT.

Use a calibrated insulation resistance tester (Megger) at 500V for 1 minute to measure the resistance between conductor(s) and earth. Record values and ensure they meet project or manufacturer's criteria prior to proceeding with VLF test.

5.5 PREPARE TERMINATIONS, ENSURING CLEANLINESS AND DRYNESS.

Remove any temporary protection, clean the terminations with approved cleaning agents, and ensure the surfaces are dry and free of debris or moisture. Verify correct assembly of stress control components.

5.6 CONNECT VLF TEST SET BETWEEN CONDUCTOR AND METALLIC SCREEN (EARTH).

Connect the high-voltage output of the VLF generator to the conductor under test. Connect the return path to the metallic screen or grounding system. Ensure all connections are secure and that the test equipment is rated for the test voltage.

5.7 APPLY 11.43 KV RMSAT 0.1 HZ FOR 15 MINUTES.

Gradually ramp up the voltage 11.43 kV RMS. Maintain the voltage for the full duration of 15 minutes while monitoring the test equipment for current, voltage stability, and signs of insulation failure.

5.8 MONITOR FOR BREAKDOWNS, DISCHARGES OR CURRENT SPIKES.

Visually observe the test set and cable terminations. Monitor the current for any sharp increases or instability, which may indicate partial discharges or breakdowns.

5.9 DISCHARGE AND GROUND CABLE AFTER TEST COMPLETION.

After the test, slowly decrease the voltage to zero. Use a grounding rod to safely discharge any residual voltage from the conductor before handling.

5.10 REPEAT POINT 5.4

5.11 DOCUMENT ALL RESULTS IN THE ATTACHED TEST REPORT.

Complete the test report form, including all pre-checks, insulation readings, test parameters, observations, and results. Sign and submit the document for recordkeeping.

TEST REPORT

Cable Tag/ID: _____

Cable Type: _____

Voltage Rating: 6/10 kV

5.12 PRE-TEST CHECKLIST

☐ Cable properly tagged and identified

☐ Visual inspection of terminations completed

☐ Insulation resistance test performed

☐ Clean and dry termination surfaces

☐ Metallic screen continuity verified

Client representative present during inspection: Yes ☐/ No ☐

5.13 TEST DETAILS

Megger before test: ☐

Test Method: VLF – 0.1 Hz

Test Voltage: 11.43 kV RMS

Duration: 15 minutes

Megger after test: ☐

Equipment Used: _____

Serial Number: _____

Operator: _____

5.14 OBSERVATIONS

Partial Discharge observed: Yes ☐/ No ☐

Breakdown occurred: Yes ☐/ No ☐

Final Result: PASS ☐/ FAIL ☐

NOTES: _____

_____

5.15 SIGNATURES

Tested by: _____ Signature: _____ Date: _____

Witnessed by: _____ Signature: _____ Date: _____

82006-CEM-1-L2

VLF Withstand Report

82006-CEM-1-L2 - Maintenance Test

Auto Test

Test finished successfully

Report Information

Date	4/05/2025 10:36 AM
Company Name	ICS
Region	---
Station	---
Operator Name	RECHICHI
Work Order	---

Device Under Test (Cable XLPE)

Voltage Rating	11.5 kV
Insulation	XLPE
Line Length	80 Meter
Size	1X150
Phase	B
Manufacturer Name	---

Equipment:

HVA45	GH5219.16C010

Test Setup

Test Purpose	Maintenance
Arc Management Mode	Trip out on Arc

#	Test Voltage	Waveform	Frequency	Duration
1	11.5 kV•	Sine	0.1 Hz (A)	15 min

Measurements:

Test finished successfully

#	Voltage	Current	Cap.	Res.	Frequency
1	11.5 kV•	48 µA•	6,8 nF	>20 GΩ	0.1 Hz

•RMS value

TEST REPORT

Cable Tag/ID: 82006-CEM-1-L2

Cable Type: 1x70mm²

Voltage Rating: 6/10 kV

5.12 PRE-TEST CHECKLIST

☑ Cable properly tagged and identified

☑ Visual inspection of terminations completed

☑ Insulation resistance test performed

☑ Clean and dry termination surfaces

☑ Metallic screen continuity verified

Client representative present during inspection: Yes ☑/ No ☐ CABLE NOT INSPECTED TEST RESULT ACCEPTABLE

5.13 TEST DETAILS

Megger before test: ☑

Test Method: VLF - 0.1 Hz

Test Voltage: 11.43 kV RMS

Duration: 15 minutes

Megger after test: ☑

Equipment Used: HVA45

Serial Number: GH 5219.16C010

Operator: FAUSTO RECHICHI

5.14 OBSERVATIONS

Partial Discharge observed: Yes ☐/ No ☒

Breakdown occurred: Yes ☐/ No ☒

Final Result: PASS ☑/ FAIL ☐

NOTES: _____

5.15 SIGNATURES

Tested by: FAUSTO RECHICHI Signature: _____ Date: 05/04/2025

Witnessed by: GIOVANNI TANGIANU Signature: _____ Date: 05/04/2025
DAVE MUSUROI 05/04/2025

ITEM	Tag	82006-CEM-1-L2	:	6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer	Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	:	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	Module	LD	
TASK	code	C10000489	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX08	HV Power Cable

CABLE DATA

Type	Cores/Size mm²	Color
CU/EPR/CTS/LSZH/CWB/LSZH	1X70 mm2	RED

From SG-100D1 To TR-200ED1

1	Confirm cable is as specified in project cable schedule	OK
2	Visual Check cable physical integrity.	OK
3	Check is installed in accordance with layout drawing (segregation, distance…).	OK
4	Check cable is supported and fixed to rack according to project specification.	Note
5	Check bending radius is within the specified limits.	OK
6	Confirm cable glands suit for cable type, correctly mounted and tightened.	OK
7	Check gland plate for single core cables is non ferrous (non -magnetic).	OK
8	Confirm cable labelling is in accordance with specifications.	Note
9	Check cable is correctly loomed and segregated in accordance with specification.	OK
10	Check cable earthing against lastest drawings.	OK
11	Check cores marking are in accordance with termination diagram	OK
12	Check terminations are in accordance with latest termination diagram	Note
13	If required produce Red Line Mark Up for "AS BUILT"	

REFER TO FINAL SHEET FOR ACCEPTANCE

ROSETTI MARINO PROVERLIS CROSSWIND

ITEM	Tag	82006-CEM-1-L2	: 6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer		Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		Module	LD	
TASK	code	C10000489	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity CCK	Discipline Electrical	Form	CPX08	HV Power Cable

	CONTINUITY TESTS			
1	CORE CONTINUITY	500	mΩ	OK
2	SCREEN CONTINUITY	500	mΩ	OK
3	ARMOUR CONTINUITY	500	mΩ	OK
	1st INSULATION TEST			
	Voltage applied:	2500	kV	
4	Ph1 / Ph2-Ph3-screen-armour-Earth :	>999	MΩ	OK
5	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	MΩ	OK
6	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	MΩ	OK
	HV TEST 15 min			
	Voltage applied:		kV	
7	Ph1 / Ph2-Ph3-screen-armour-Earth :		µA	Note
8	Ph2 / Ph1-Ph3-screen-armour-Earth:		µA	Note
9	Ph3 / Ph2-Ph1-screen-armour-Earth:		µA	Note
	2nd INSULATION TEST			
	Voltage applied:	2500	kV	
10	Ph1 / Ph2-Ph3-screen-armour-Earth :	>999	MΩ	OK
11	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	MΩ	OK
12	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	MΩ	OK
	RE-CONNECT TERMINATIONS			
13	Tightening torque		N.m	Note

TESTING INSTRUMENTS USED

TYPE / SERIAL N°	Mod:KEW3125A S/N: W8330207	TYPE / SERIAL N°	Mod:HVA45 S/N:GH5219.16C010
Calibration certificate N° and date:	N°7722/24 _ 10/07/2024	Calibration certificate N° and date:	LAT04200772/24 _ 02.2024
TYPE / SERIAL N°	Mod:FLUKE 175 S/N:(AW1/018-17140769)	TYPE / SERIAL N°	
Calibration certificate N° and date:	N°7715/24 _ 10/07/2024	Calibration certificate N° and date:	

Comments:

Note 4: refer to PL n° C30000672
Note 8: refer to PL n° C30000673
Note 12: refer to PL n° C30000674
Note 13: refer to PL n° C30000674

Note HV TEST: See attached certificate

	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM (Rosetti Marino)	
Name	Carmelo Bongiovanni	Paolo Schintu	
Date	2024-11-04	2024-11-20	
Signature	PROVERLIS Digitaly signed by Carmelo Bongiovanni 2024-11-04T17:06:12.063Z	PROVERLIS Digitaly signed by Paolo Schintu 2024-11-20T15:33:15.689Z	

82006-CEM-L2
VLF Diagnostic Report

Manual Test
Test finished successfully

Report Information

Date	11/8/2024 7:03 PM
Company Name	ICS
Region	EMILIA ROMAGNA
Station	---
Operator Name	RIELA
Work Order	MT-MISURE

Device Under Test (Cable XLPE)

Voltage Rating	10.0 kV
Insulation	XLPE
Line Length	80 Meter
Size	1X70
Phase	C
Manufacturer Name	ICS

Equipment:

HVA45TD	GH5219.16C010

Test Setup

Arc Management Mode: Trip out on Arc

#	first Voltage	Waveform	Frequency	Duration
1	10.0 kV•	Sine	0.1 Hz	5 min

Manual max. Voltage 10.0 kV

Measurements:

Test finished successfully

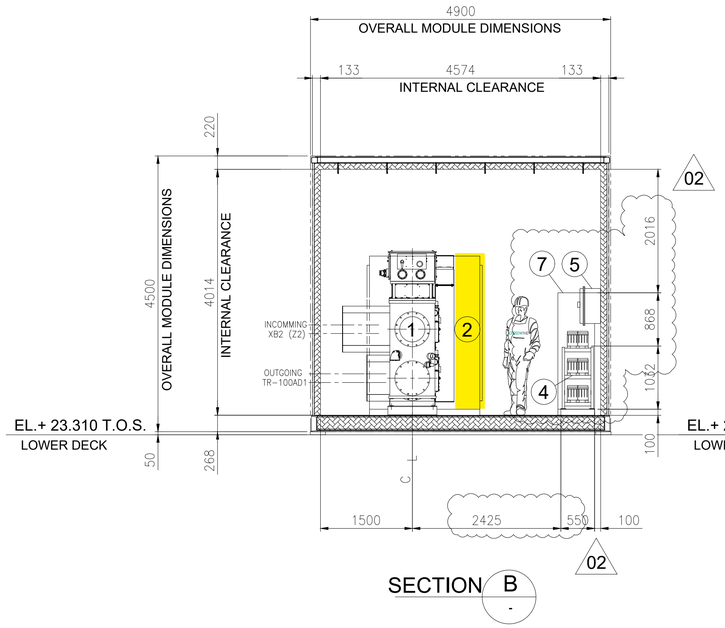
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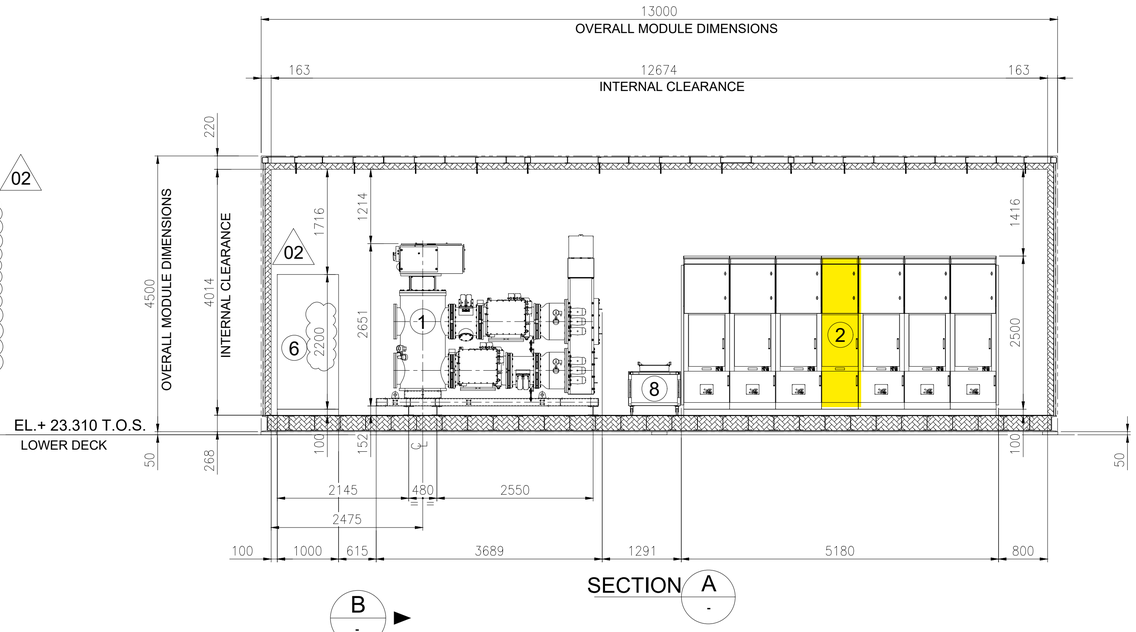
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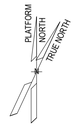
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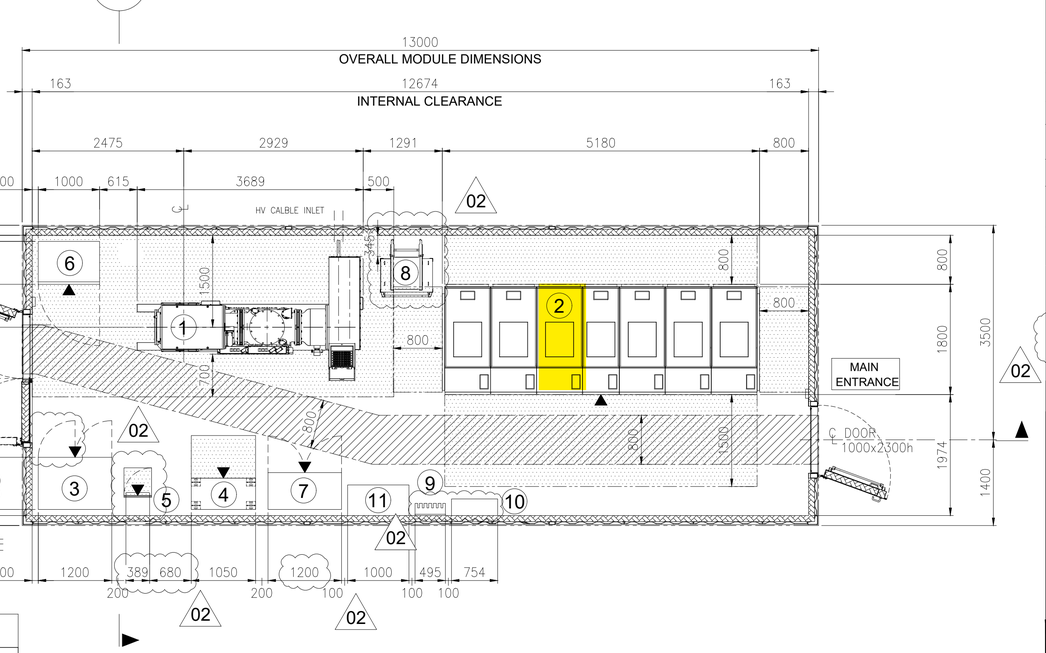
20/11/24
I.C.S. IMPIANTI
BONGIOVANNI CARMELO

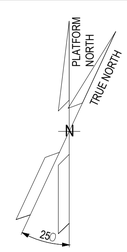
DRAWING NO. 123A90-DDL-EL-DL-20104 REV. 02

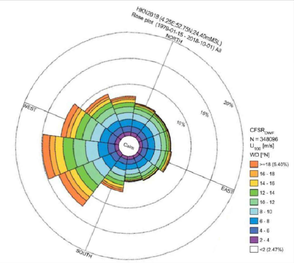












NOTES

1. U.N.O. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DELETED
3. DOCUMENT VALID ONLY FOR ELECTRICAL COMPONENT.
4. FOR OTHER ITEMS, CORRECT LOCATION AND INFROMATION, PLEASE REFER TO VENDORS AND DEDICATED PROJECT DOCUMENTATION.
5. HEIGHT OF ALL PANELS IN THE EQUIPMENT LIST TABLE IS WITHOUT THE BASE FRAME (100mm)

02

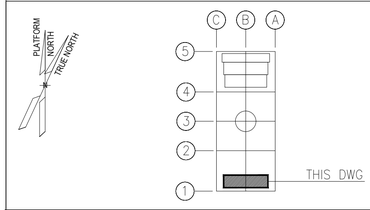
LEGEND

U.N.O. _____ UNLESS NOTED OTHERWISE
T.O.S. _____ TOP OF STEEL
_____ ESCAPE CORRIDOR - WIDTH 800mm.
_____ MAINTENANCE AREA - VENDOR REQUIREMENT
_____ SWITCHGEAR ROOM ENCLOUSURE
_____ FRONT OF EQUIPMENT

REFERENCES

DOCUMENT TITLE	DOCUMENT NUMBER
66kV SWITCHGEAR (GIS) GENERAL ARRANGEMENT DRAWING	1723001595-EL-DA-00006
CIRCUIT AND WIRING DIAGRAM	1723001595-EL-DG-00015
SG-100D1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00006
DC UPS – GENERAL ARRANGEMENT AND DIMENSIONAL DRAWINGS	1724000372-EL-DA-00003
DC UPS – BATTERY LAYOUT AND INTERCONNECTING DIAGRAM	1724000372-EL-DG-00010
B-100 - GENERAL ARRANGEMENT DRAWINGS - E&I SHELTER	1724000049-AR-DA-00014

KEY PLAN



EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	NOTE
1	HNA6-AFA70	66kV SWITCHGEAR (GIS)	3689	2025	2651	
2	SG-100D1	6.6kV SWITCHGEAR	5180	1800	2500	
3	UP-200F1	DC UPS PANEL	1200	850	2105	
4	BA-200F1	DC UPS BATTERY RACK	1050	510	1272	
5	CB-200F1 02	ISOLATOR FOR DC UPS	452	377	634	
6	CP-100E1	66 kV SWITCHGEAR LOCAL CONTROL PANEL	1000	700	2200	02
7	B100-HSB-001	DISTRIBUTION & HVAC PANEL - HV MV ROOM	1200	600	1900	
8	-	SERVICE TROLLEY FOR 6.6kV SWITCHGEAR	943	862	874	
9	-	TOOL BOX	495	200	200	
10	-	SUBSTATION LIFE SAVING & INTERVENTION KIT	754	270	840	
11	-	TABLE	1000	500	750	

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20104**

REV.:	DATE:	SIGNATURE:
2_A	08/08/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/05/2024	FMO	LMA/AMA	LMA/MDO	ACCEPTED FOR CONSTRUCTION (AFC)
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	10/11/2023	DSF	CB/AMA	OYFO/MDO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
HV SWITCHROOM

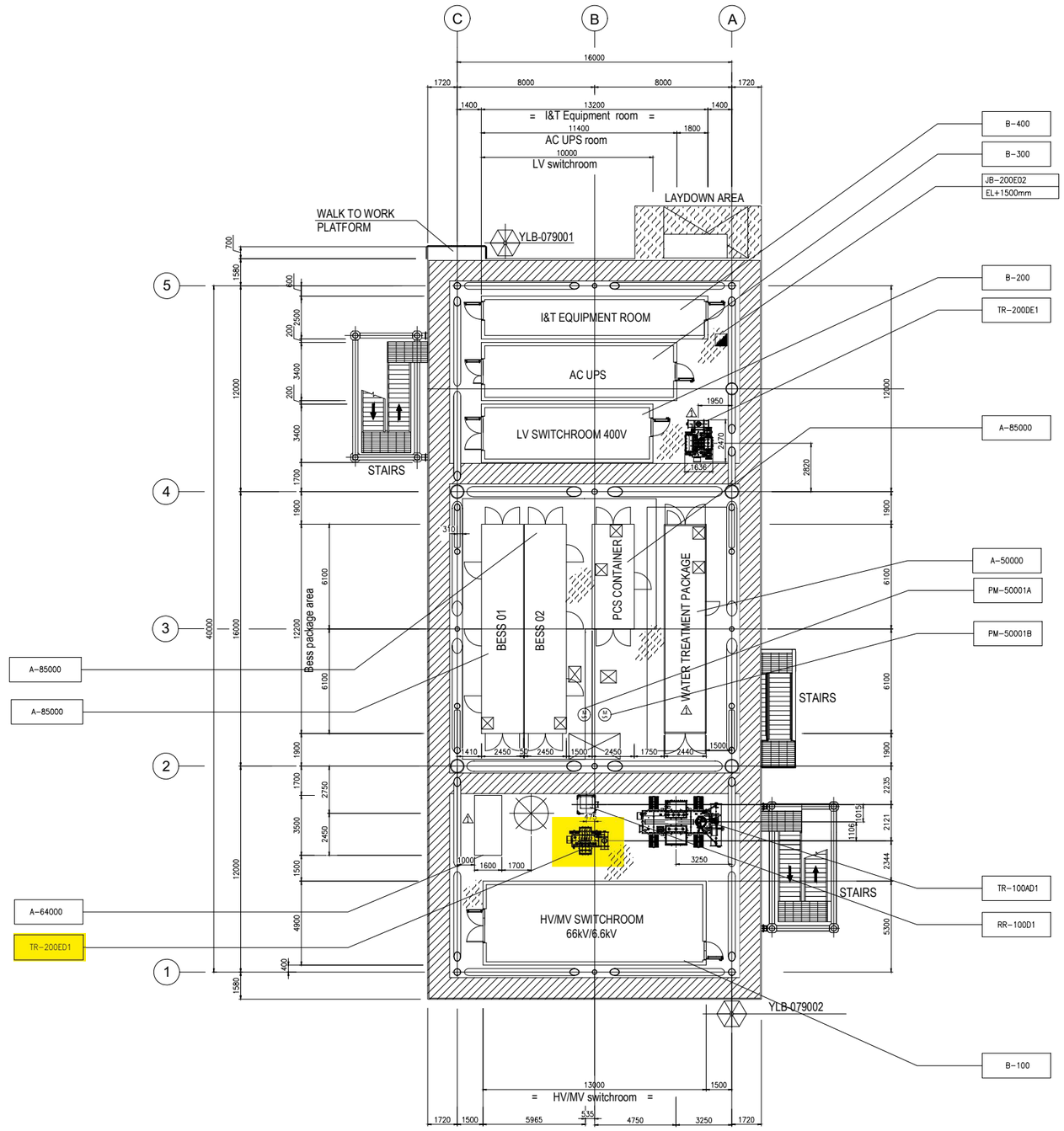
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:50
DRAWN GPA	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 27/05/2024

A1	DRAWING NO. 123A90-DDL-EL-DL-20104	SHEET 001	REV. 02

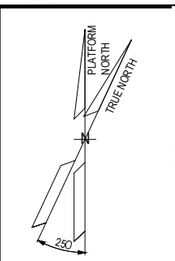
File Name : 123A90-DDL-EL-DL-20104_REV02.dwg

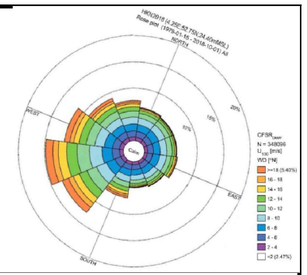
DRAWING NO. 123A90-DDL-EL-DL-20101

REV. 01



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





NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

(M)	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
⚠ 123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DL-20101
REV.: 1_A | DATE: 08/08/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE 1:150
DRAWN SAM | CHECKED FMA/AMA | APPROVED FPA/DLO | DATE 04/03/24
A1 | DRAWING NO. 123A90-DDL-EL-DL-20101 | SHEET 001 | REV. 01

File Name : 123A90-DDL-EL-DL-20101-Electrical Equipment Layout – Lower Deck

FROM

DESCRIPTION: 6.6KV HV SWITCHGEAR
TAG NUMBER: SG-100D1

TAG COLUMN: A4

L1	Arm.	BK	82002-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82002-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82002-CEM-1-L3 1C X 70 mm²	BK

TAG COLUMN: A7

L1	Arm.	BK	82003-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82003-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82003-CEM-1-L3 1C X 70 mm²	BK

TAG COLUMN: A1

L1	Arm.	BK	82004-CEM-1-L1 1C X 150 mm²	BK
L2		BK	82004-CEM-1-L2 1C X 150 mm²	BK
L3		BK	82004-CEM-1-L3 1C X 150 mm²	BK

TAG COLUMN: A3

L1	Arm.	BK	82005-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82005-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82005-CEM-1-L3 1C X 70 mm²	BK

TAG COLUMN: A2

L1	Arm.	BK	82006-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82006-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82006-CEM-1-L3 1C X 70 mm²	BK

TO

DESCRIPTION: 6.6/0.42 KV, 1.6MVA TRANSFORMER
TAG NUMBER: TR-200DE1

BK	Arm.	1U	HV TERMINAL BOX OF TR-200DE1
BK		1V	
BK		1W	

DESCRIPTION: 6.6/0.4 KV, 1.25MVA TRANSFORMER
TAG NUMBER: TA30

BK	Arm.	1U	HV TERMINAL BOX OF TA30
BK		1V	
BK		1W	

DESCRIPTION: 6.6/0.4/0.4 KV, 3.15MVA TRANSFORMER
TAG NUMBER: T4

BK	Arm.	1U	HV TERMINAL BOX OF T4
BK		1V	
BK		1W	

DESCRIPTION: 6.6/0.62 KV, 1.25MVA TRANSFORMER
TAG NUMBER: 18T1

BK	Arm.	1U	HV TERMINAL BOX OF 18T1
BK		1V	
BK		1W	

DESCRIPTION: 6.6/0.8 KV, 0.5MVA TRANSFORMER
TAG NUMBER: TR-200ED1

BK	Arm.	1U	HV TERMINAL BOX OF TR-200ED1
BK		1V	
BK		1W	

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

REV.:	DATE:	SIGNATURE:
1_A	17/10/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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
6.6KV HV SWITCHGEAR

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

SCALE : 1:X

A3

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

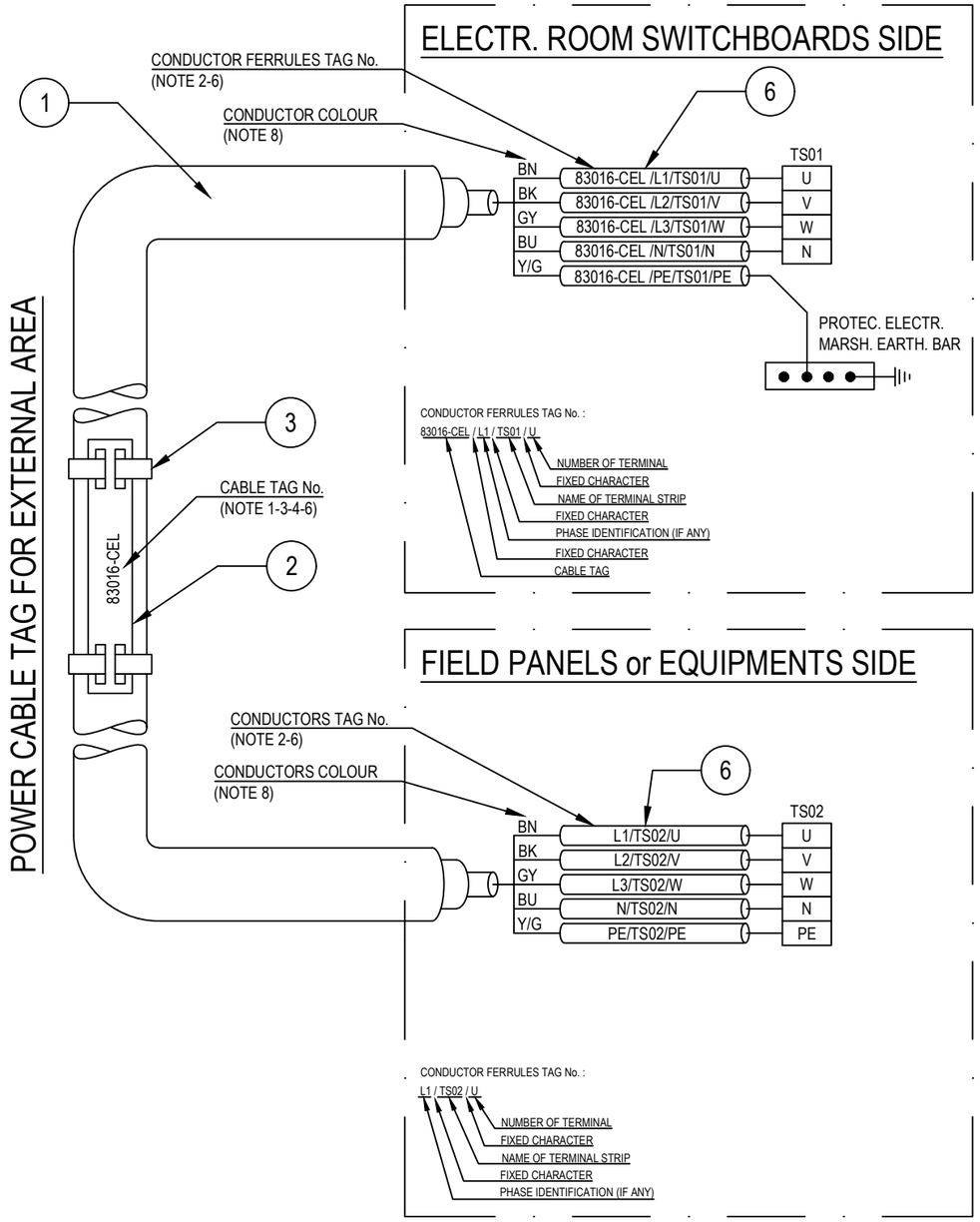
SHEET 016

REV. 01

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DG-20162 Rev. 01

C02



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	UNARMOURED CABLE				
2	CABLE TAG FOR EXTERNAL AREA	HDG/SS			NOTE 1 NOTE 4
3	TIE FOR CABLE TAG IN EXTERNAL AREA	HDG/SS			
4	CABLE TAG FOR INTERNAL AREA	PVC			NOTE 1 NOTE 5
5	TIE FOR CABLE TAG IN INTERNAL AREA	NYLON 6.6			
6	CORE FERRULES	PVC			

NOTES:

1) ALL CABLES SHALL BE IDENTIFIED AT EACH TERMINATION AND EACH SIDE OF ANY OBSTACLE (E.G. CABLE TRANSIT ON WALLS INSIDE SHELTER AND FLOOR DECK CROSSING, BY THEIR RESPECTIVE TAGS/NUMBERS, AS INDICATED ON THE CABLE SCHEDULE.
CABLE IDENTIFICATION SHALL BE ALSO DONE BELOW AND IN THE SWITCHBOARD CABLE COMPARTMENT.

2) CABLE CORE FERRULES SHALL BE FITTED AT EVERY TERMINATION. THESE FERRULES SHALL BE OF ENGRAVED PLASTIC SLIP ON, INTERLOCKED AND SELF GRIP TYPE.

3) ON CABLE TRAYS OR LADDERS, CABLES SHALL BE IDENTIFIED AT EACH END, AND EVERY 25 METERS.

4) THE CABLE TAG FOR EXTERNAL AREA SHALL DONE BY 316L STAINLESS STEEL LABELS, TAG (H=5mm) SHALL BE LASER PRINTED PREFERABLY OR EMBOSSED, LABEL HELD BY TWO 316L STAINLESS STEEL TIES.

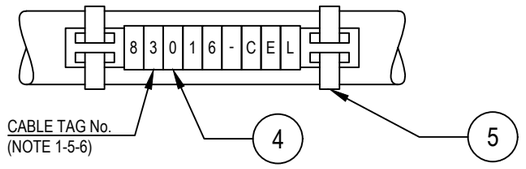
5) THE CABLE TAG FOR INTERNAL AREA SHALL BE DONE BY ENGRAVED PLASTIC SLIP ON CHARACTERS ONTO PLASTIC TIE, BLACK LETTER (H=5mm) ON WHITE.

6) CABLE AND CONDUCTOR TAG ARE INDICATIVE ONLY.

7) WITHIN TECHNICAL BUILDING, PROTECTIVE CONDUCTOR SHALL BE TAGGED BETWEEN FOLLOWING ITEMS:
- PANEL (SWITCHBOARD, SWITCHGEAR, DISTRIBUTION BOARD, ETC) AND EARTH BAR
- EARTH BAR AND EARTH BOSS

8) ONLY IF NECESSARY, SHRINK TUBES OF THE APPROPRIATE COLOR WILL BE INSTALLED TO COVER THE WRONG CONDUCTOR COLOR, THIS WILL BE PERFORMED IN EACH SIDE OF THE CABLES WHERE NECESSARY.

POWER CABLE TAG FOR INTERNAL AREA



VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DD-20092
REV.: 2_A | DATE: 28/08/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	28/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	04/07/24	NLK	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-POWER SYSTEM & CABLE INSTALLATION
CABLES INSTALLATION SYSTEM IDENTIFICATION FOR POWER CABLES

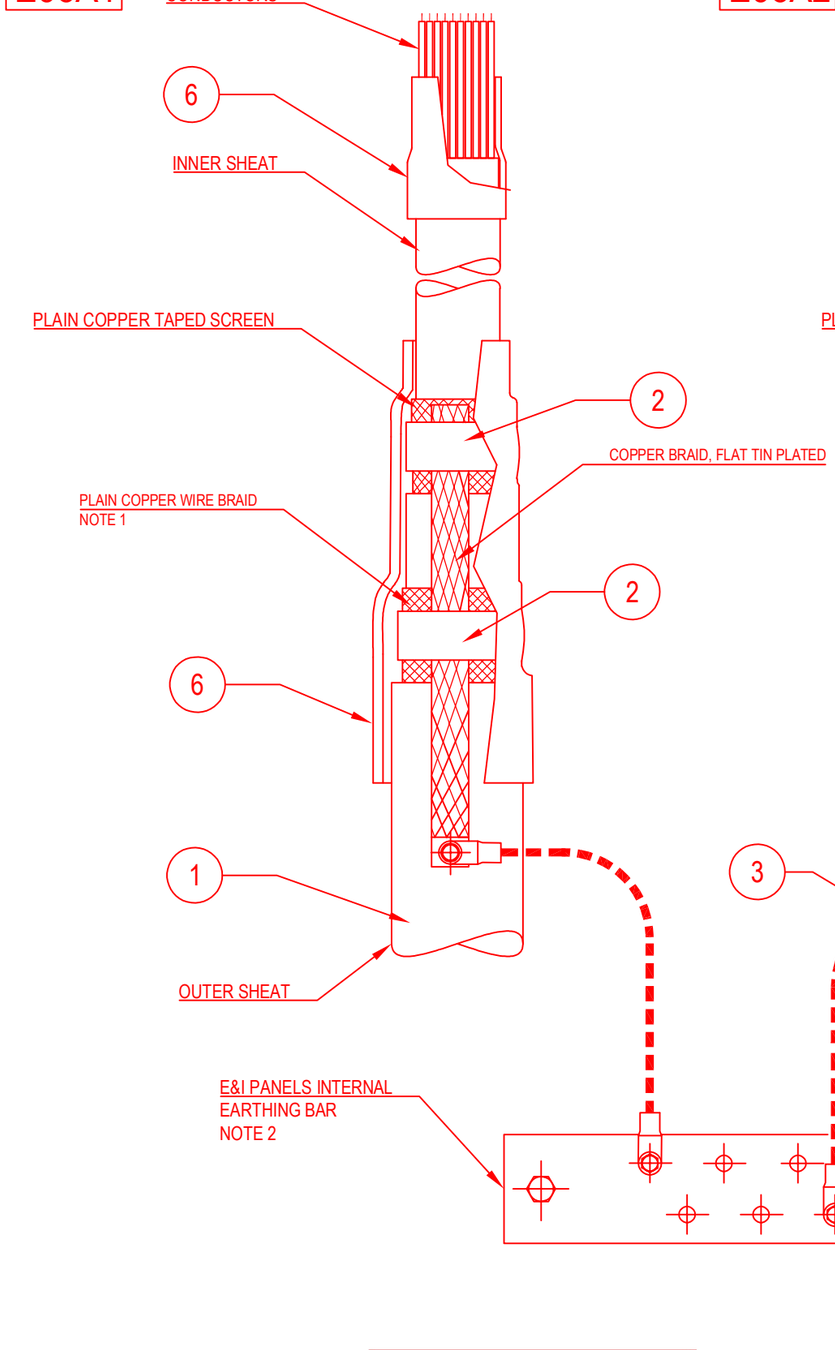
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 123A90-DDL-EL-DD-20092 | SHEET 007 | REV. 02

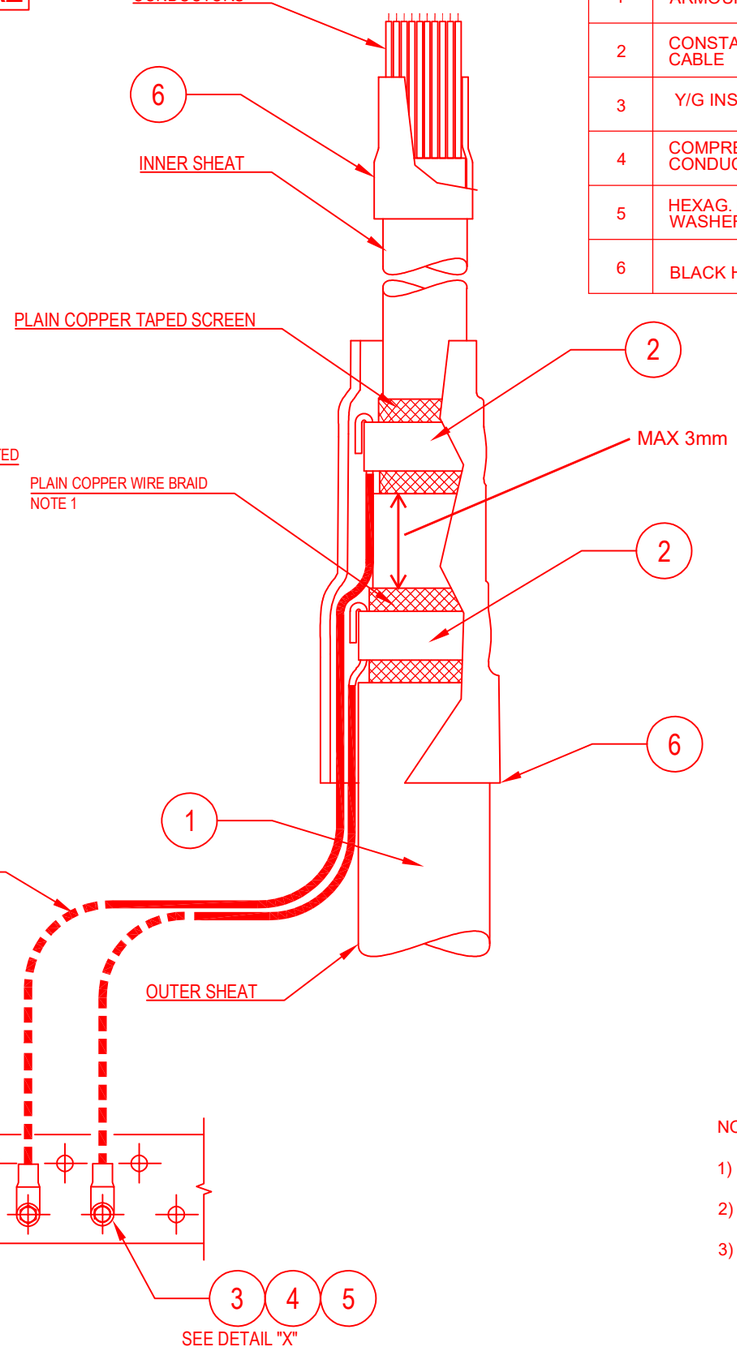
F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20092 REV.02.DWG

E06A1

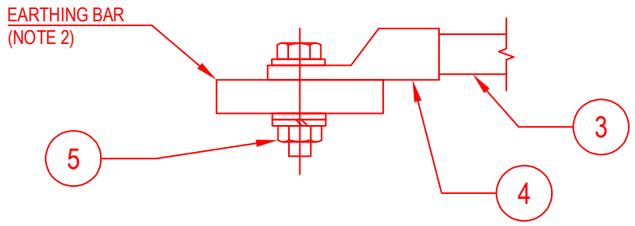


E06A2



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	ARMOURED CABLE				
2	CONSTANT FORCE SPRING FOR EARTHING ARMOUR CABLE	AISI 316L			
3	Y/G INSULATING COPPER CONDUCTOR	COPPER	$16mm^2$		
4	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	$16mm^2$		
5	HEXAG. BOLTS, PLANE WASHERS, GROWER SPRING WASHER AND NUT	AISI 316L	M8X30		
6	BLACK HEAT SHRINKABLE SLEEVE				

DETAIL "X"



NOTES:

1) CABLE ARMOUR SHALL BE EARTHED AT BOTH ENDS.
2) FOR EARTHING BAR INSIDE SWITCHBOARD SEE VENDOR DOCUMENTATION.
3) CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_G	25/10/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-EARTHING SYSTEM
EARTHING FOR CABLE ARMOUR AND SCREEN (MV CABLES)

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

A3 | DRAWING NO. 123A90-DDL-EL-DD-20090 | SHEET 028 | REV. 02

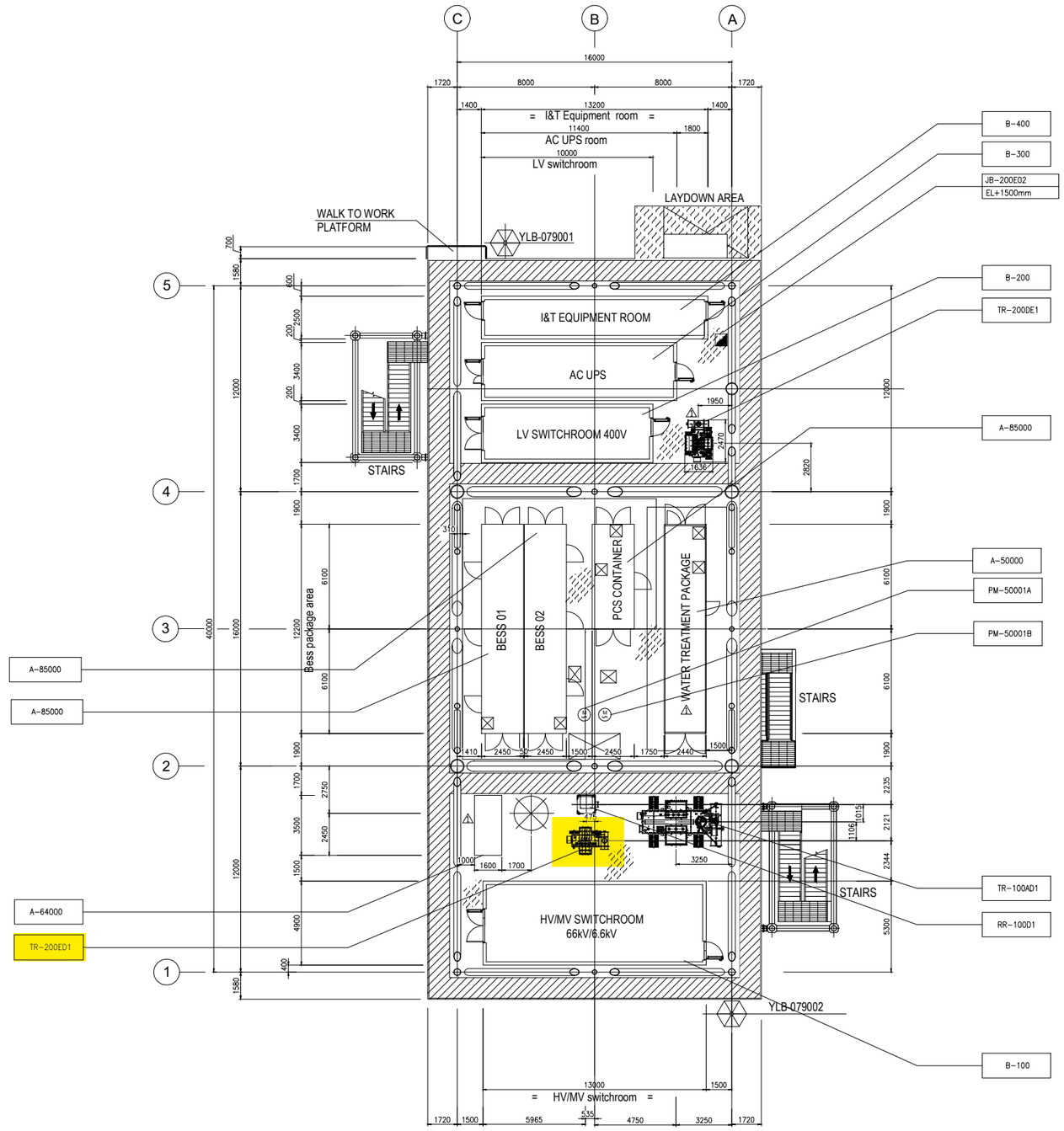
F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 RLMU MV CABLES.DWG

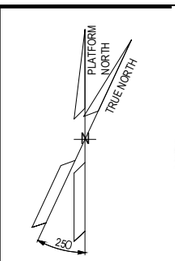
Tag Number	Category	Discipline	Eng Status	NativeDoc	Parent Tag	Grouping	Main Function	Secondary Function	Area	From Tag	From Main Function	From Area	To Tag	To Main Function	To Area	Material ID	Material Desc.	Gland Standard	From Gland	From Entry	From Fitting	To Gland	To Entry	To Fitting	Routing	Routing Manual
82006-CEM-1-L2	Cable	EL	VFC	123A90-DDL-EL-LIS-20148		Int-Ext				SG-100D1	MV 6,6kV Switchgear	Lower Deck (B-100)	TR-200ED1	6,6 / 0,8 kV 0,5 MVA Transformer	Lower Deck	ELECV36-1X70	Cable CU/EPR/CTS/LSZH/CWB/LSZH 6/10kV 1x70mm²- Red	M40	n.a.			T2_M40_Double				L-150-101-MVT-015 / L-600-101-MVT-008 / L-600-101-MVT-009 / E-MCT-103 / L-450-101-MVT-004 / L-150-101-MVT-003

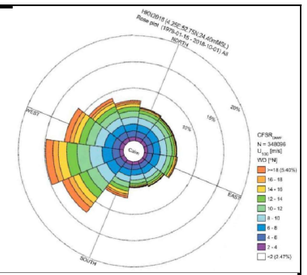
DRAWING NO. 123A90-DDL-EL-DL-20101

REV. 01



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





NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

(M)	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
⚠ 123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DL-20101
REV.: 1_A | DATE: 08/08/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE 1:150
DRAWN SAM | CHECKED FMA/AMA | APPROVED FPA/DLO | DATE 04/03/24
A1 | DRAWING NO. 123A90-DDL-EL-DL-20101 | SHEET 001 | REV. 01

File Name : 123A90-DDL-EL-DL-20101-Electrical Equipment Layout – Lower Deck

ITEM	Tag	82006-CEM-1-L3	: 6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer			Dwg	123A90-DDL-EL-LIS-20148
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)			Module	LD_B-100/LD
TASK	code	C10000490		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX08 HV Power Cable

CABLE DATA

Type: CU/EPR/CTS/LSZH/CWB/LSZH | Cores/Size mm²: 1X70 mm2 | Color: RED

From: SG-100D1 | To: TR-200ED1

1	Confirm cable is as specified in project cable schedule	OK
2	Visual Check cable physical integrity.	OK
3	Check is installed in accordance with layout drawing (segregation, distance…).	OK
4	Check cable is supported and fixed to rack according to project specification.	OK
5	Check bending radius is within the specified limits.	OK
6	Confirm cable glands suit for cable type, correctly mounted and tightened.	OK
7	Check gland plate for single core cables is non ferrous (non -magnetic).	OK
8	Confirm cable labelling is in accordance with specifications.	OK
9	Check cable is correctly loomed and segregated in accordance with specification.	OK
10	Check cable earthing against lastest drawings.	OK
11	Check cores marking are in accordance with termination diagram	OK
12	Check terminations are in accordance with latest termination diagram	OK
13	If required produce Red Line Mark Up for "AS BUILT"	

ROSETTI MARINO PROVERLIS CROSSWIND

ITEM	Tag	82006-CEM-1-L3	: 6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer		Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		Module	LD_B-100/LD	
TASK	code	C10000490	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity CCK	Discipline Electrical	Form	CPX08	HV Power Cable

	CONTINUITY TESTS			
1	CORE CONTINUITY	500	mΩ	OK
2	SCREEN CONTINUITY	500	mΩ	OK
3	ARMOUR CONTINUITY	500	mΩ	OK
	1st INSULATION TEST			
	Voltage applied:	500	kV	
4	Ph1 / Ph2-Ph3-screen-armour-Earth :	>999	MΩ	OK
5	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	MΩ	OK
6	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	MΩ	OK
	HV TEST 15 min			
	Voltage applied:	11,5	kV	
7	Ph1 / Ph2-Ph3-screen-armour-Earth :	47	µA	OK
8	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	µA	
9	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	µA	
	2nd INSULATION TEST			
	Voltage applied:	500	kV	
10	Ph1 / Ph2-Ph3-screen-armour-Earth :	>999	MΩ	OK
11	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	MΩ	OK
12	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	MΩ	OK
	RE-CONNECT TERMINATIONS			
13	Tightening torque		N.m	Note

TESTING INSTRUMENTS USED

TYPE / SERIAL N°	Mod:KEW3125A S/N: W8330207	TYPE / SERIAL N°	Mod:HVA45 S/N:GH5219.16C010
Calibration certificate N° and date:	N°7722/24 _ 10/07/2024	Calibration certificate N° and date:	LAT04200772/24 _ 02.2024
TYPE / SERIAL N°	VOLCRAFT 1000V - ET-200 S/N:H240103023	TYPE / SERIAL N°	
Calibration certificate N° and date:	N°LAT 042 00768/24 _ 12/10/2024	Calibration certificate N° and date:	

Comments: Note HV TEST: See attached certificate and Test Report.

Note : Tightening torque will be done by the commissioning activity.

	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Michele Tartaglia	Giovanni Tangianu	
Date	2025-04-05	2025-04-18	
Signature	PROVERLIS Digitaly signed by Michele Tartaglia 2025-04-05T08:15:16.159Z	PROVERLIS Digitaly signed by Giovanni Tangianu 2025-04-18T10:17:22.242Z	

Base Load Power Hub (BLPH)

Work Instruction – VLF Testing of Installed 6/10 kV Cables

Document Number: 123A90-PML-QHSE-WI-0001

Document Class: 2

0	01/04/2025	Issue for Review	R.Degli Esposti	G. Tassinari	A.Iveson
Rev.	Date	Description	Prepared	Reviewed	Approved

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Revision / Change Log

Rev.	Description
0	Issue for Review (IFR)

HOLDS LIST

No.	Description
1	
2	
3	
4	

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1 SCOPE

This work instruction describes the procedure for Very Low Frequency (VLF) withstand testing on installed 6/10 (12) kV cables in accordance with IEC 60502-2:2014, clause 20.3.1(c).

2 APPLICABLE STANDARDS

- IEC 60502-2:2014 – Power cables with extruded insulation from 6 kV to 30 kV

3 EQUIPMENT REQUIRED

- VLF test set capable of generating 18 kV RMS at 0.1 Hz
- Voltage and current monitoring equipment
- Grounding and discharge rods
- Insulation resistance tester (Megger)
- Safety barriers and warning signs

4 SAFETY PRECAUTIONS

- All personnel must be trained and authorized
- Area must be barricaded with proper warning signs
- Only test personnel shall remain inside the zone during testing
- Confirm absence of voltage and ensure cable is grounded before and after testing
- Issue of work permit

5 PROCEDURE

5.1 TEST VOLTAGE

With reference to the IEC 60502-2:2014, clause 20.3.1(c), according to the Engineering department's instruction, the VLF test voltage is based on the system operational voltage of 6.6 kV.

Therefore, the value of U_0 is derived as:

$U_0 = 6.6\ kV / \sqrt{3} \approx 3.81\ kV$

Following this interpretation, the VLF withstand test shall be performed using:

- Test Voltage: $3 \times U_0 = 3 \times 3.81 \approx 11.43$ kV RMS
- Frequency: 0.1 Hz
- Duration: 15 minutes

5.2 VISUALLY INSPECT THE CABLE AND TERMINATIONS.

Inspect the entire length of the cable, joints, and terminations for visible damage, proper preparation, cleanliness, and conformance with installation standards. Check that no mechanical stress, sharp bends, or contamination is present.

5.3 VERIFY CABLE IS PROPERLY IDENTIFIED AND TAGGED.

Confirm that the cable is correctly labeled according to project documentation. Identification tags should match drawing references and be securely attached.

5.4 PERFORM INSULATION RESISTANCE MEASUREMENT.

Use a calibrated insulation resistance tester (Megger) at 500V for 1 minute to measure the resistance between conductor(s) and earth. Record values and ensure they meet project or manufacturer's criteria prior to proceeding with VLF test.

5.5 PREPARE TERMINATIONS, ENSURING CLEANLINESS AND DRYNESS.

Remove any temporary protection, clean the terminations with approved cleaning agents, and ensure the surfaces are dry and free of debris or moisture. Verify correct assembly of stress control components.

5.6 CONNECT VLF TEST SET BETWEEN CONDUCTOR AND METALLIC SCREEN (EARTH).

Connect the high-voltage output of the VLF generator to the conductor under test. Connect the return path to the metallic screen or grounding system. Ensure all connections are secure and that the test equipment is rated for the test voltage.

5.7 APPLY 11.43 KV RMSAT 0.1 HZ FOR 15 MINUTES.

Gradually ramp up the voltage 11.43 kV RMS. Maintain the voltage for the full duration of 15 minutes while monitoring the test equipment for current, voltage stability, and signs of insulation failure.

5.8 MONITOR FOR BREAKDOWNS, DISCHARGES OR CURRENT SPIKES.

Visually observe the test set and cable terminations. Monitor the current for any sharp increases or instability, which may indicate partial discharges or breakdowns.

5.9 DISCHARGE AND GROUND CABLE AFTER TEST COMPLETION.

After the test, slowly decrease the voltage to zero. Use a grounding rod to safely discharge any residual voltage from the conductor before handling.

5.10 REPEAT POINT 5.4

5.11 DOCUMENT ALL RESULTS IN THE ATTACHED TEST REPORT.

Complete the test report form, including all pre-checks, insulation readings, test parameters, observations, and results. Sign and submit the document for recordkeeping.

TEST REPORT

Cable Tag/ID: _____

Cable Type: _____

Voltage Rating: 6/10 kV

5.12 PRE-TEST CHECKLIST

☐ Cable properly tagged and identified

☐ Visual inspection of terminations completed

☐ Insulation resistance test performed

☐ Clean and dry termination surfaces

☐ Metallic screen continuity verified

Client representative present during inspection: Yes ☐/ No ☐

5.13 TEST DETAILS

Megger before test: ☐

Test Method: VLF – 0.1 Hz

Test Voltage: 11.43 kV RMS

Duration: 15 minutes

Megger after test: ☐

Equipment Used: _____

Serial Number: _____

Operator: _____

5.14 OBSERVATIONS

Partial Discharge observed: Yes ☐/ No ☐

Breakdown occurred: Yes ☐/ No ☐

Final Result: PASS ☐/ FAIL ☐

NOTES: _____

_____

5.15 SIGNATURES

Tested by: _____ Signature: _____ Date: _____

Witnessed by: _____ Signature: _____ Date: _____

82006-CEM-1-L3

VLF Withstand Report
82006-CEM-1-L3 - Maintenance
Test Auto Test
Test finished successfully

Report Information

Date	4/5/2025 10:52 AM
Company Name	ICS
Region	---
Station	---
Operator Name	RECHICHI
Work Order	---

Device Under Test (Cable XLPE)

Voltage Rating	11.5 kV
Insulation	XLPE
Line Length	80 Meter
Size	1X150
Phase	C
Manufacturer Name	---

Equipment:

HVA45	GH5219.16C010

Test Setup

Test Purpose	Maintenance
Arc Management Mode	Trip out on Arc

#	Test Voltage	Waveform	Frequency	Duration
1	11.5 kV•	Sine	0.1 Hz (A)	15 min

Measurements:

Test finished successfully

#	Voltage	Current	Cap.	Res.	Frequency
1	11.5 kV•	47 µA•	6.6 nF	> 20 GΩ	0.1 Hz

- RMS value

TEST REPORT

Cable Tag/ID: 82006-CEM-1-L3

Cable Type: 1x70 mm²

Voltage Rating: 6/10 kV

5.12 PRE-TEST CHECKLIST

☑ Cable properly tagged and identified

☑ Visual inspection of terminations completed

☑ Insulation resistance test performed

☑ Clean and dry termination surfaces

☑ Metallic screen continuity verified

Client representative present during inspection: Yes ☑/ No ☐ CABLE NOT INSPECTED TEST RESULT ACCEPTABLE

5.13 TEST DETAILS

Megger before test: ☑

Test Method: VLF – 0.1 Hz

Test Voltage: 11.43 kV RMS

Duration: 15 minutes

Megger after test: ☑

Equipment Used: HVA45

Serial Number: QH5219.16C010

Operator: FAUSTO RECHICHI

5.14 OBSERVATIONS

Partial Discharge observed: Yes ☐/ No ☑

Breakdown occurred: Yes ☐/ No ☑

Final Result: PASS ☑/ FAIL ☐

NOTES: _____

5.15 SIGNATURES

Tested by: FAUSTO RECHICHI Signature: _____ Date: 05/04/2025

Witnessed by: GIOVANNI TANGIANU Signature: _____ Date: 05/04/2025
DAVE MUSGROVE 05/04/2025

ITEM	Tag	82006-CEM-1-L3	: 6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer			Dwg	123A90-DDL-EL-LIS-20148
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)			Module	LD
TASK	code	C10000490		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX08 HV Power Cable

CABLE DATA

Type	CU/EPR/CTS/LSZH/CWB/LSZH	Cores/Size mm²	1X70 mm2	Color	RED
From	SG-100D1	To	TR-200ED1		

1	Confirm cable is as specified in project cable schedule	OK
2	Visual Check cable physical integrity.	OK
3	Check is installed in accordance with layout drawing (segregation, distance…).	OK
4	Check cable is supported and fixed to rack according to project specification.	Note
5	Check bending radius is within the specified limits.	OK
6	Confirm cable glands suit for cable type, correctly mounted and tightened.	OK
7	Check gland plate for single core cables is non ferrous (non -magnetic).	OK
8	Confirm cable labelling is in accordance with specifications.	Note
9	Check cable is correctly loomed and segregated in accordance with specification.	OK
10	Check cable earthing against lastest drawings.	OK
11	Check cores marking are in accordance with termination diagram	OK
12	Check terminations are in accordance with latest termination diagram	Note
13	If required produce Red Line Mark Up for "AS BUILT"	

ROSETTI MARINO PROVERLIS CROSSWIND

ITEM	Tag	82006-CEM-1-L3	: 6.6KV HV Switchgear / 6.6/0.8 KV, 0.5MVA Transformer		Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		Module	LD	
TASK	code	C10000490	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity CCK	Discipline Electrical	Form	CPX08	HV Power Cable

	CONTINUITY TESTS			
1	CORE CONTINUITY	600	mΩ	OK
2	SCREEN CONTINUITY	600	mΩ	OK
3	ARMOUR CONTINUITY	600	mΩ	OK
	1st INSULATION TEST			
	Voltage applied:	2500	kV	
4	Ph1 / Ph2-Ph3-screen-armour-Earth :	>999	MΩ	OK
5	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	MΩ	OK
6	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	MΩ	OK
	HV TEST 15 min			
	Voltage applied:		kV	
7	Ph1 / Ph2-Ph3-screen-armour-Earth :		µA	Note
8	Ph2 / Ph1-Ph3-screen-armour-Earth:		µA	Note
9	Ph3 / Ph2-Ph1-screen-armour-Earth:		µA	Note
	2nd INSULATION TEST			
	Voltage applied:	2500	kV	
10	Ph1 / Ph2-Ph3-screen-armour-Earth :	>999	MΩ	OK
11	Ph2 / Ph1-Ph3-screen-armour-Earth:	>999	MΩ	OK
12	Ph3 / Ph2-Ph1-screen-armour-Earth:	>999	MΩ	OK
	RE-CONNECT TERMINATIONS			
13	Tightening torque		N.m	Note

TESTING INSTRUMENTS USED

TYPE / SERIAL N°	Mod:KEW3125A S/N: W8330207	TYPE / SERIAL N°	Mod:HVA45 S/N:GH5219.16C010
Calibration certificate N° and date:	N°7722/24 _ 10/07/2024	Calibration certificate N° and date:	LAT04200772/24 _ 02.2024
TYPE / SERIAL N°	Mod:FLUKE 175 S/N:(AW1/018-17140769)	TYPE / SERIAL N°	
Calibration certificate N° and date:	N°7715/24 _ 10/07/2024	Calibration certificate N° and date:	

Comments:

Note 4: refer to PL n° C30000672
Note 8: refer to PL n° C30000673
Note 12: refer to PL n° C30000674
Note 13: refer to PL n° C30000674

Note HV TEST: See attached certificate

	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM (Rosetti Marino)	
Name	Carmelo Bongiovanni	Paolo Schintu	
Date	2024-11-04	2024-11-20	
Signature	PROVERLIS Digitaly signed by Carmelo Bongiovanni 2024-11-04T17:06:23.725Z	PROVERLIS Digitaly signed by Paolo Schintu 2024-11-20T15:31:59.527Z	

82006-CEM-L3
VLF Diagnostic Report

Manual Test
Test finished successfully

Report Information

Date	11/8/2024 6:51 PM
Company Name	ICS
Region	EMILIA ROMAGNA
Station	---
Operator Name	RIELA
Work Order	MT-MISURE

Device Under Test (Cable XLPE)

Voltage Rating	10.0 kV
Insulation	XLPE
Line Length	80 Meter
Size	1X70
Phase	C
Manufacturer Name	ICS

Equipment:

HVA45TD	GH5219.16C010

Test Setup

Arc Management Mode: Trip out on Arc

#	first Voltage	Waveform	Frequency	Duration
1	0.0 kV•	Sine	0.1 Hz	5 min

Manual max. Voltage 10.0 kV

Measurements:

Test finished successfully

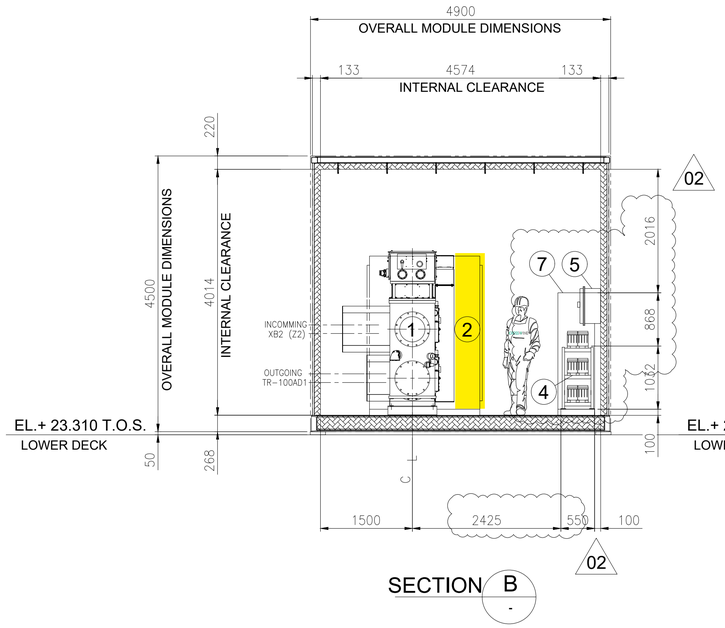
#	Voltage	Current	Cap.	Res.	Frequency
1	10.0 kV•	33 µA•	5.2 nF	2.1 GΩ	0.1 Hz

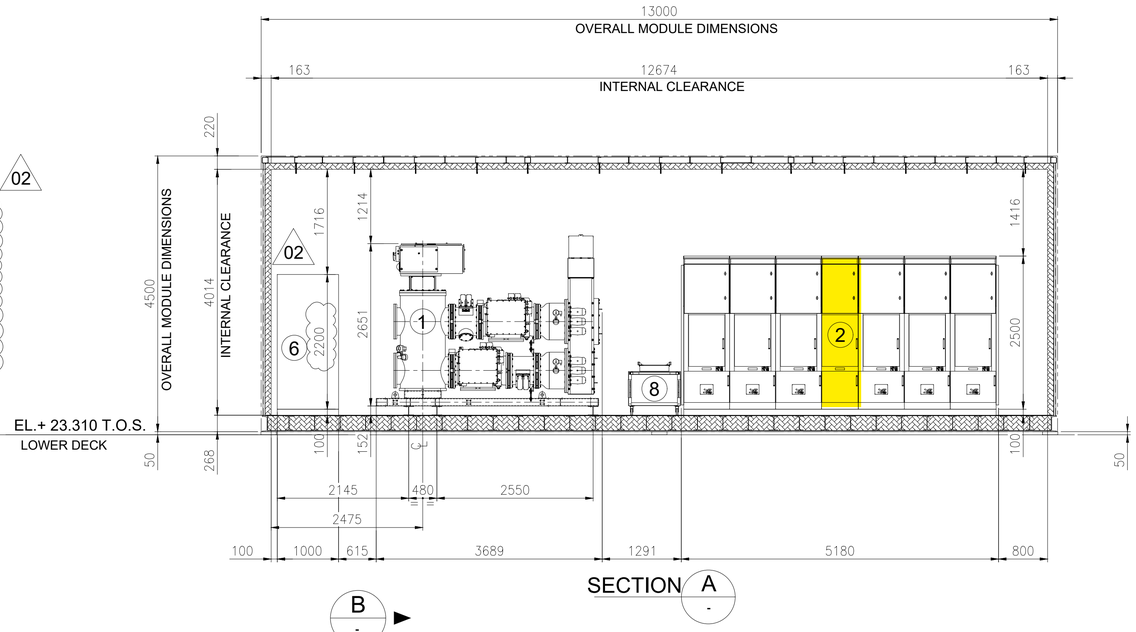
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1	10.0 kV•	157	1.45

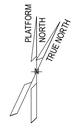
•RMS value

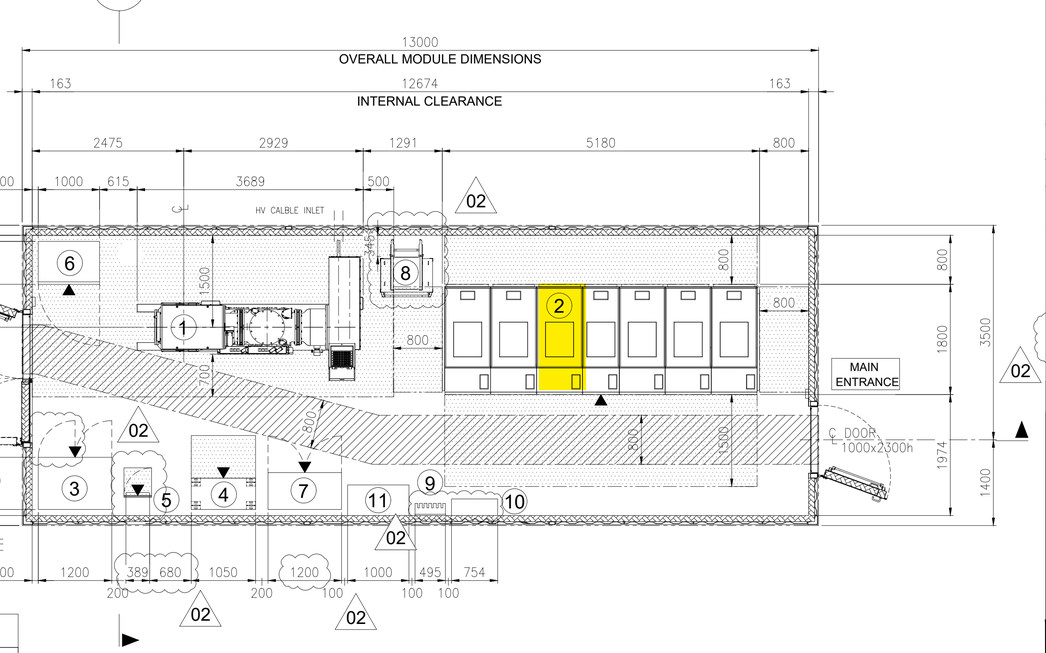
20/11/24
I.C.S IMPIANTI
BONGIOVANNI CARMELO

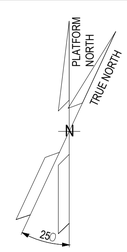
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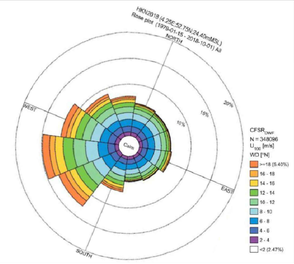












NOTES

1. U.N.O. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DELETED
3. DOCUMENT VALID ONLY FOR ELECTRICAL COMPONENT.
4. FOR OTHER ITEMS, CORRECT LOCATION AND INFROMATION, PLEASE REFER TO VENDORS AND DEDICATED PROJECT DOCUMENTATION.
5. HEIGHT OF ALL PANELS IN THE EQUIPMENT LIST TABLE IS WITHOUT THE BASE FRAME (100mm)

02

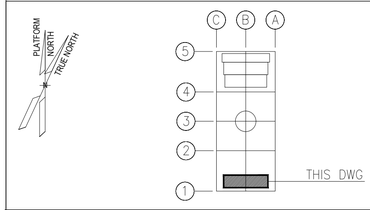
LEGEND

U.N.O. _____ UNLESS NOTED OTHERWISE
T.O.S. _____ TOP OF STEEL
_____ ESCAPE CORRIDOR - WIDTH 800mm.
_____ MAINTENANCE AREA - VENDOR REQUIREMENT
_____ SWITCHGEAR ROOM ENCLOUSURE
_____ FRONT OF EQUIPMENT

REFERENCES

DOCUMENT TITLE	DOCUMENT NUMBER
66kV SWITCHGEAR (GIS) GENERAL ARRANGEMENT DRAWING	1723001595-EL-DA-00006
CIRCUIT AND WIRING DIAGRAM	1723001595-EL-DG-00015
SG-100D1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00006
DC UPS – GENERAL ARRANGEMENT AND DIMENSIONAL DRAWINGS	1724000372-EL-DA-00003
DC UPS – BATTERY LAYOUT AND INTERCONNECTING DIAGRAM	1724000372-EL-DG-00010
B-100 - GENERAL ARRANGEMENT DRAWINGS - E&I SHELTER	1724000049-AR-DA-00014

KEY PLAN



EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	NOTE
1	HNA6-AFA70	66kV SWITCHGEAR (GIS)	3689	2025	2651	
2	SG-100D1	6.6kV SWITCHGEAR	5180	1800	2500	
3	UP-200F1	DC UPS PANEL	1200	850	2105	
4	BA-200F1	DC UPS BATTERY RACK	1050	510	1272	
5	CB-200F1 02	ISOLATOR FOR DC UPS	452	377	634	
6	CP-100E1	66 kV SWITCHGEAR LOCAL CONTROL PANEL	1000	700	2200	02
7	B100-HSB-001	DISTRIBUTION & HVAC PANEL - HV MV ROOM	1200	600	1900	
8	-	SERVICE TROLLEY FOR 6.6kV SWITCHGEAR	943	862	874	
9	-	TOOL BOX	495	200	200	
10	-	SUBSTATION LIFE SAVING & INTERVENTION KIT	754	270	840	
11	-	TABLE	1000	500	750	

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20104**

REV.:	DATE:	SIGNATURE:
2_A	08/08/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/05/2024	FMO	LMA/AMA	LMA/MDO	ACCEPTED FOR CONSTRUCTION (AFC)
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	10/11/2023	DSF	CB/AMA	OYFO/MDO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
HV SWITCHROOM

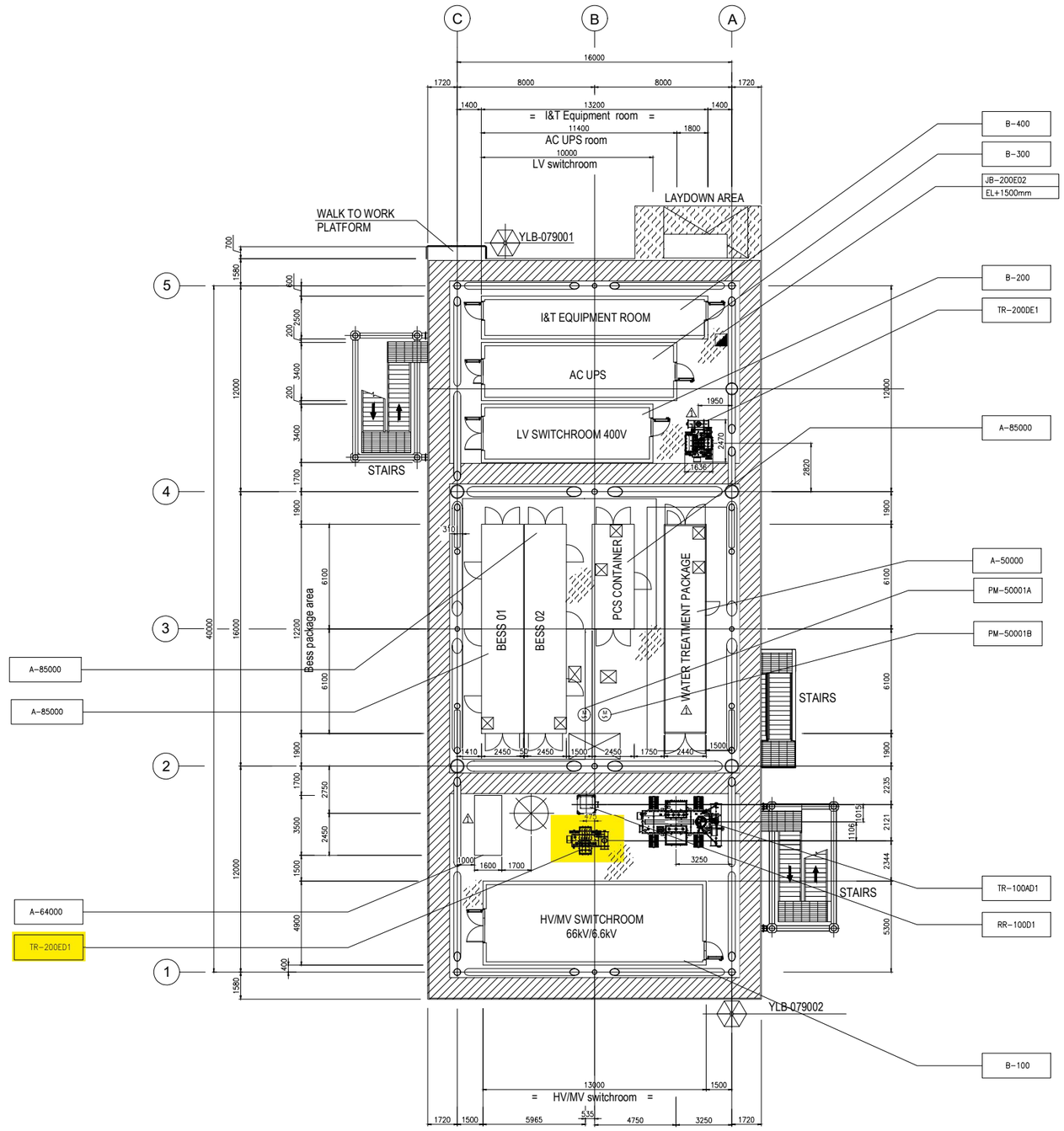
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:50
DRAWN GPA	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 27/05/2024

A1	DRAWING NO. 123A90-DDL-EL-DL-20104	SHEET 001	REV. 02

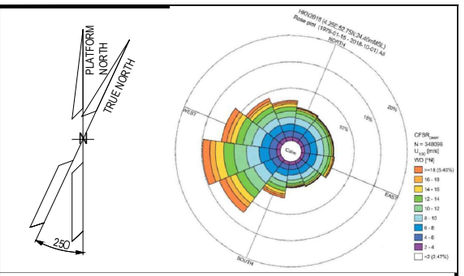
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DRAWING NO. 123A90-DDL-EL-DL-20101

REV. 01



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



NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

(M)	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20101**
REV.: 1_A | DATE: 08/08/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE 1:150
DRAWN SAM | CHECKED FMA/AMA | APPROVED FPA/DLO | DATE 04/03/24
A1 | DRAWING NO. 123A90-DDL-EL-DL-20101 | SHEET 001 | REV. 01

File Name : 123A90-DDL-EL-DL-20101-Electrical Equipment Layout – Lower Deck

FROM	TO

DESCRIPTION: 6.6KV HV SWITCHGEAR
TAG NUMBER: SG-100D1

TAG COLUMN: A4

L1	Arm.	BK	82002-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82002-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82002-CEM-1-L3 1C X 70 mm²	BK

DESCRIPTION: 6.6/0.42 KV, 1.6MVA TRANSFORMER
TAG NUMBER: TR-200DE1

Arm. 1U 1V 1W — HV TERMINAL BOX OF TR-200DE1

TAG COLUMN: A7

L1	Arm.	BK	82003-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82003-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82003-CEM-1-L3 1C X 70 mm²	BK

DESCRIPTION: 6.6/0.4 KV, 1.25MVA TRANSFORMER
TAG NUMBER: TA30

Arm. 1U 1V 1W — HV TERMINAL BOX OF TA30

TAG COLUMN: A1

L1	Arm.	BK	82004-CEM-1-L1 1C X 150 mm²	BK
L2		BK	82004-CEM-1-L2 1C X 150 mm²	BK
L3		BK	82004-CEM-1-L3 1C X 150 mm²	BK

DESCRIPTION: 6.6/0.4/0.4 KV, 3.15MVA TRANSFORMER
TAG NUMBER: T4

Arm. 1U 1V 1W — HV TERMINAL BOX OF T4

TAG COLUMN: A3

L1	Arm.	BK	82005-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82005-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82005-CEM-1-L3 1C X 70 mm²	BK

DESCRIPTION: 6.6/0.62 KV, 1.25MVA TRANSFORMER
TAG NUMBER: 18T1

Arm. 1U 1V 1W — HV TERMINAL BOX OF 18T1

TAG COLUMN: A2

L1	Arm.	BK	82006-CEM-1-L1 1C X 70 mm²	BK
L2		BK	82006-CEM-1-L2 1C X 70 mm²	BK
L3		BK	82006-CEM-1-L3 1C X 70 mm²	BK

DESCRIPTION: 6.6/0.8 KV, 0.5MVA TRANSFORMER
TAG NUMBER: TR-200ED1

Arm. 1U 1V 1W — HV TERMINAL BOX OF TR-200ED1

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

REV.:	DATE:	SIGNATURE:
1_A	17/10/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
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
6.6KV HV SWITCHGEAR

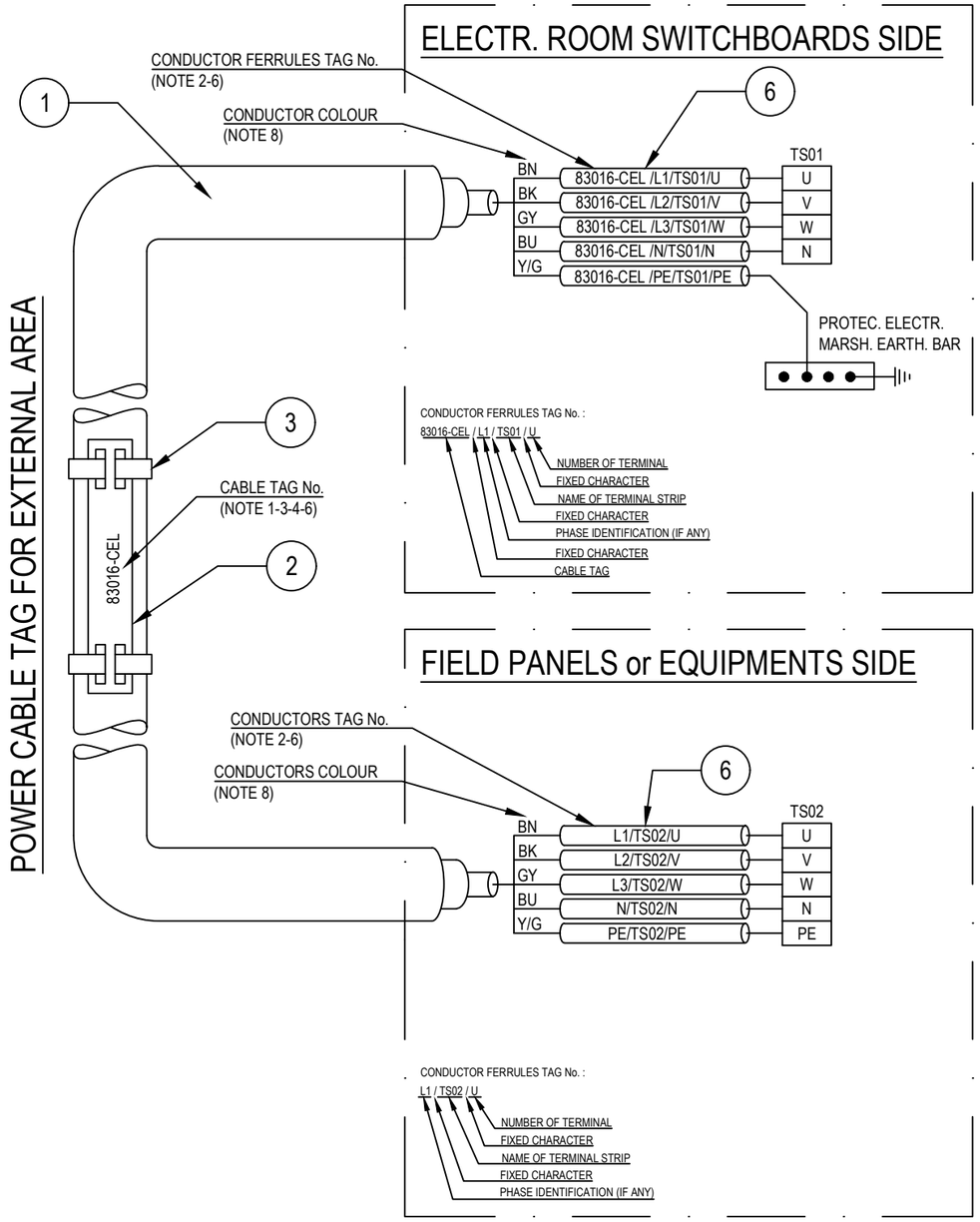
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : 1:X

A3 | DRAWING NO. 123A90-DDL-EL-DG-20149 | SHEET 016 | REV. 01

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DG-20162 Rev. 01

C02



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	UNARMOURED CABLE				
2	CABLE TAG FOR EXTERNAL AREA	HDG/SS			NOTE 1 NOTE 4
3	TIE FOR CABLE TAG IN EXTERNAL AREA	HDG/SS			
4	CABLE TAG FOR INTERNAL AREA	PVC			NOTE 1 NOTE 5
5	TIE FOR CABLE TAG IN INTERNAL AREA	NYLON 6.6			
6	CORE FERRULES	PVC			

NOTES:

1) ALL CABLES SHALL BE IDENTIFIED AT EACH TERMINATION AND EACH SIDE OF ANY OBSTACLE (E.G. CABLE TRANSIT ON WALLS INSIDE SHELTER AND FLOOR DECK CROSSING, BY THEIR RESPECTIVE TAGS/NUMBERS, AS INDICATED ON THE CABLE SCHEDULE.
CABLE IDENTIFICATION SHALL BE ALSO DONE BELOW AND IN THE SWITCHBOARD CABLE COMPARTMENT.

2) CABLE CORE FERRULES SHALL BE FITTED AT EVERY TERMINATION. THESE FERRULES SHALL BE OF ENGRAVED PLASTIC SLIP ON, INTERLOCKED AND SELF GRIP TYPE.

3) ON CABLE TRAYS OR LADDERS, CABLES SHALL BE IDENTIFIED AT EACH END, AND EVERY 25 METERS.

4) THE CABLE TAG FOR EXTERNAL AREA SHALL DONE BY 316L STAINLESS STEEL LABELS, TAG (H=5mm) SHALL BE LASER PRINTED PREFERABLY OR EMBOSSED, LABEL HELD BY TWO 316L STAINLESS STEEL TIES.

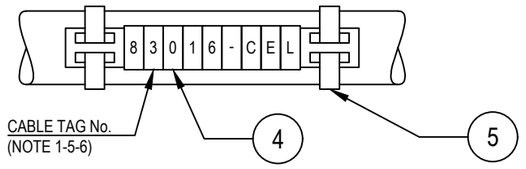
5) THE CABLE TAG FOR INTERNAL AREA SHALL BE DONE BY ENGRAVED PLASTIC SLIP ON CHARACTERS ONTO PLASTIC TIE, BLACK LETTER (H=5mm) ON WHITE.

6) CABLE AND CONDUCTOR TAG ARE INDICATIVE ONLY.

7) WITHIN TECHNICAL BUILDING, PROTECTIVE CONDUCTOR SHALL BE TAGGED BETWEEN FOLLOWING ITEMS:
- PANEL (SWITCHBOARD, SWITCHGEAR, DISTRIBUTION BOARD, ETC) AND EARTH BAR
- EARTH BAR AND EARTH BOSS

8) ONLY IF NECESSARY, SHRINK TUBES OF THE APPROPRIATE COLOR WILL BE INSTALLED TO COVER THE WRONG CONDUCTOR COLOR, THIS WILL BE PERFORMED IN EACH SIDE OF THE CABLES WHERE NECESSARY.

POWER CABLE TAG FOR INTERNAL AREA



VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DD-20092
REV.: 2_A | DATE: 28/08/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	28/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	04/07/24	NLK	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-POWER SYSTEM & CABLE INSTALLATION
CABLES INSTALLATION SYSTEM IDENTIFICATION FOR POWER CABLES

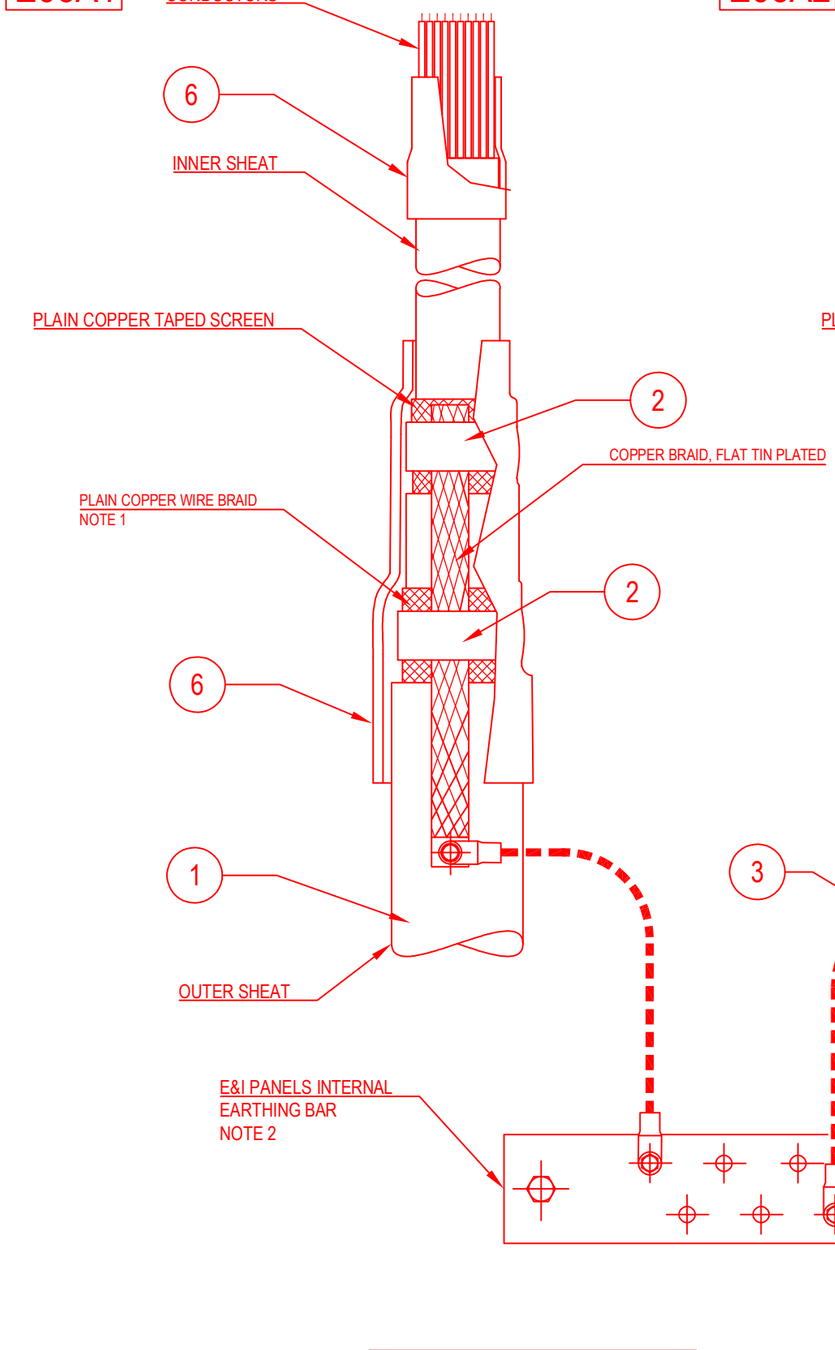
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 123A90-DDL-EL-DD-20092 | SHEET 007 | REV. 02

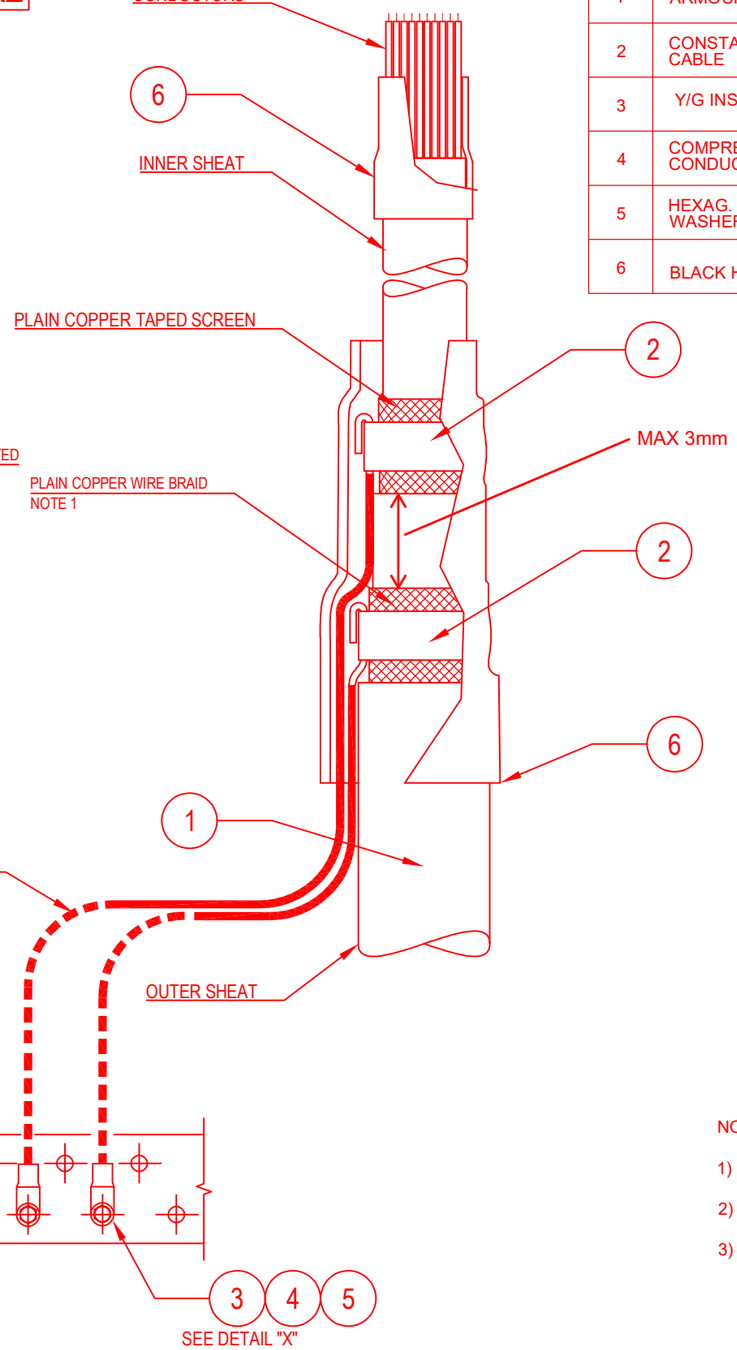
F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20092 REV.02.DWG

E06A1

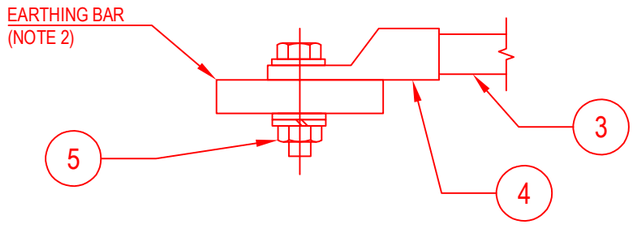


E06A2



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	ARMOURED CABLE				
2	CONSTANT FORCE SPRING FOR EARTHING ARMOUR CABLE	AISI 316L			
3	Y/G INSULATING COPPER CONDUCTOR	COPPER	$16mm^2$		
4	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	$16mm^2$		
5	HEXAG. BOLTS, PLANE WASHERS, GROWER SPRING WASHER AND NUT	AISI 316L	M8X30		
6	BLACK HEAT SHRINKABLE SLEEVE				

DETAIL "X"



NOTES:

1) CABLE ARMOUR SHALL BE EARTHED AT BOTH ENDS.
2) FOR EARTHING BAR INSIDE SWITCHBOARD SEE VENDOR DOCUMENTATION.
3) CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_G	25/10/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-EARTHING SYSTEM
EARTHING FOR CABLE ARMOUR AND SCREEN (MV CABLES)

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

A3 | DRAWING NO. 123A90-DDL-EL-DD-20090 | SHEET 028 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 RLMU MV CABLES.DWG

Tag Number	Category	Discipline	Eng Status	NativeDoc	Parent Tag	Grouping	Main Function	Secondary Function	Area	From Tag	From Main Function	From Area	To Tag	To Main Function	To Area	Material ID	Material Desc.	Gland Standard	From Gland	From Entry	From Fitting	To Gland	To Entry	To Fitting	Routing	Routing Manual
82006-CEM-1-L3	Cable	EL	VFC	123A90-DDL-EL-LIS-20148		Int-Ext				SG-100D1	MV 6,6kV Switchgear	Lower Deck (B-100)	TR-200ED1	6,6 / 0,8 kV 0,5 MVA Transformer	Lower Deck	ELECV36-1X70	Cable CU/EPR/CTS/LSZH/CWB/LSZH 6/10kV 1x70mm^2- Red	M40	n.a.			T2_M40_Double				L-150-101-MVT-015 / L-600-101-MVT-008 / L-600-101-MVT-009 / E-MCT-103 / L-450-101-MVT-004 / L-150-101-MVT-003

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO
		Sh: 9 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024
		Rev.: 01

TITLE

DATA SHEET FOR 6.6KV HV CABLE (LSZH, FLAME RETARDANT)

ELECTRICAL SYSTEM CHARACTERISTIC

OPERATING VOLTAGE	6,6	kVac	±	5	%		
FREQUENCE	50	Hz	±	2	%		
NEUTRAL SYSTEM	☐	EARTHED				☐	INSULATED
	☑	EARTHED BY RESISTANCE				☐	
EXPOSITION OF LIGHTNING OVER VOLTAGE						☐ NO	☑ YES

PROJECT SPECIFICATION: 123A90-DDL-EL-SP-20057

CABLE CHARACTERISTIC

GENERAL CHARACT	REFERENCE STD	FOR CONSTRUCTION AND TEST	IEC 60092-350
		FOR SPECIAL CHARACTERISTIC	**IEC-60754-1, IEC-60332-1-2**
			IEC-61034-2

RATED VOLTAGE (Uo/U): 3.6/6(7.2) kV

MAX. OPERATING TEMPERATURE 90 °C TEMP.SHORT CIRCUIT TEMPERATURE 250 °C

POWER FREQUENCY TEST VOLTAGE/IMPULSE WITHSTAND VOLTAGE (Up): (AS PER IEC) 21 kV

COEFFICIEN. K: - FOR CONDUCTOR 143 A $\sqrt{s}$ /mm^2

- FOR SCREEN OR METAL SHEATS 115 A $\sqrt{s}$ /mm^2

SPECIAL CHARACT.	☐ HYDROCARBON RESISTANCE	☐ NON PROPAGATING FIRE	☐ FIRE RESISTANCE	
	☐ BUNCHED CABLES NON PROPAGATING FIRE : TOT. Q.TY OF COMBUSTIBLE MATERIAL			kg/m
	☐ LOW CORROSIVE GAS EMISSION	☐ % HCl ≤ 0,3	☐ % HCl =	
	☐ LOW TOXIC GAS EMISSION (T INDEX)	☐ T ≤ 2	☐ T=	
	☑ LOW SMOKE EMISION (OPTICAL DENSITY)	☐ D ≤ 1,5	☐ D=	
	☐ U.V. RESISTANT	☑ HALOGEN FREE COMPOUND	☑ FLAME RETARDANT	

INSTALL. SPECIAL CONDITION	CABLE LADDER, TREFOIL FORMATION
ACCESS.	

NOTES:

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO Sh: 10 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024 Rev.: 01

TITLE

DATA SHEET FOR 6.6KV HV CABLE (LSZH, FLAME RETARDANT)

MATERIALS

GENERAL DATA	REF.STD N.: IEC 60092-350
CONDUCTOR	MATERIAL: ☑ Cu ☐ Al ☐ Tinned Cu CLASS (1): ☑ CLASS 2 ☐ CLASS 5 (F) ☐ CLASS 6 (H)
INSULATION	MATERIAL: EPR
SEMI-CONDUCTOR LAYER	☑ FORESEEN AS PER IEC 60092-350 MATERIAL: HF EXTRUDED COMPOUND
SCREENS	☑ FORESEEN AS PER IEC 60092-350 MATERIAL: Plain Copper Taped Screen
ARMOUR	☑ REQUIRED TYPE: MATERIAL: Plain Copper Wire Braid
OUTER SHEATING	MATERIAL: SHF1 to IEC 60093.360
COMPONENTS AND SPECIAL CONSTR.	

NOTE: (1) CLASS 1 : SOLID CONDUCOR - (U).
CLASS 2 : STRANDARD CONDUCTOR: CIRCULAR -R-, SHAPED -S-
CLASS 5 : FLEXIBLE CONDUCTOR - (F).
CLASS 6 : HIGHLY FLEXIBLE CONDUCTOR - (H) o (FF).

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO Sh: 11 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024 Rev.: 01

TITLE

DATA SHEET FOR 6.6KV HV CABLE (LSZH, FLAME RETARDANT)

1	**CONSTRUCTIVE DATA**						
2							
3	MR TAG / PART NUMBER			Note-3	Note-3		
4	n° x NOMINAL AREA OF CONDUCTORS		N.xmm^2	1Cx70	1Cx150		
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR		N.xmm	352x0,52	776X0,51		
6	CONDUCTOR CLASS (2)			2	2		
7	RATED CURRENT IN AIR AT 30°		A	285	460		
8	RATED CURRENT IN GROUND AT 20°		A	272	416		
9							
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.		Ω/km	0,345	0,163		
11	PHASE REACTANCE AT 50 Hz		Ω/km	0,110	0,097		
12	MINIMUM INSULATION RESISTANCE AT 20°		MΩ/km	745	567		
13	PHASE CAPACITY		µF/km	0,301	0,396		
14							
15	MINIMUM ORDER Q.TY		m	TBD	TBD		
16	MAX LENGHT OF DRUMS		m	TBD	TBD		
17	DIAMETERS	BARE CONDUCTOR	mm	10	14,3		
18		CORE (INSULATED CORE)	mm	19,6	24		
19		UNDER ARMOUR	mm	23,6	28,3		
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	24,8	29,5		
21							
22							
23		OVERALL	mm	29	34		
24	MASSES	CONDUCTORS	kg/km	640	1350		
25		INSULATION	kg/km	290	410		
26		INNER COVERING	kg/km	180	220		
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	220	250		
28		OUTER SHEATING	kg/km	280	350		
29							
30		TOTAL	kg/km	1610	2580		
31	EXTERNAL COLOUR			RED	RED		
32	CORE IDENTIFICATION (1)			NATURAL	NATURAL		
33							
34							
35							
36							
37							
38							

39

40 NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN

41 (*) TO BE FILLED BY VENDOR

42 NA NOT APPLICABLE

43

44

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46

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51

ITEM	Tag	83117-CEL	:	Lighting & Small Power DB BoP / Auxiliary Trafo SOLAR 0,5MVA	Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	:	Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	Module	LD_B-200	
TASK	code	C10000636	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX09	LV Power Cable

CABLE DATA

Type: Cu Cl.2/EPR/LSZH | Cores/Size mm²: 3G2,5 mm2 | Color: GREY

From: DP-200N1 | To: CP-200E2

1	Confirm cable is as specified in project cable schedule	OK
2	Visual Check cable physical integrity.	OK
3	Check is installed in accordance with layout drawing (segregation, distance…).	OK
4	Check cable is supported and fixed to rack according to project specification.	Note
5	Check bending radius is within the specified limits.	OK
6	Confirm cable glands suit for cable type, correctly mounted and tightened.	OK
7	Check gland plate for single core cables is non ferrous (non -magnetic).	NA
8	Confirm cable labelling is in accordance with specifications.	PL
9	Check cable is correctly loomed and segregated in accordance with specification.	OK
10	Check cable earthing against lastest drawings.	OK
11	Check cores marking are in accordance with termination diagram	PL
12	Check terminations are in accordance with latest termination diagram	OK
13	If required produce Red Line Mark Up for "AS BUILT"	

REFER TO FINAL SHEET FOR ACCEPTANCE

ROSETTI MARINO PROVERLIS CROSSWIND

ITEM	Tag	83117-CEL	: Lighting & Small Power DB BoP / Auxiliary Trafo SOLAR 0,5MVA			Dwg	123A90-DDL-EL-LIS-20148
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)			Module	LD_B-200
TASK	code	C10000636		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX09 LV Power Cable

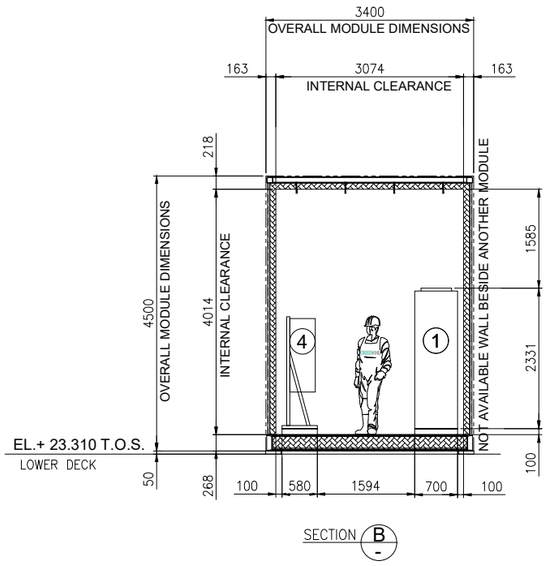
CONTINUITY				
5	CORE CONTINUITY Ω	PH 1	0,4	
6		PH 2	0,4	
7		PH 3	NA	
8	ARMOUR CONTINUITY Ω		NA	
9	PROTECTIVE CONDUCTOR CONTINUITY Ω		0,4	
INSULATION				
10	CORES / ARMOUR+EARTH MΩ	PH1 / PH2-PH3-A-E	>999	
11		PH2 / PH1-PH3-A-E	>999	
12		PH3 / PH1-PH2-A-E	>999	
13	CABLE IS CORRECTLY RE-CONNECTED.		Yes	

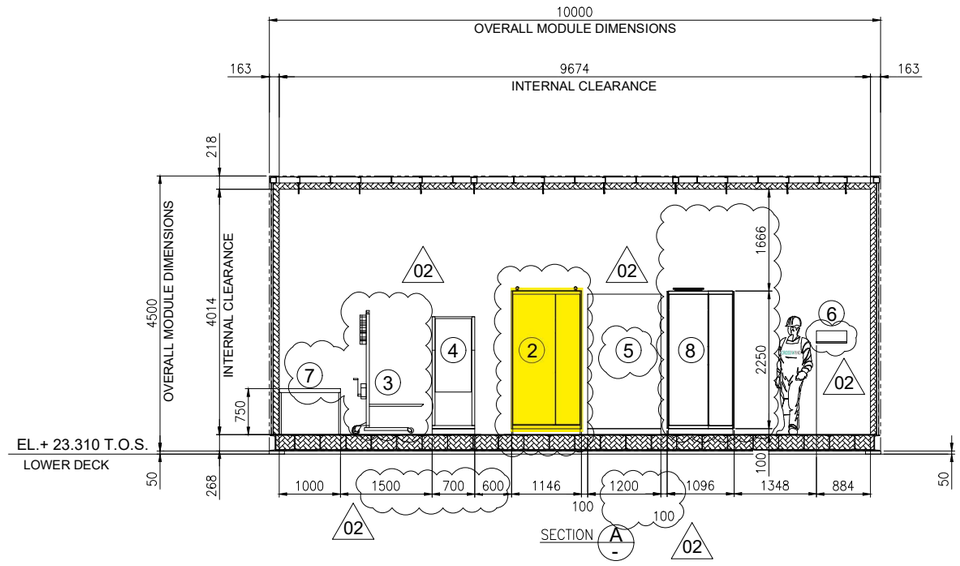
TESTING INSTRUMENTS USED			
TYPE / SERIAL N° :	MEGGER : KEW3125A SERIAL: W8330207	TYPE / SERIAL N° :	MULTIMETER: FLUKE 175 SERIAL:AW1/018(17140769)
Calibration certificate N° and date:	N°7722/24 _ 10/07/2024	Calibration certificate N° and date:	N°7715/24 _ 10/07/2024

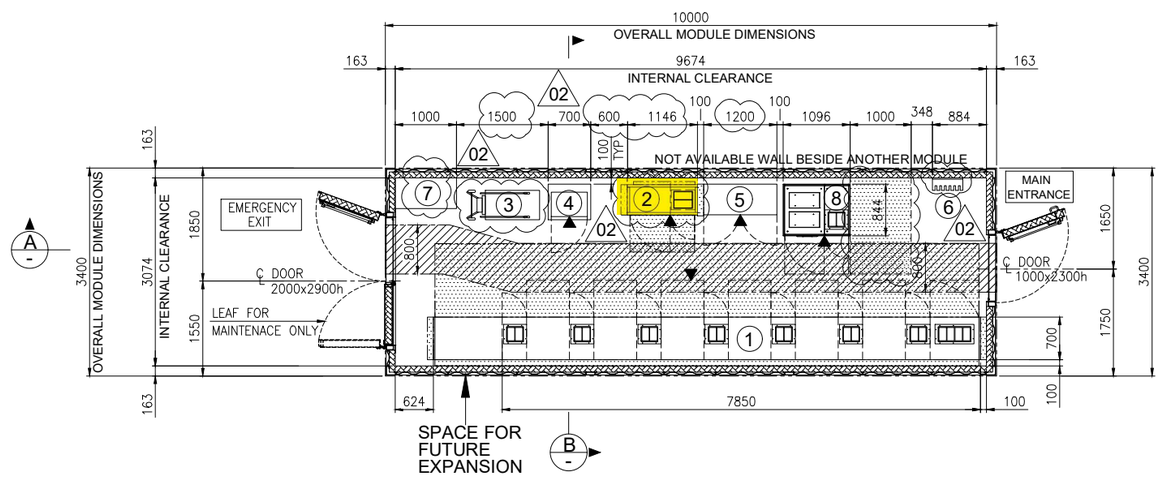
Comments: Nota 4: refer to PL C30000679

	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Francesco Zucca	Giovanni Tangianu	
Date	2024-12-07	2024-12-09	
Signature	PROVERLIS Digitaly signed by Francesco Zucca 2024-12-07T07:52:19.101Z	PROVERLIS Digitaly signed by Giovanni Tangianu 2024-12-09T07:33:09.044Z	

DRAWING NO. 123A90-DDL-EL-DL-20105 | REV. 02





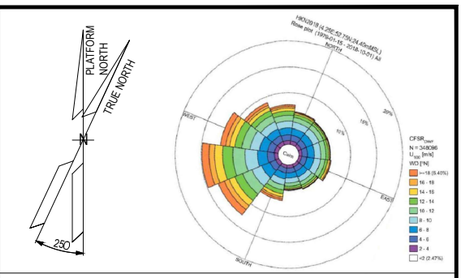


EQUIPMENT LAYOUT
"B-200" LV (400V) SWITCHGEAR ROOM
BOTTOM PLAN

1

EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	NOTE
1	SG-200N1	400V SWITCHGEAR	7850	700	2331	
2	DP-200N1	DISTRIBUTION BOARD FOR LIGHTING AND SMALL POWER B.O.P.	1146	520	2250	
3	-	SERVICE TROLLEY FOR 400V SWITCHGEAR	1034	490	2030	
4	CN-200N1	ICCP PANEL	700	580	1830	
5	B200-HSB-001	DISTRIBUTION & HVAC PANEL - LV ROOM	1200	600	1900	02
6	-	TOOL BOX	495	200	200	
7	-	TABLE	1000	500	750	
8	SG-200D2	ACB PANEL FOR SOLAR PACKAGE	1096	844	2294	



NOTES

1. U.N.O. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DELETED.
3. DOCUMENT VALID ONLY FOR ELECTRICAL COMPONENT, FOR OTHER SCOPE LOCATION AND INFORMATION, PLEASE REFER TO VENDORS AND PROJECT DOCUMENTS.
4. FOR OTHER ITEMS, CORRECT LOCATION AND INFORMATION, PLEASE REFER TO VENDORS AND DEDICATED PROJECT DOCUMENTATION.
5. HEIGHT OF ALL PANELS IN THE EQUIPMENT LIST TABLE IS WITHOUT THE BASE FRAME (100mm)

02

LEGEND

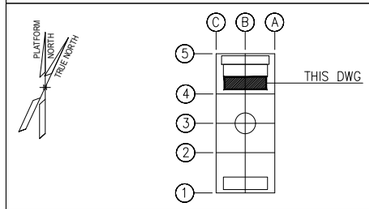
U.N.O. _____ UNLESS NOTED OTHERWISE
T.O.S. _____ TOP OF STEEL
_____ ESCAPE CORRIDOR - WIDTH 800mm.
_____ MAINTENANCE AREA - VENDOR REQUIREMENT
_____ SWITCHGEAR ROOM ENCLOUSURE
_____ FRONT OF EQUIPMENT

REFERENCES

DOCUMENT TITLE	DOCUMENT NUMBER
SG-200N1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00007
SG-200D2 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00008
DP-200N1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00009
AC UPS – GENERAL ARRANGEMENT AND DIMENSIONAL DRAWINGS	1724000372-EL-DA-00004
AC UPS – BATTERY LAYOUT INTERCONNECTING DIAGRAM	1724000372-EL-DG-00011
B-200 -GENERAL ARRANGEMENT DRAWINGS - E&I SHELTER	1724000049-AR-DA-00015
ICCC PANEL GENERAL ARRANGEMENT DRAWING	144671-CORR-TF-FAB-DWG-0003

02

KEY PLAN



VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DL-20105

REV.:	DATE:	SIGNATURE:
2_A	08/08/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/05/2024	FMO	LMA/AMA	LMA/MDO	ACCEPTED FOR CONSTRUCTION (AFC)
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	08/11/2023	DSF	CB/AMA	OYFO/MDO	ISSUE FOR REVIEW (IFR)

CROSSWIND | ROSETTI MARINO

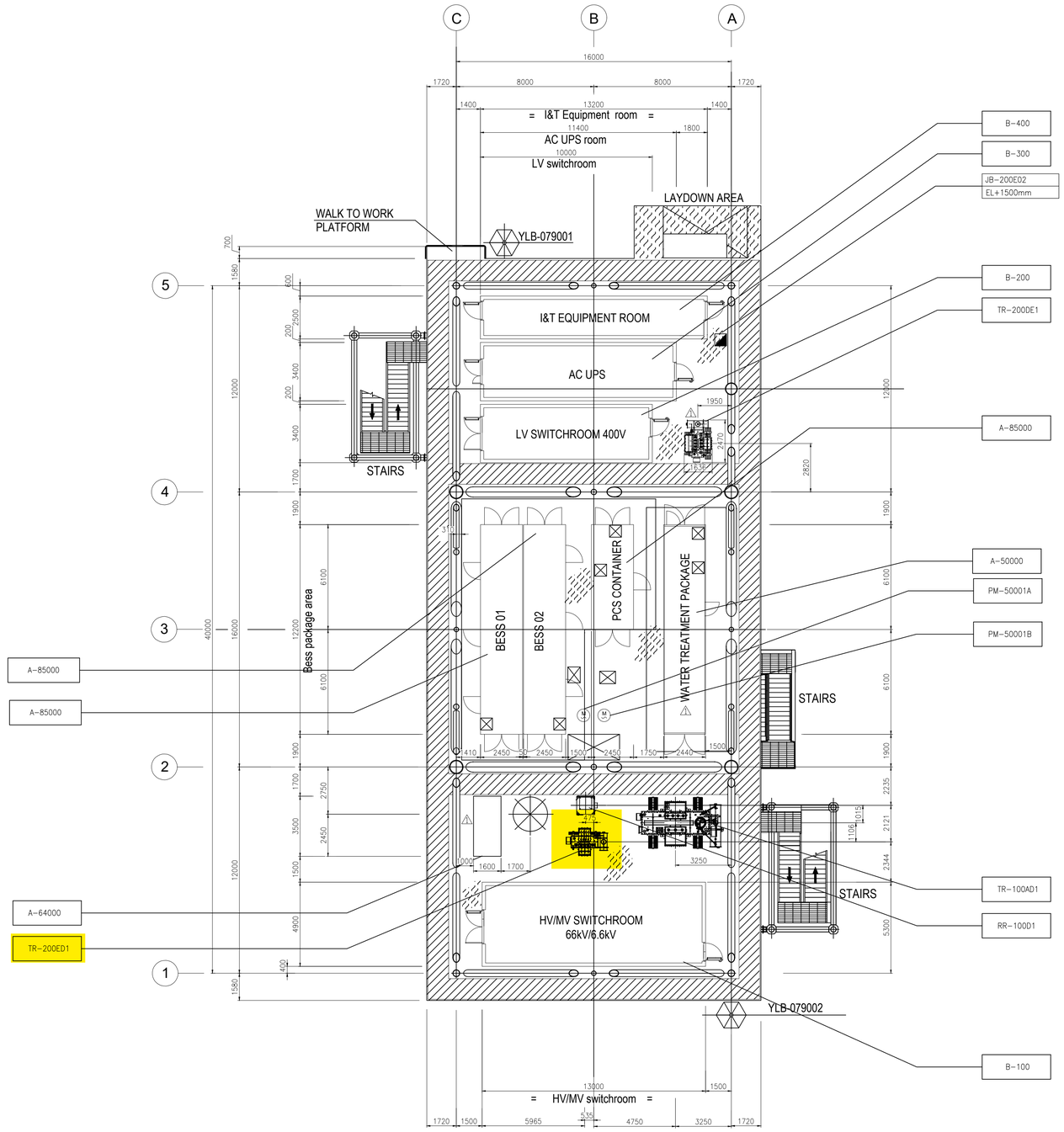
TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LV SWITCHROOM

CONTRACT NO./TITLE	CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK		SCALE 1:50
DRAWN FMO	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 27/05/2024
A1	DRAWING NO. 123A90-DDL-EL-DL-20105	SHEET 001	REV. 02

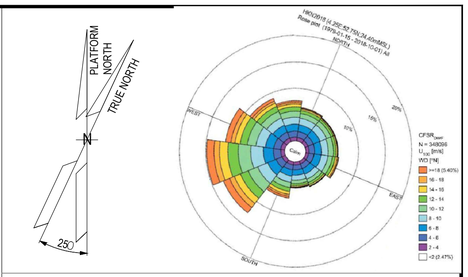
File Name : 123A90-DDL-EL-DL-20105_REV02.dwg

DRAWING NO. 123A90-DDL-EL-DL-20101

REV. 01



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



NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

(M)	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20101**

REV.:	DATE:	SIGNATURE:
1_A	08/08/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND | ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

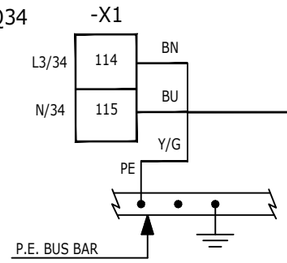
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN SAM	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 04/03/24
A1	DRAWING NO. 123A90-DDL-EL-DL-20101	SHEET 001	REV. 01

File Name : 123A90-DDL-EL-DL-20101-Electrical Equipment Layout – Lower Deck

FROM	TO

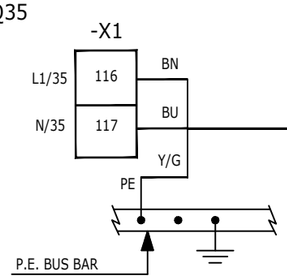
DESCRIPTION: LIGHTING & SMALL POWER DB BOP
TAG NUMBER: DP-200N1

CUBICLE/CB: +03/Q34



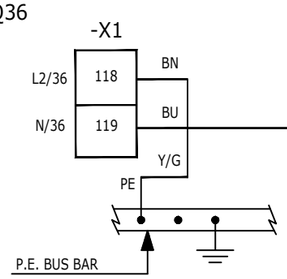
83115-CEL
3G2.5 mm²

CUBICLE/CB: +03/Q35



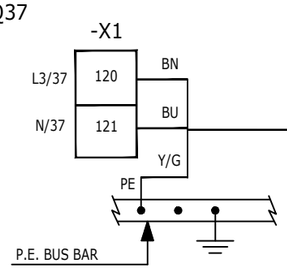
83116-CEL
3G2.5 mm²

CUBICLE/CB: +03/Q36



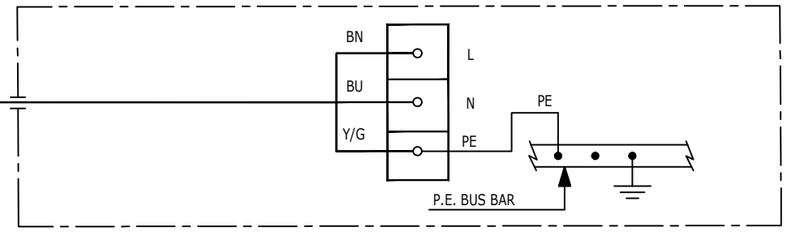
83117-CEL
3G2.5 mm²

CUBICLE/CB: +03/Q37

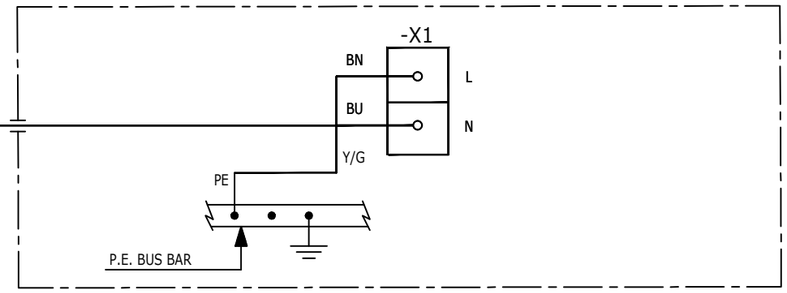


83118-CEL
3G6 mm²

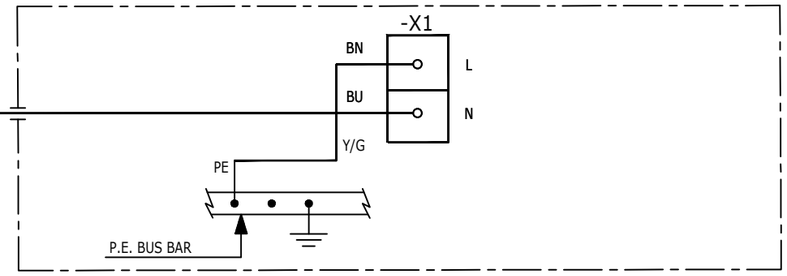
DESCRIPTION: AUXILIARY NER
TAG NUMBER: RR-100D1



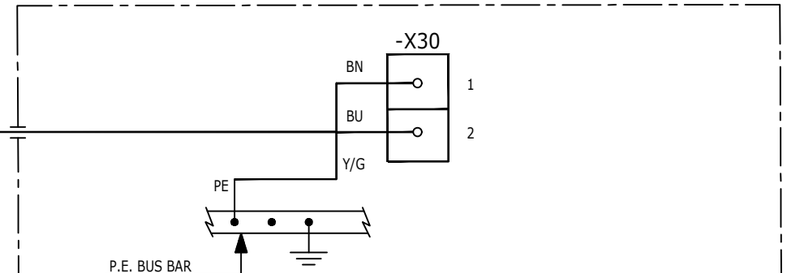
DESCRIPTION: AUXILIARY TRAFO 1,6MVA
TAG NUMBER: CP-200E1



DESCRIPTION: AUXILIARY TRAFO SOLAR 0,5MVA
TAG NUMBER: CP-200E2



DESCRIPTION: AUXILIARY GIS
TAG NUMBER: CP-100E1



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

REV.:	DATE:	SIGNATURE:
2_C	02/12/24	G.Randi

ROSETTI MARINO SpA

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)

CROSSWIND

ROSETTI MARINO

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

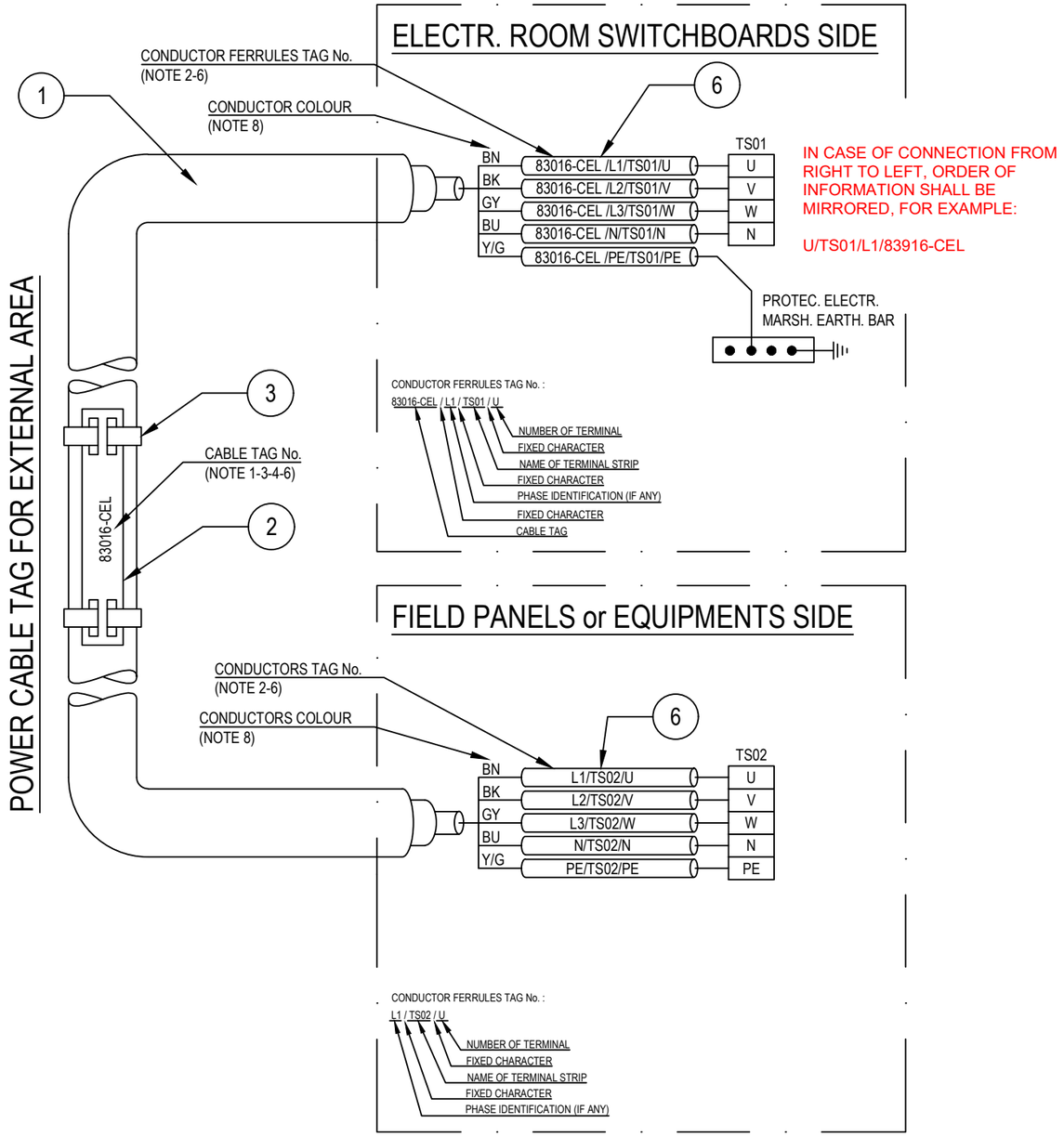
SHEET 055

REV. 02

F.to UNI A3: 420mmx297mm

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

C02



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	UNARMOURED CABLE				
2	CABLE TAG FOR EXTERNAL AREA	HDG/SS			NOTE 1 NOTE 4
3	TIE FOR CABLE TAG IN EXTERNAL AREA	HDG/SS			
4	CABLE TAG FOR INTERNAL AREA	PVC			NOTE 1 NOTE 5
5	TIE FOR CABLE TAG IN INTERNAL AREA	NYLON 6.6			
6	CORE FERRULES	PVC			

NOTES:

1) ALL CABLES SHALL BE IDENTIFIED AT EACH TERMINATION AND EACH SIDE OF ANY OBSTACLE (E.G. CABLE TRANSIT ON WALLS INSIDE SHELTER AND FLOOR DECK CROSSING, BY THEIR RESPECTIVE TAGS/NUMBERS, AS INDICATED ON THE CABLE SCHEDULE.
CABLE IDENTIFICATION SHALL BE ALSO DONE BELOW AND IN THE SWITCHBOARD CABLE COMPARTMENT.

2) CABLE CORE FERRULES SHALL BE FITTED AT EVERY TERMINATION. THESE FERRULES SHALL BE OF ENGRAVED PLASTIC SLIP ON, INTERLOCKED AND SELF GRIP TYPE.

3) ON CABLE TRAYS OR LADDERS, CABLES SHALL BE IDENTIFIED AT EACH END, AND EVERY 25 METERS.

4) THE CABLE TAG FOR EXTERNAL AREA SHALL DONE BY 316L STAINLESS STEEL LABELS, TAG (H=5mm) SHALL BE LASER PRINTED PREFERABLY OR EMBOSSED, LABEL HELD BY TWO 316L STAINLESS STEEL TIES.

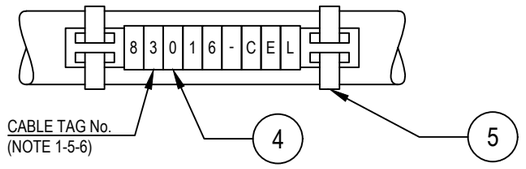
5) THE CABLE TAG FOR INTERNAL AREA SHALL BE DONE BY ENGRAVED PLASTIC SLIP ON CHARACTERS ONTO PLASTIC TIE, BLACK LETTER (H=5mm) ON WHITE.

6) CABLE AND CONDUCTOR TAG ARE INDICATIVE ONLY.

7) WITHIN TECHNICAL BUILDING, PROTECTIVE CONDUCTOR SHALL BE TAGGED BETWEEN FOLLOWING ITEMS:
- PANEL (SWITCHBOARD, SWITCHGEAR, DISTRIBUTION BOARD, ETC) AND EARTH BAR
- EARTH BAR AND EARTH BOSS

8) ONLY IF NECESSARY, SHRINK TUBES OF THE APPROPRIATE COLOR WILL BE INSTALLED TO COVER THE WRONG CONDUCTOR COLOR, THIS WILL BE PERFORMED IN EACH SIDE OF THE CABLES WHERE NECESSARY.

POWER CABLE TAG FOR INTERNAL AREA



VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20092**

REV.:	DATE:	SIGNATURE:
2_B	28/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	28/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	04/07/24	NLK	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-POWER SYSTEM & CABLE INSTALLATION
CABLES INSTALLATION SYSTEM IDENTIFICATION FOR POWER CABLES

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

A3	DRAWING NO.	SHEET	REV.
	123A90-DDL-EL-DD-20092	007	02

F.to UNI A3: 420mmx297mm

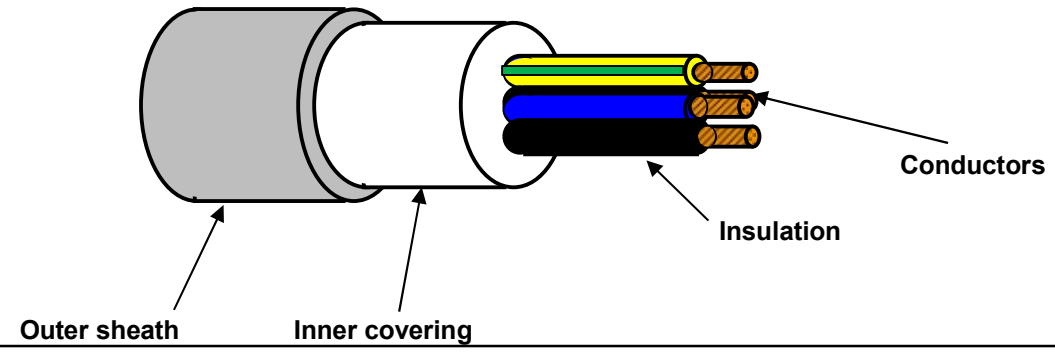
File Name : 123A90-DDL-EL-DD-20092 REV.02.DWG

Tag Number	Category	Discipline	Eng Status	NativeDoc	Layout	Parent Tag	Main Function	Secondary Function	Area	From Tag	From Main Function	From Area	To Tag	To Main Function	To Area	Material ID	Material Desc.	Gland Standard	From Gland	From Entry	From Fitting	To Gland	To Entry	To Fitting	Routing	Routing Manual
83117-CEL	Cable	EL	VFC	123A90-DDL-EL-LIS-20148						DP-200N1	LV 0,4 / 0,23 kV Distribution Switchgear	Lower Deck (B-200)	CP-200E2	Auxiliary Trafo SOLAR 0,5 MVA Marshalling Box	Lower Deck	ELECV06-3G2,5	Cable Cu Cl.2/EPR/LSZH 0,6/1kV 3G2,5mm² - Grey	M20	n.a.			T1_M20_Single				L-450-101-LVT-030 / L-600-101-LVT-020 / L-600-101-LVT-018 / L-600-101-LVT-017 / E-MCT-201 / L-750-101-LVT-011 / L-300-101-LVT-003 / L-300-101-LVT-002

FLEI s.r.l.

Cu Cl.2/EPR/LSZH 0,6/1 KV

3G2,5 - L.V. POWER CABLE - Flame Retardant



TECHNICAL FEATURES

Conductors :	**STRANDED** plain/bare annealed copper wires	IEC 60228 Class 2
Insulation :	EPR compound, quality to IEC 60092.360, Nominal Thickness 1,0 mm	
Cores colour code :	**Brown - Blue - Yellow/Green**	
Pair Assembling :	Not required	
Pair Wrapping:	Not required	
Drain wire :	Not required	
Pair Shield :	Not required	
Shield Insulation :	Not Required	
Total Assembling :	Cores layed up with optimal lay length	
Overall Wrapping:	Not required	
Drain wire :	Not required	
Overall Shield:	Not required	
Inner covering :	Extruded LSZH compound, Average Thickness 1,0 mm	
Inner covering color code:	**Black or Natural**	
Armour :	Not required	
Outer sheath :	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type **SHF1** to IEC 60093.360, Average Thickness 1,2 mm	
Outer sheath color code:	**Grey**	
Outer printing (INKJET) :	**FLEI - ELECTRIC CABLE - 1000V - 3G2,5 SQMM - EPR/LSZH - 0,6/1 KV - IEC 60332.1.2 - IEC 60332.3.22 -**	
	Year of Manufacture - CE + Meter Marking	
Outer diameter :	(13,0 ± 10%) mm	
Bending radius :	cable outer diameter x 10	(in fixed installation)
Voltage test :	3,5 kV a.c. for 5' (Between Cores)	
Conductors DC Resistance :		IEC 60228 Class 2
Insulation Resistance :	≥ 1100 MΩ x Km (@ 20°C)	
Applicable Standards		
Design Guidelines :	**IEC 60092.353**	
ON COMPLETE CABLE		
Flame Retardant test :	IEC 60332.1.2 - IEC 60332.3.22	
Acid Gas generation :	IEC 60754.1/2	
Smoke density/Light Transmittance :	IEC 61034.2 (LT ≥ 60%)	
Temperature Range :		
ON INSULATION	(max +90°C)	(max continuous operation temperature of conductors)
	(max +250°C)	(max conductors temperature during short-circuit for 5 seconds)
ON COMPLETE CABLE		
During Operation :	(-20°C up to +90°C)	(in fixed installation)
During installation :	(- 5°C up to +50°C)	
Note :	**To meet the requirements of installation and use in Zone 1 & Zone 2 (IEC 60079-14) and "Gas & Vapour Tight" the cable must be provided with Penetrating Inner covering together with correct ATEX approved equipment or accessories.**	

Office	Date	Sign	Rev.	Date	Sign
Drawn by :	29/03/2024	Messa			
Checked :	29/03/2024	Spaccasassi			
Approved :	29/03/2024	Cucinotta			

The data provided, lending assent for the treatment, will be used to the sense of the article 13 of of the Regulation (UE) 2016/679, also through outsiders, in order to allow the realization of the fulfilments informatives, administrative, commercial and accounting related to the contractual relationship. Integral copy of the informative could be requested at our offices.

All proprietary rights reserved according to law. This document shall be not reproduced without written permission. FLEI reserves the right to change characteristics and technical data of product shown at any time.

ITEM	Tag	TR-200ED1	: 6,6 / 0,8 kV 0,5 MVA Transformer			Dwg	123A90-DDL-EL-DS-20004
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)			Module	LD
TASK	code	C10000869		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX02 Power Transformer LV/HV

1	Check transformer is de-energized and safe.	OK
2	Check transformer rating plate is correct.	OK
3	Check conformity to latest data sheet /project specification.	OK
4	Check transformer installation against latest drawings.	Note
5	Check dielectric levels are correct with no leak (visual check).	OK
6	Check transformer access is properly protected and warning labels and safety instructions are adequately posted.	OK
7	Check primary terminations are clean, undamaged and correctly identified (phase).	OK
8	Check secondary terminations are clean, undamaged and correctly identified (phase).	OK
9	Check all termination enclosures have correct gaskets and fixing bolts.	OK
10	Check accessories according to data sheet are correctly installed and undamaged (themometers, relay, fans etc...).	OK
11	Check tap changer selector is correclty fitted and locked in the mid position (where applicable).	OK
12	Check On load tap changer control panel to wiring diagram (where applicable).	OK
13	Check mechanichal interlock of terminals.	OK
14	Check cable connections against drawings (visual check only of power and control cables).	Note
15	Check coating integrity.	OK
16	Check earthing and bonding against drawings.	OK
17	Check transformer is properly clean.	OK
18	If required produce Red Line Mark Up for "AS BUILT"	

ITEM	Tag	TR-200ED1	: 6,6 / 0,8 kV 0,5 MVA Transformer	Dwg	123A90-DDL-EL-DS-20004		
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	Module	LD		
TASK	code	C10000869	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form CPX02	Power Transformer LV/HV

TRANSFORMER DATA

Manufacturer :	MF Transformatori	Serial N° :	181023/3	Rating :	500 kWA
Primary Voltage	6600 V	Secondary Voltg.	420 V	Vector group	dyn11
UpStream Eqp.	SG-200D2	DownStream Eqp.	SG-100D1	Data Sheet :	123A90-DDL-EL-DS-20004

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity

TEST RESULTS

INSULATION RESISTANCE / H.V. TESTS

Temperature record:

	Voltage	Mini Req	Readings MΩ	IR FAT VALUE
Primary winding /Secondary windings - Earth				
Secondary windings/primary windings- Earth				
TANK INSULATION RESISTANCE (if applicable)				
AUXILIARY WIRING INSULATION RESISTANCE				

See Attached

OIL BREAKDOWN TESTS

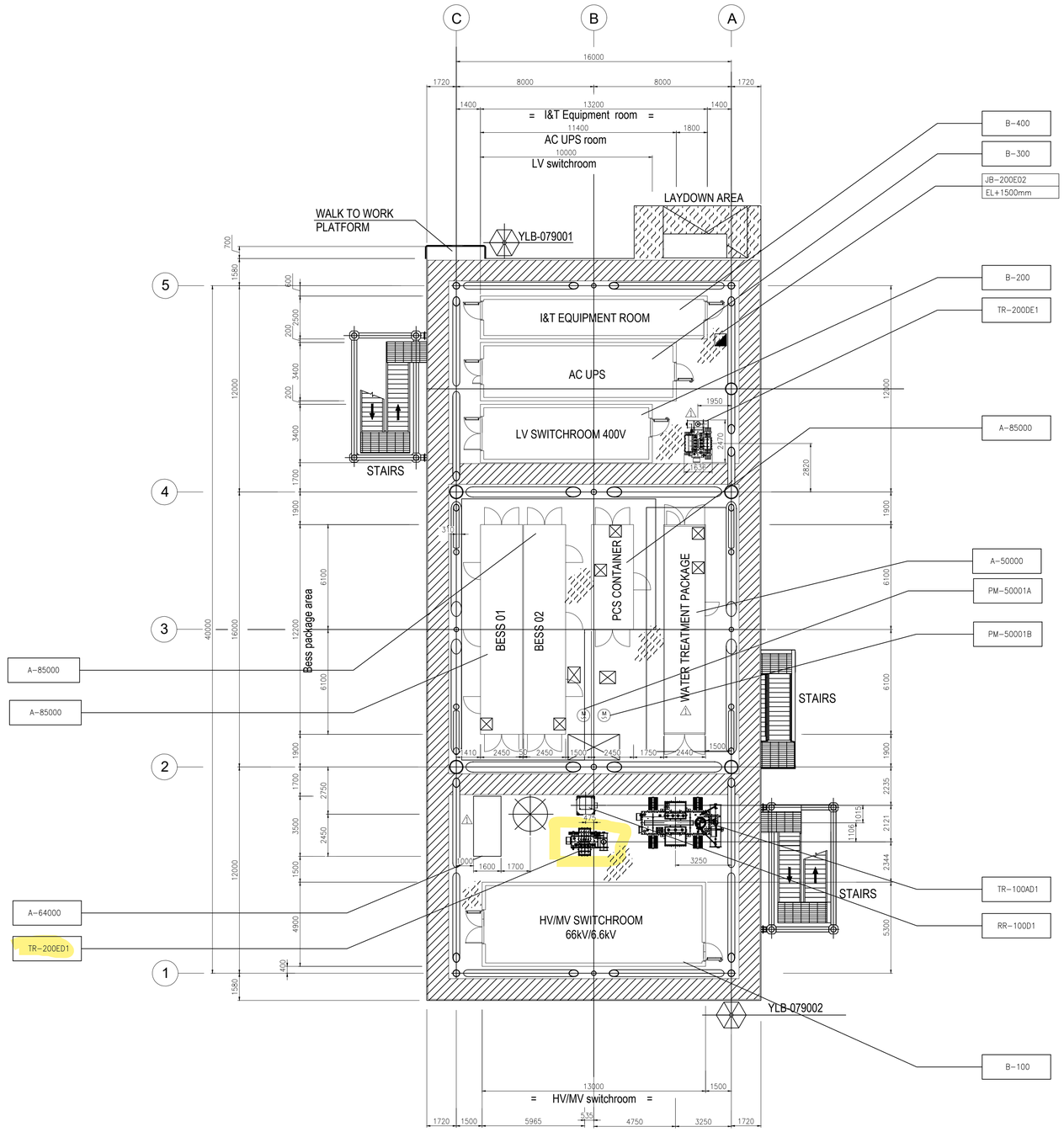
OIL WATER CONTENT TEST	< 50	ppm
DIELECTRIC STRENGTH		KV/cm

CONTINUITY CHECK PHASES / TAPPING POSITION (Winding Resistance in mOhms)

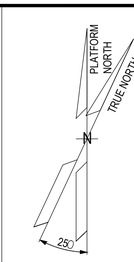
Ph1 / Ph2	Ph1 / Ph3	Ph3 / Ph2	TAPPING POSITION
			+5 %
			+2.5 %
			0%
			-2.5 %
			-5 %

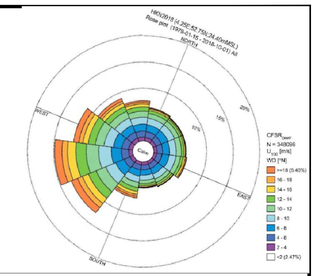
Comments: Note: N*4: See attached RLMU raised during FAT.
Note: N*14: Check on connection will be done during cable ispection.
Please refer to the relevant RFI.

	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company		RM (Rosetti Marino)	
Name	Carmelo Bongiovanni	Giovanni Tangianu	
Date	2024-09-11	2024-09-13	
Signature	Firma Digitale Sicura Carmelo Bongiovanni 2024-09-11T17:45:16+0200	Firma Digitale Sicura Giovanni Tangianu 2024-09-13T08:52:30+0200	



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





NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

(M)	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND | ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

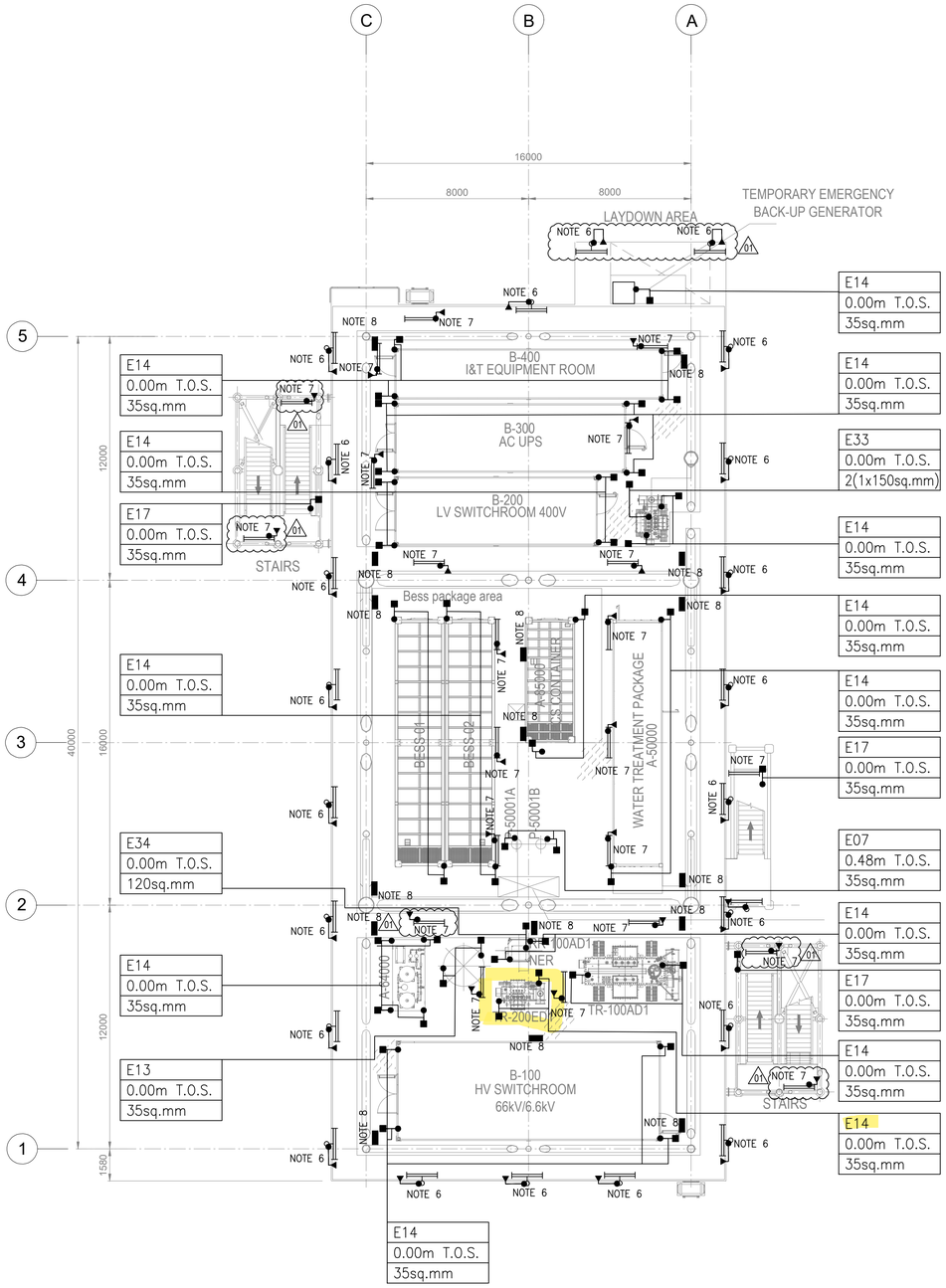
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN SAM	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 04/03/24
A1	DRAWING NO. 123A90-DDL-EL-DL-20101	SHEET 001	REV. 01

DRAWING NO. 123A90-DDL-EL-DL-20101 REV. 01

File Name : 123A90-DDL-EL-DL-20101-Electrical Equipment Layout – Lower Deck

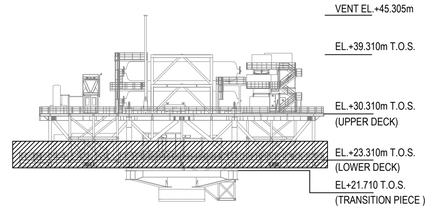
DRAWING NO. 123A90-DDL-EL-DL-20133

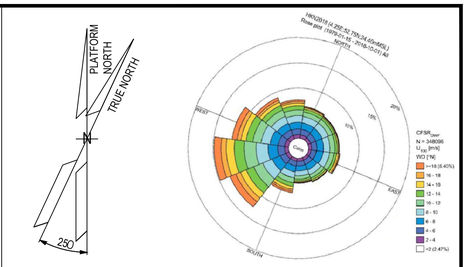
REV. 01



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

KEY PLAN





NOTES

1. ALL DIMENSIONS AND ELEVATIONS ARE GIVEN IN mm UNLESS OTHERWISE NOTED.
2. ELEVATIONS REFER TO T.O.S.
3. THIS DOCUMENT IS ONLY VALID FOR EARTHING LAYOUT.
4. ALL ELECTRICAL EQUIPMENT NOT DIRECTLY WELDED TO SKID FRAME SHALL BE BONDED TO STEEL TO THE STRUCTURE OF SKID BASEFRAME.
5. FOR LIGHTNING PROTECTION SYSTEM SURGE PROTECTIVE DEVICES (SPD), REFER TO THE DOCUMENT 123A90-DDL-EL-RE-20154.
6. ALL NON-WELDED POLES WILL BE EARTHED AS PER TYPICAL E05 AND E24. 01
7. ALL LINEAR LIGHTING FIXTURE WILL BE EARTHED AS PER TYPICAL E32.
8. EARTH BAR WILL BE FIXED TO THE PRIMARY BEAMS OF THE UPPER DECK. COMPLETE EARTHING INCLUDING WITH 2 THREADED STUDS. ALL EARTH BAR WILL BE EARTHED AS PER TYPICAL E03D / 6.00M T.O.S. / 35 SQ MM.
9. EQUIPOTENTIAL BONDING GROUPING FOR BOLTED HANDRAILS ARE PROVIDED EVERY 3M FOR THE ENTIRE PERIMETER AS TYPICAL E16 AND WILL BE DEFINED DURING ASSEMBLY PHASE

LEGEND

- LIGHTING FIXTURE POLE MOUNTED
- LINEAR LIGHTING FIXTURE
- EARTHING BOSS AISI316L
- COMPRESSION TYPE LUG TINNED COPPER
- THREADED STUD FOR EARTHING CONNECTION
- Exx EARTHING TYPICAL CODE
- EARTHING BAR

TYP.	TYPICAL
ELE	ELEVATION
SIZE	

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DD-20090	ELECTRICAL TYPICAL INSTALLATION DETAILS - EARTHING SYSTEM
123A90-DDL-EL-RE-20154	LIGHTNING PROTECTION SYSTEM CALCULATION REPORT
123A90-DDL-EL-DL-20119	LIGHTING & SOCKET LAYOUT - LOWER DECK
123A90-DDL-EL-DL-20101	ELECTRICAL EQUIPMENT LAYOUT - LOWER DECK

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	25/07/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	29/05/24	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
EARTHING & LIGHTNING LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN SPS	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 25/07/24
A1	DRAWING NO. 123A90-DDL-EL-DL-20133	SHEET 001	REV. 01

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20133**

REV.:	DATE:	SIGNATURE:
1_A	08/08/24	G.Randi

ROSETTI MARINO SpA

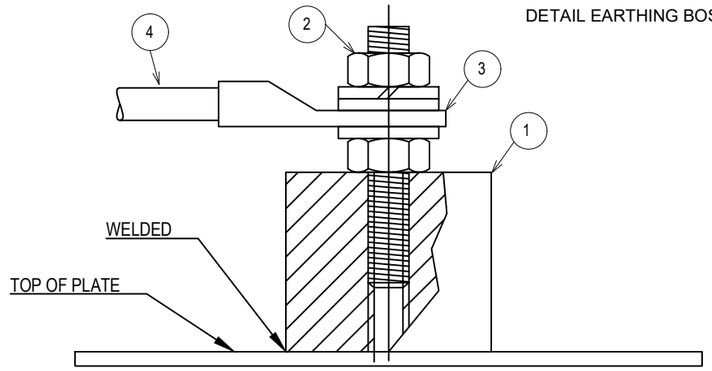
SHEET 001 OF 002

File Name : 123A90-DDL-EL-DL-20133

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50 50X150	1	NOTE 2
2	STUD BOLT WITH PLANE WASHER, GROWER AND NUT	AISI 316L	M10X50		
3	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER			~~NOTE 3~~
4	Y/G INSULATING COPPER CONDUCTOR				NOTE 1 NOTE 5
5	EARTHING PLATE	AISI 316L (NOT PAINTED)	50X50X5		NOTE 4
6	HEXAGONAL BOLT WITH PLANE WASHERS, GROWER AND NUT.	AISI 316L	M10X30		
7	THREADED STUD COMPLETE WITH GROWER AND NUTS	AISI 316L	M10X28		NOTE 6 NOTE 7

E11A

DETAIL EARTHING BOSS 50x50

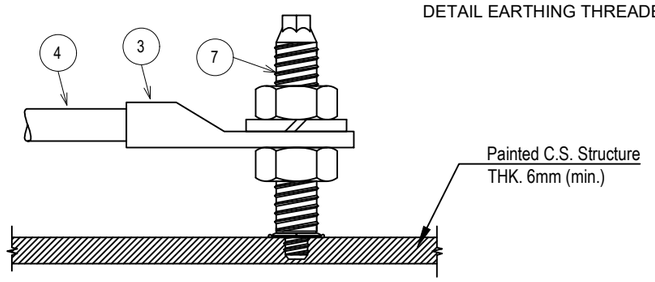


E11D

SEE NOTE 6

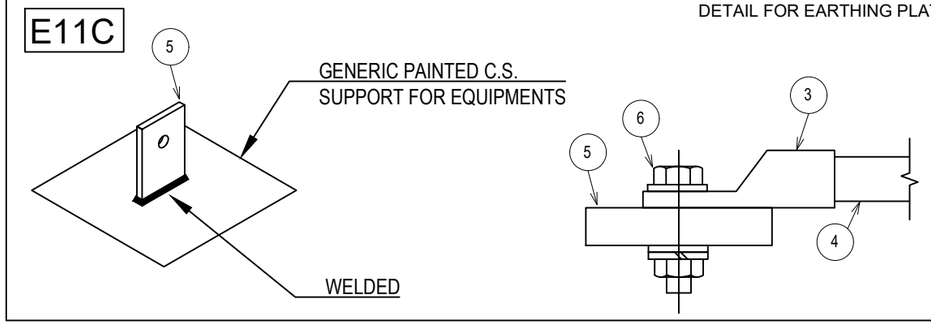
FOR CABLE
MAX 10mm²

DETAIL EARTHING THREADED STUD



E11C

DETAIL FOR EARTHING PLATE

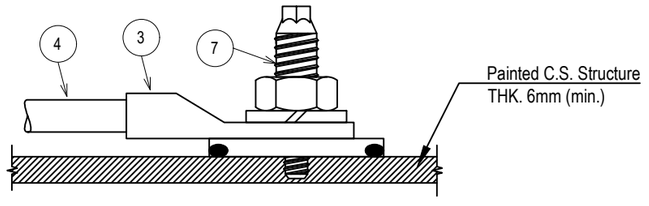


E11E

SEE NOTE 7

FOR CABLE
MAX 35mm²

DETAIL EARTHING THREADED STUD



NOTES:

1) ONLY ONE PROTECTIVE CONDUCTOR TERMINATION LUG SHALL BE CONNECTED TO A DEDICATED EARTHING BOSS, EARTH PLATE OR EARTH STUD.
2) EXTERNAL EARTHING CONNECTION ONLY SHALL BE PROTECTED AGAINST CORROSION USING OXIDE RESISTANT COMPOUND (E.G. COPPER GREASE).
3) ~~CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.~~
4) EARTHING PLATE SHALL BE DEDICATED TO CABLE TRAY AND PIPE SUPPORTS, JUNCTION BOX, LOCAL CONTROL STATION AND SMALL EQUIPMENT SUPPORTS, LIGHTING POLES, RECEPTACLE SUPPORTS AND REMOVABLE HANDRAILS, ONLY.
5) FOR SIZE OF THE EARTHING CABLE SEE EARTHING LAYOUT DRAWINGS OF RESPECTIVE AREAS
6) HILTI S-BT-ER M10/15 SN6 CERTIFIED FOR EARTHING SYSTEM. RECOMMENDED MAX CONDUCTOR SIZE 10mm².
7) HILTI S-BT-ER M10 HC 120 CERTIFIED FOR EARTHING SYSTEM. RECOMMENDED MAX CONDUCTOR SIZE 35mm².

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_C	09/09/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
SINGLE EARTHING CONNECTION

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

SCALE : NTS

A3

DRAWING NO. 123A90–DDL–EL–DD–20090

SHEET 003

REV. 02

F.to UNI A3: 420mmx297mm

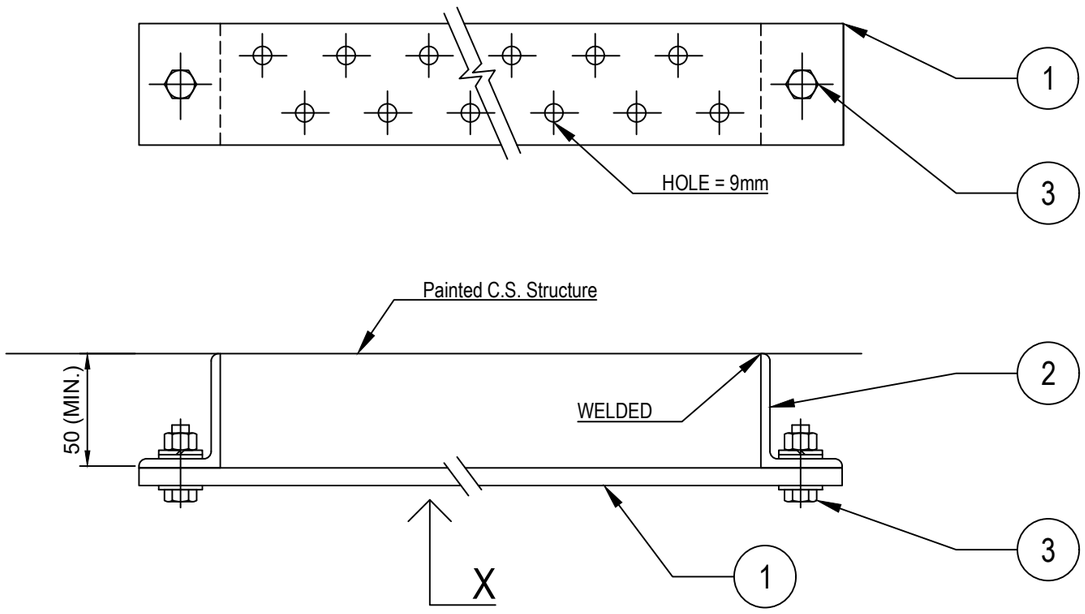
File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BAR	TINNED COPPER	285X50X5	1	
2	PROFILE SUPPORT	AISI 316L		2	
3	HEXAG. BOLTS, PLANE WASHERS, GROWER SPRING WASHER AND NUT	AISI 316L	M10X30	2	
4	THREADED STUD	AISI 316L	M10X28	2	NOTE 1
5	FEMALE / MALE COUPLING	AISI 316L	M10X50	2	NOTE 2
6	PLANE WASHER, GROWER AND NUT	AISI 316L	M10	2	

TYPICAL DETAIL VALID FOR EXTERNAL USE ONLY

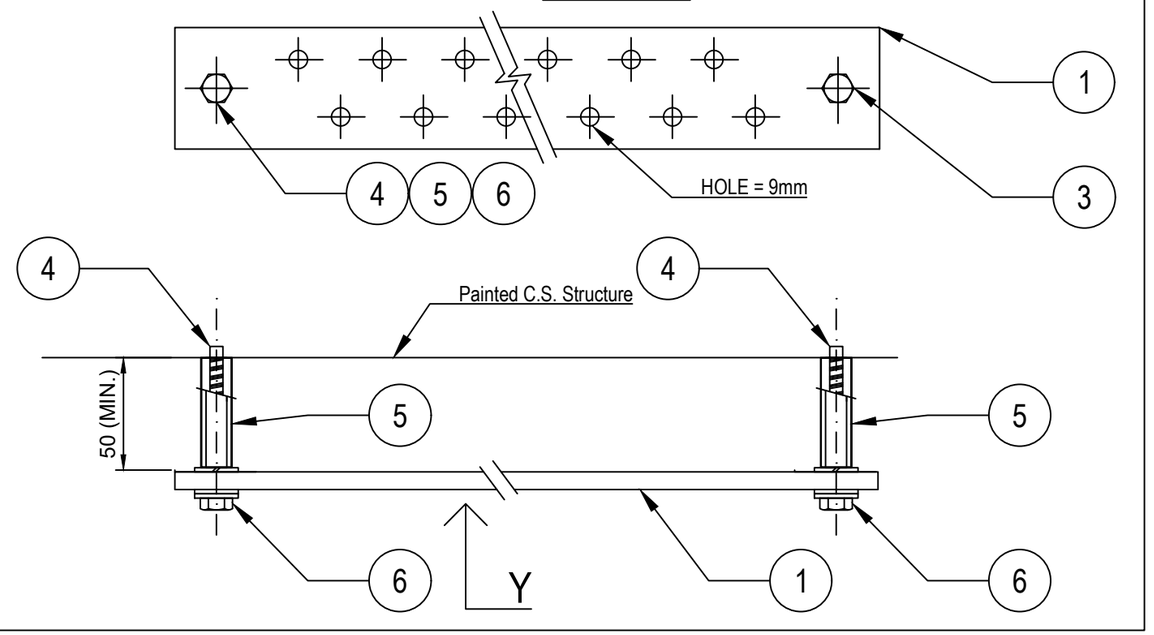
E03A

VIEW "X"



E03D

VIEW "Y"



NOTES:

1) THREADED STUD mod. HILTI S-BT-ER M10/15 SN6 CERTIFIED FOR EARTHING SYSTEM.

2) STANDOFF ADAPTER mod. HILTI M10-HC120 50

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_C	09/09/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING BAR INSTALLED ON WELDED PROFILE OR THREADED STUD

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

A3	DRAWING NO.	SHEET	REV.
	123A90-DDL-EL-DD-20090	004	02

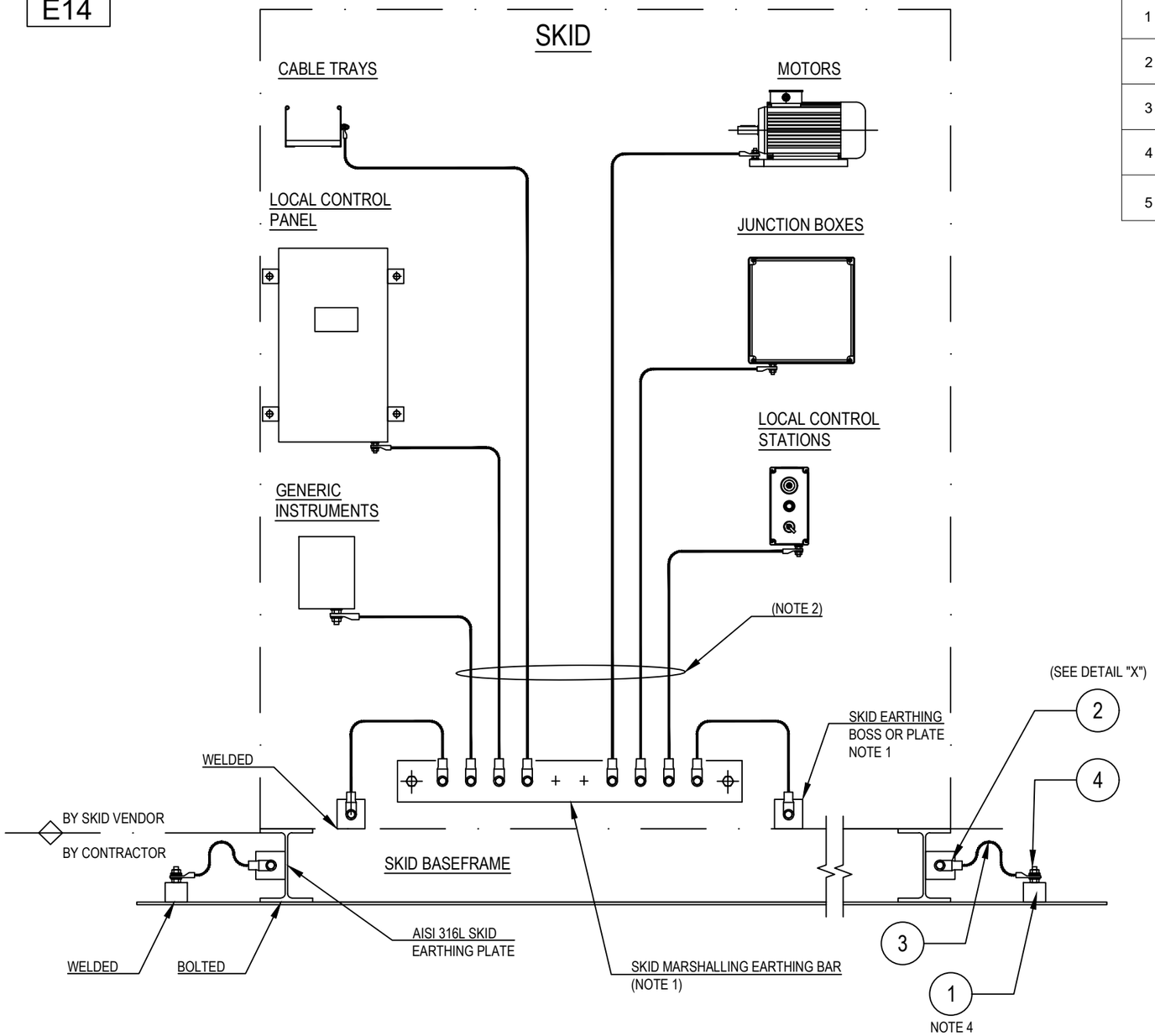
CROSSWIND

ROSETTI MARINO

F.to UNI A3: 420mmx297mm

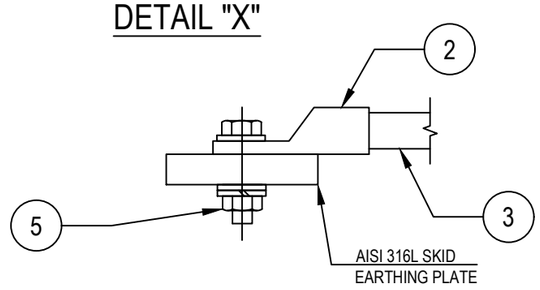
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E14



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50		NOTE 5
2	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	35mm^2		NOTE 3
3	Y/G INSULATING COPPER CONDUCTOR	COPPER	35mm^2		NOTE 3
4	STUD BOLT WITH PLANE WASHER, SPRING WASHER AND NUT	AISI 316L	M10X50		
5	HEXAG. BOLT COMPLETE WITH PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M10X30		

DETAIL "X"



NOTES:
1) EARTHING BAR/BOSS/PLATE SUPPLIED BY SKID MANUFACTURER
2) ALL EQUIPMENTS AND CABLE TRAYS WILL BE EARTHING ON SKID EARTHING BAR BY SKID MANUFACTURER
3) ~~CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY~~
4) FOR EARTHING BOSS TYPICAL DETAIL E11A
5) EXTERNAL EARTHING CONNECTION ONLY SHALL BE PROTECTED AGAINST CORROSION USING OXIDE RESISTANT COMPOUND (E.G. COPPER GREASE)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_C	09/09/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR SKID BASEFRAME

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

A3 | DRAWING NO. 123A90-DDL-EL-DD-20090 | SHEET 014 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

BASE LOAD POWER HUB (BLPH)

TR-200ED1 General arrangement drawings

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	17/05/24	ML	MF	MF	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/04/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)
00	07/02/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 General arrangement drawings
FRONT PAGE

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

SCALE : NTS

A3

DRAWING NO. 1723001697-EL-DA-00008

SHEET 001

REV. 02

File Name : 1723001697-EL-DA-00008 Rev. 02

F.to UNI A3: 420mmx297mm

REV.	SHEET NUMBER	DESCRIPTION	REF. CODE
02	001	FRONT PAGE	
02	002	SUMMARY and GENERAL NOTES	
02	003	GENERAL ARRANGEMENT	
02	004	GENERAL ARRANGEMENT	
02	005	EQUIPMENT LIST	
02	006	H.V. 6.6 kV - PROTECTION BOX DETAIL	
02	007	L.V. 800V - PROTECTION BOX DETAIL	
02	008	DETAIL BASE FRAME	
02	009	RATING PLATE	

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	17/05/24	ML	MF	MF	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/04/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)
00	07/02/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 General arrangement drawings
SUMMARY and GENERAL NOTES

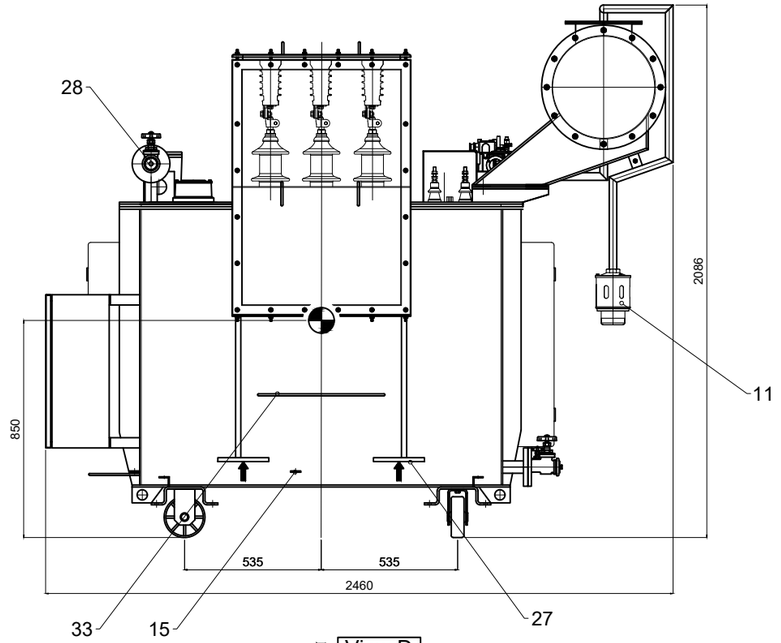
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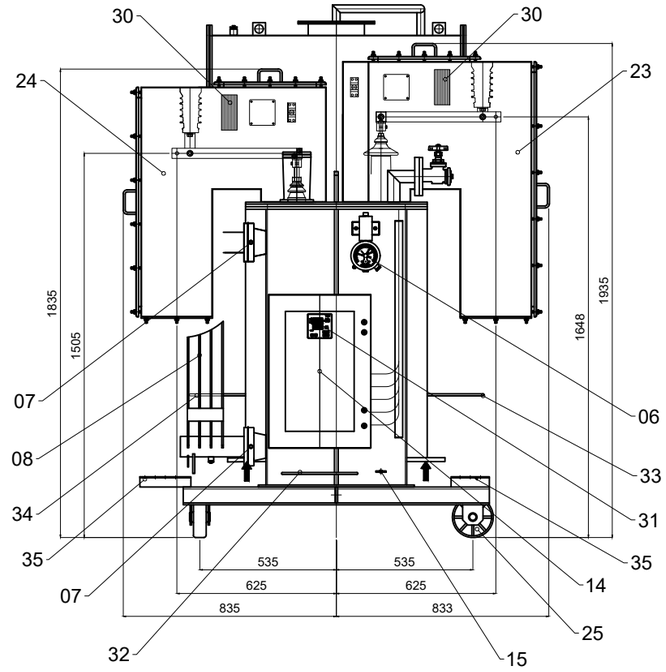
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File Name : 1723001697-EL-DA-00008 Rev. 02

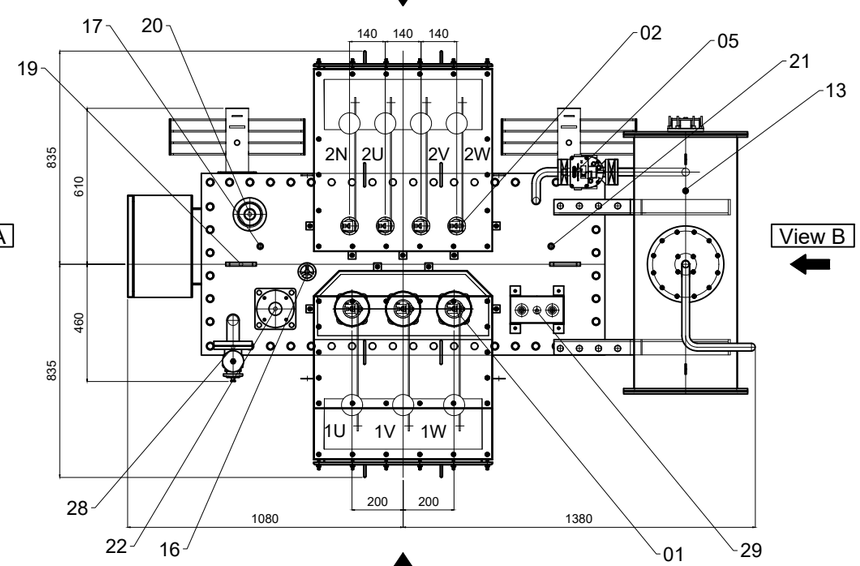
View C



View A



View D



View A

View B

View C

NORTH

Note:

- Rated power:	500kVA
- Rated voltage:	6600±2x2.5% / 0.8kV
- Vector group:	Dyn11
- Oil weight:	540kg
- Total weight:	3340kg
- Painting:	RAL7031 (Cl. CX)
- Short circuit impedance:	6%
- Item trafo:	TR-200ED1
Tolerance:	±20mm

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	17/05/24	ML	MF	MF	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/04/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)
00	07/02/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 General arrangement drawings
GENERAL ARRANGEMENT

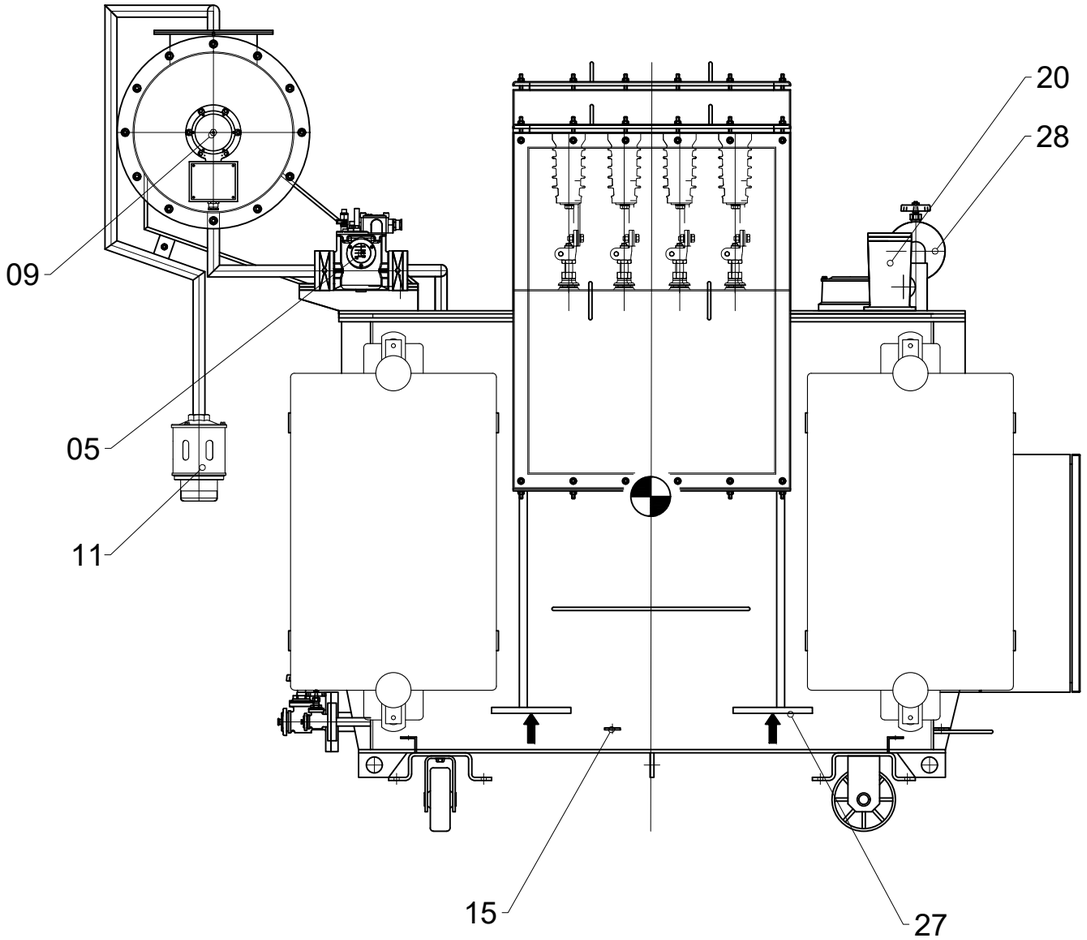
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A3 | DRAWING NO. 1723001697-EL-DA-00008 | SHEET 003 | REV. 02

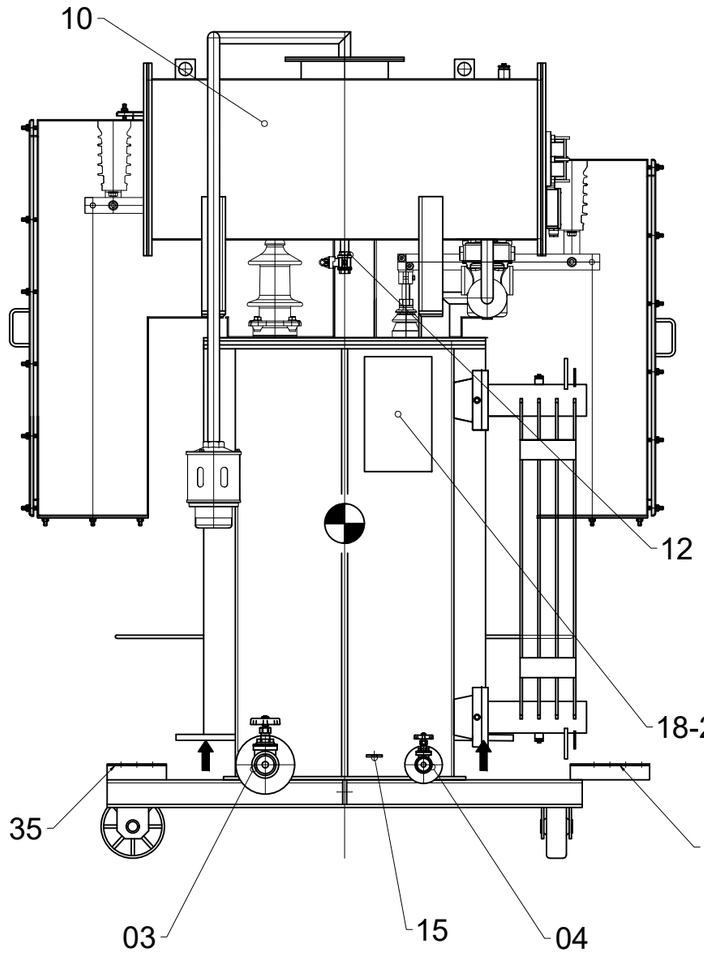
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F.to UNI A3: 420mmx297mm

View D



View B



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	17/05/24	ML	MF	MF	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/04/24	ML	MF	MF	ACCEPTED FOR REVIEW (IFR)
00	07/02/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 General arrangement drawings
GENERAL ARRANGEMENT

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

SCALE : NTS

A3

DRAWING NO. 1723001697-EL-DA-00008

SHEET 004

REV. 02

File Name : 1723001697-EL-DA-00008 Rev. 02

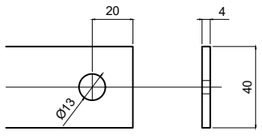
F.to UNI A3: 420mmx297mm

EQUIPMENT LIST

ITEM	DESCRIPTION	N°	SUPPLIER	TYPE	ITEM	DESCRIPTION	N°	SUPPLIER	TYPE
01	H.V. terminals - 6.6kV (1U-1V-1W) with extention copper bars	03	BARBERI	UNEL 12kV / 250A	21	Thermal pocket	01	MF	3/4"
02	L.V. terminals - 800V (2U-2V-2W-2N) with extention copper bars	04	BARBERI	DIN 1kV / 630A	22	Terminal box signal PT100 - windings / core	02	ETI	SM2-S
03	Oil drain valve	01	BARBERI	DN25-PN10	23	Protection box - HV terminals	01	MF	IP55
04	Oil sampling valve	01	BARBERI	DN15-PN10	24	Protection box - LV terminals	01	MF	IP55
05	Bucholz relay with 2 contacts, with valves	01	COMEM	C1	25	Bi-directional wheels	04	CDR	Ø160 - L=50
06	Thermometer with 2 contacts	01	TERMAF	TDT/A1-DN100	26	Tag plate	01	MF	
07	Interception radiator valve	04	ETI	WU080	27	Jacking pads	04	MF	200x150x15
08	Radiator	02	WARM	4 El. - Int. 800	28	Oil treatment valve	01	BARBERI	DN25-PN10
09	Oil level indicator with 2 contacts	01	COMEM	LB14XON	29	Core earthing terminals	02	MF	
10	Oil conservator with oil/air insulation membrane	01	MF		30	Heating element with thermostat	02	MF	
11	Dehydrating breather - Silicagel	01	COMEM	EM1DB	31	Winding temperature indicator	01	TECSYSTEM	T154
12	Conservator oil drain valve	01	MF	1/2"	32	Support for auxiliary cables	01	MF	
13	Conservator vent valve	01	MF	1/2"	33	Support for H.V. 6.6kV cables	01	MF	
14	Auxiliari panel - CP-200E2	01	MF	IP55	34	Support for L.V. 800V cables	01	MF	
15	Earthing terminals	04	MF	Stainless steel 40x30x5 n.1 hole Ø13	35	Support for cable duct	04	MF	
16	No load tap changer	01	EMC	335.20/M6 - 90A - 5 pos.					
17	Thermal pocket for pos. 6	01	MF	3/4"					
18	Rating plate	01	MF						
19	Lifting eyebolts transformer / internal part	02	MF	Ø60					
20	Pressure relay with 1 contact	01	QUALITROL	900-FLA-T-NO-STD					

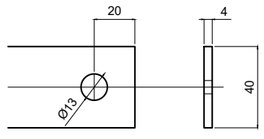
Pos. 01
Detail MV terminal

Copper bar 40x4

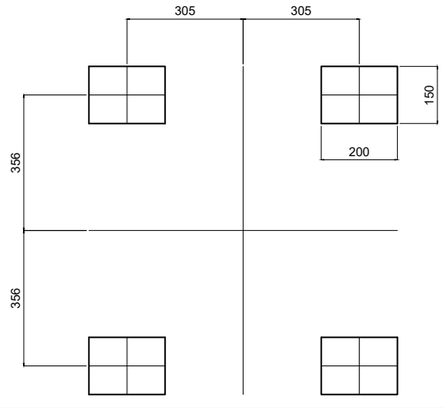


Pos. 02
Detail LV terminal

Copper bar 40x4



Pos. 27
Detail Jacking pads



MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	17/05/24	ML	MF	MF	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/04/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)
00	07/02/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)

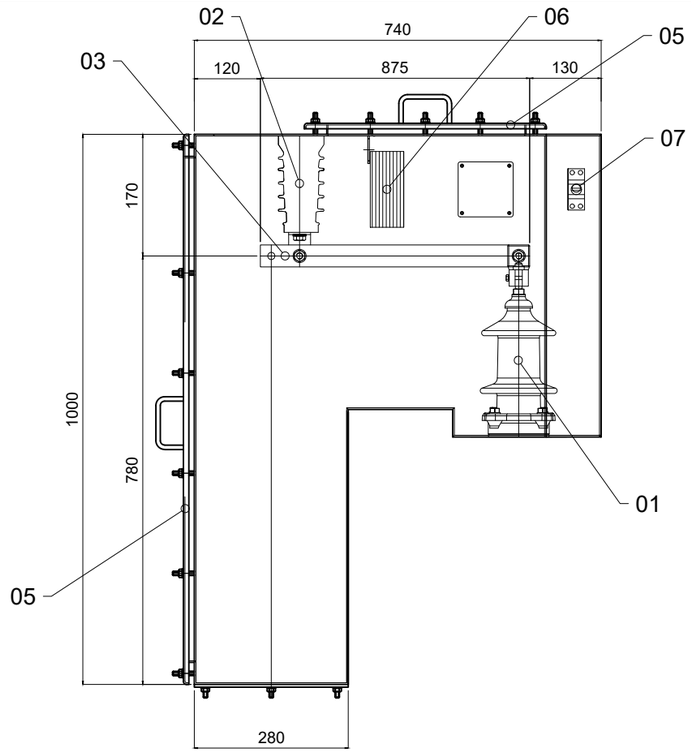
TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 General arrangement drawings
EQUIPMENT LIST

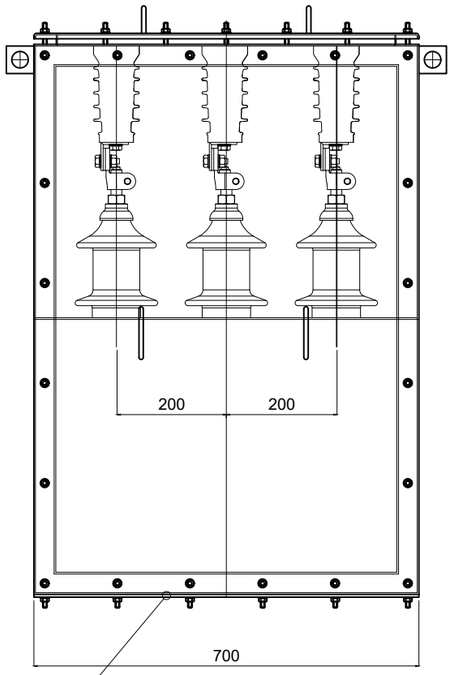
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

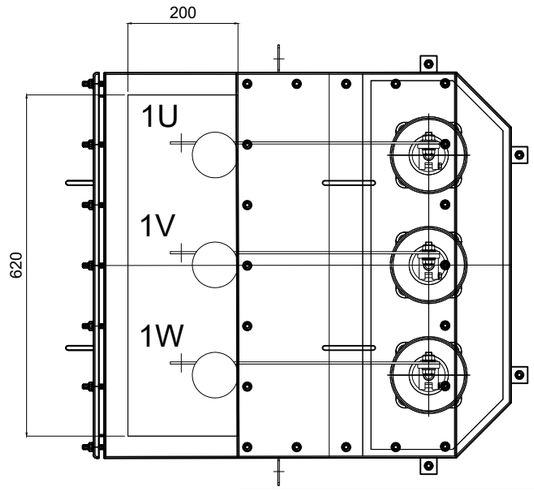
A3 | DRAWING NO. 1723001697-EL-DA-00008 | SHEET 005 | REV. 02

F.to UNI A3: 420mmx297mm

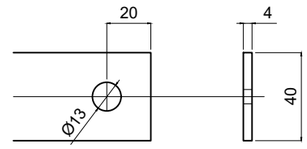
File Name : 1723001697-EL-DA-00008 Rev. 02







Copper bar 40x4



Item	Description	Q.ty	Type
01	HV Terminal	3	UNEL 12kV/250A
02	Support bushing	3	IPA 12kV
03	Copper bar	3	Cu 40x4mm
04	Cable inlet plate	1	Aluminium - th. 5mm
05	Removable plate	2	Painted steel - th. 3mm
06	Heating element	1	100W
07	Thermostat	1	

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	17/05/24	ML	MF	MF	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/04/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)
00	07/02/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)

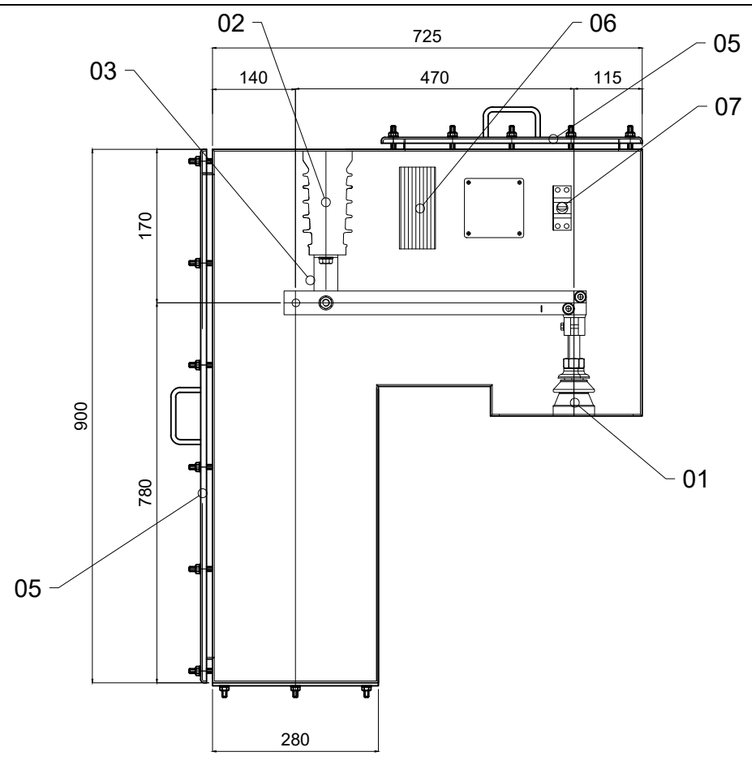
TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 General arrangement drawings
H.V. 6.6 kV – PROTECTION BOX DETAIL

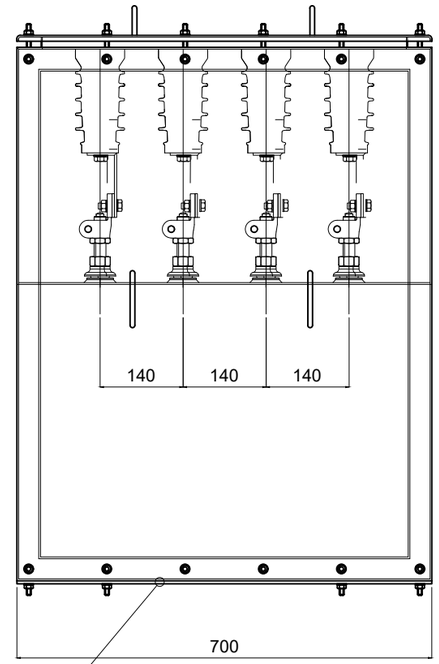
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

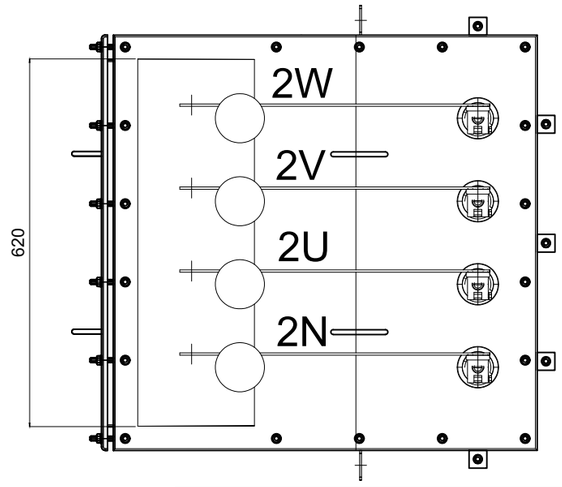
A3 | DRAWING NO. 1723001697-EL-DA-00008 | SHEET 006 | REV. 02

F.to UNI A3: 420mmx297mm

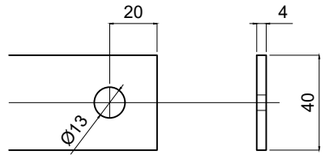
File Name : 1723001697-EL-DA-00008 Rev. 02







Copper bar 40x4



Item	Description	Q.ty	Type
01	LV Terminal	4	DIN 1kV/630A
02	Support bushing	4	IPA 12kV
03	Copper bar	4	Cu 40x4mm
04	Cable inlet plate	1	Aluminium - th. 5mm
05	Removable plate	2	Painted steel - th. 3mm
06	Heating element	1	100W
07	Thermostat	1	

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	17/05/24	ML	MF	MF	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/04/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)
00	07/02/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)

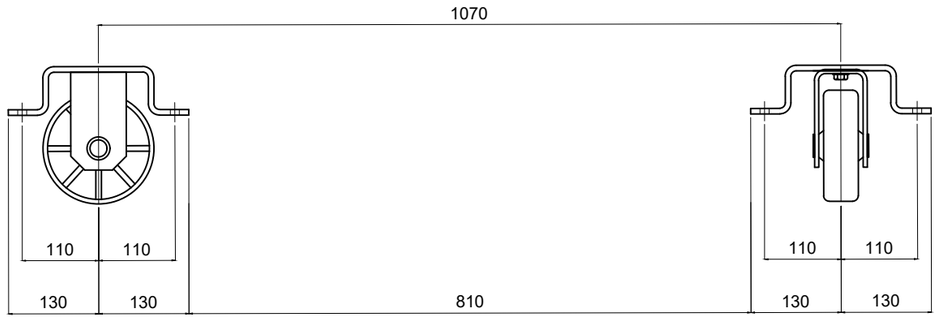
TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 General arrangement drawings
L.V. 800V - PROTECTION BOX DETAIL

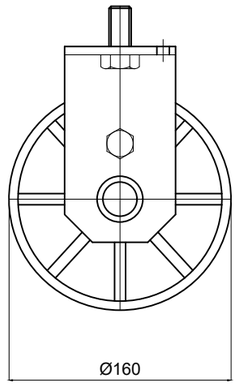
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

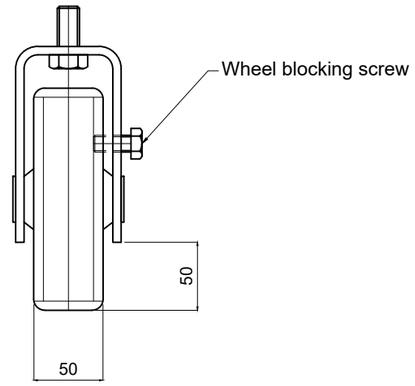
A3 | DRAWING NO. 1723001697-EL-DA-00008 | SHEET 007 | REV. 02

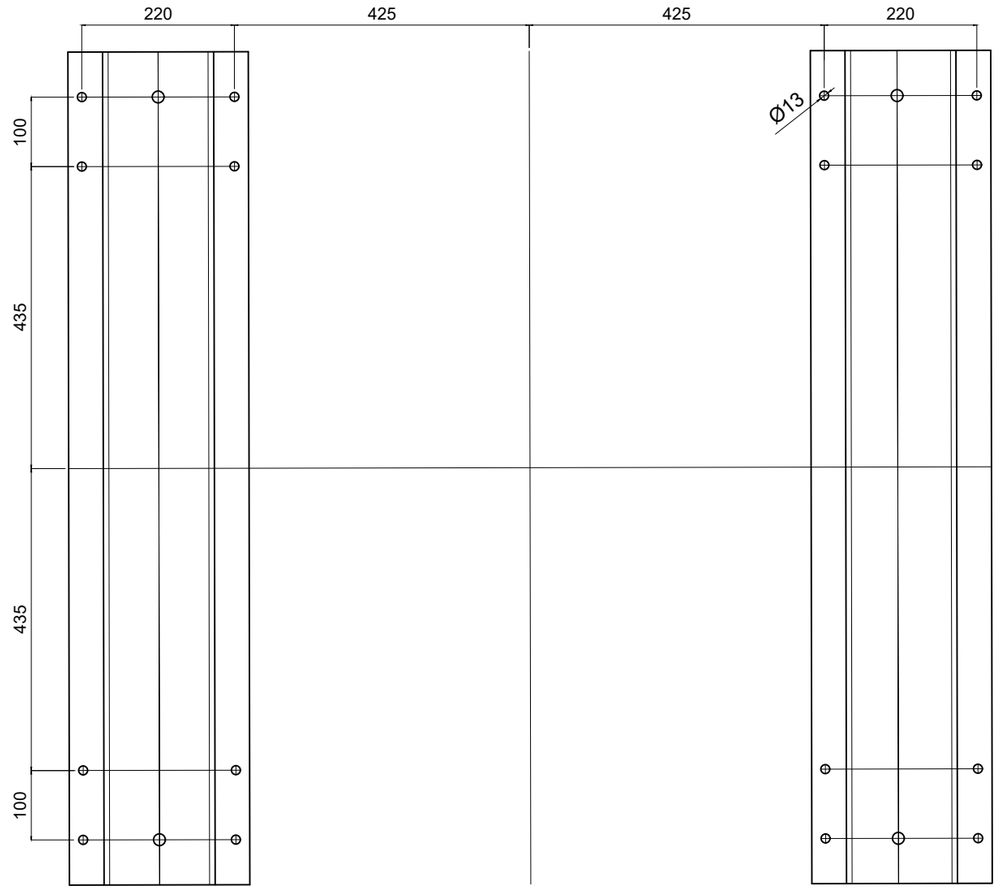
F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DA-00008 Rev. 02









02	17/05/24	ML	MF	MF	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/04/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)
00	07/02/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)
REV.	DATE	DRN	CHKD	APPD	DESCRIPTION

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 General arrangement drawings
DETAIL BASE FRAME

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

SCALE : NTS

A3

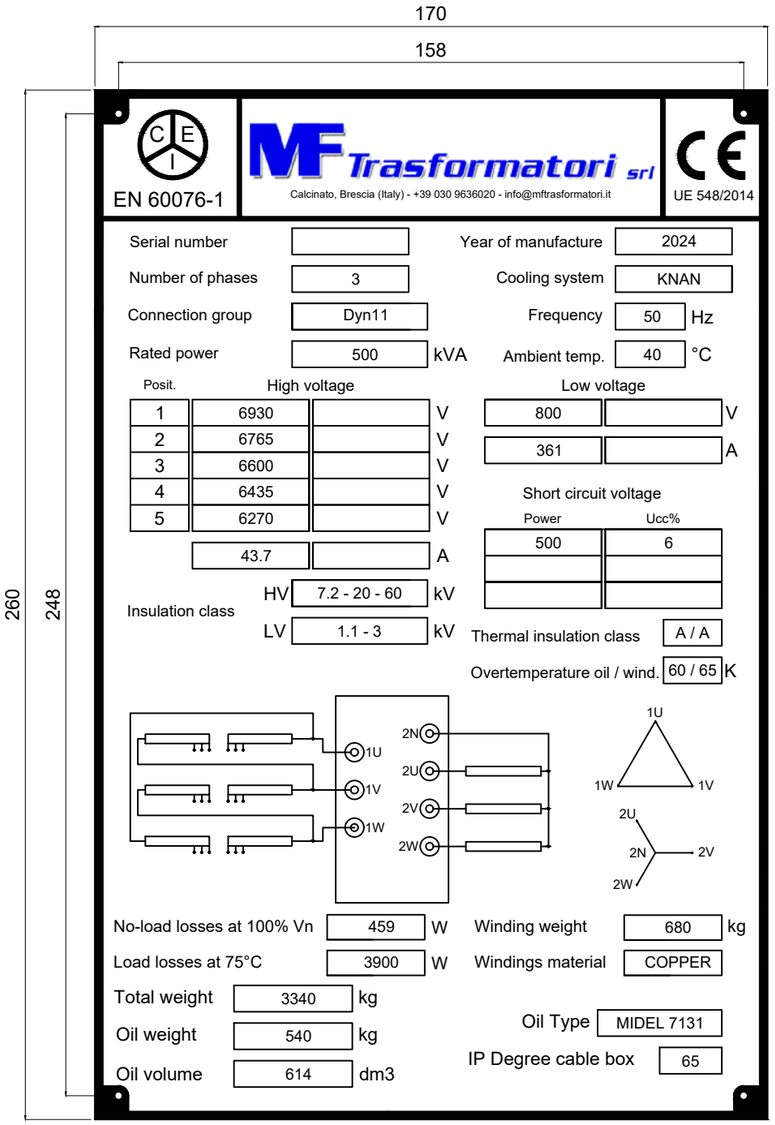
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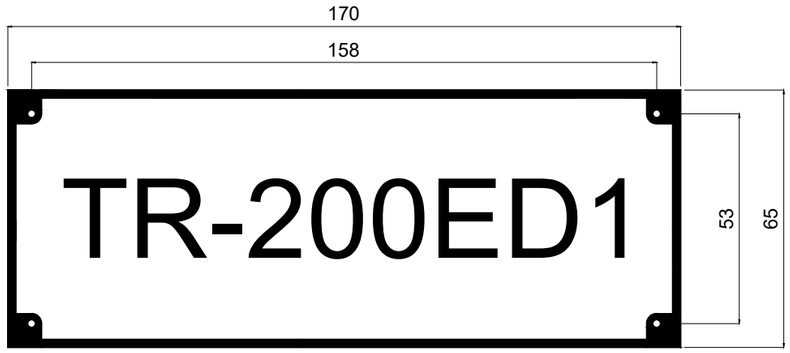
SHEET 008

REV. 02

File Name : 1723001697-EL-DA-00008 Rev. 02

F.to UNI A3: 420mmx297mm





Note:
- Material: stainless steel
- black writing on a neutral background

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	17/05/24	ML	MF	MF	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/04/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)
00	07/02/24	ML	MF	MF	ISSUE FOR REVIEW (IFR)

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 General arrangement drawings
RATING PLATE

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

SCALE : NTS

A3

DRAWING NO. 1723001697-EL-DA-00008

SHEET 009

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DA-00008 Rev. 02

BASE LOAD POWER HUB (BLPH)

TR-200ED1 Termination and Wiring Diagram

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
Luca Macuz	15/05/2024

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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	09/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
01	27/03/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
00	16/02/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)

TITLE : BASE LOAD POWER HUB (BLPH)
TR–200ED1 Termination and Wiring Diagram
FRONT PAGE

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

A3 | DRAWING NO. 1723001697–EL–DG–00012 | SHEET 001 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697–EL–DG–00012 Rev. 02

REV.	SHEET NUMBER	DESCRIPTION	REF. CODE
02	001	FRONT PAGE	
02	002	SUMMARY and GENERAL NOTES	
02	003	LAYOUT - AUXILIARY CONTROL PANEL	
02	004	INTERNAL POWER CIRCUIT DIAGRAM	
02	005	PROTECTION DEVICES ON TRANSFORMER	
02	006	THERMAL CONTROL UNIT	
02	007	TERMINAL STRIP	
02	008	EQUIPMENT LIST	

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CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	09/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
01	27/03/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
00	16/02/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
SUMMARY and GENERAL NOTES

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

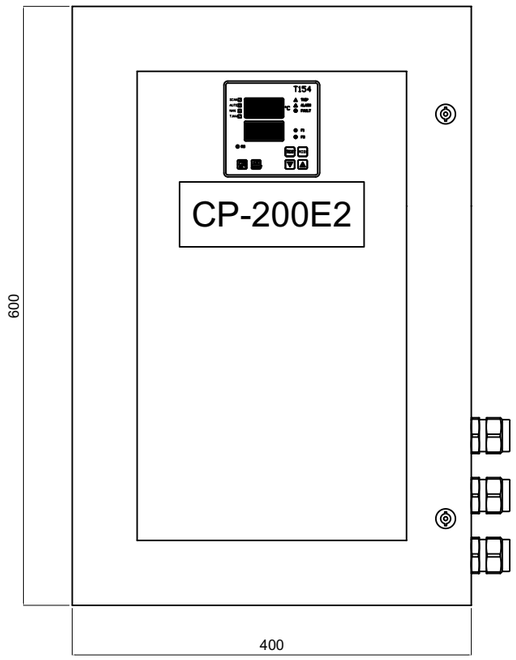
A3 | DRAWING NO. 1723001697-EL-DG-00012 | SHEET 002 | REV. 02

F.to UNI A3: 420mmx297mm

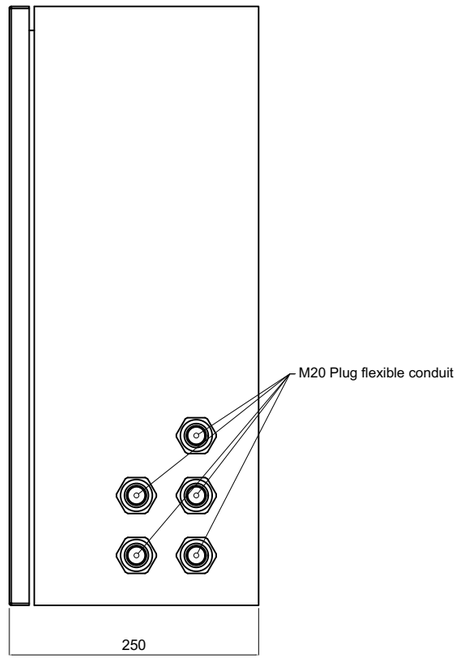
File Name : 1723001697-EL-DG-00012 Rev. 02

LAYOUT - AUXILIARY CONTROL PANEL

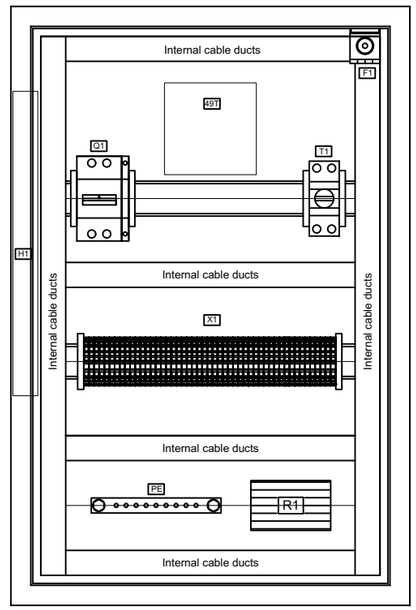
Frontal view



Left side view

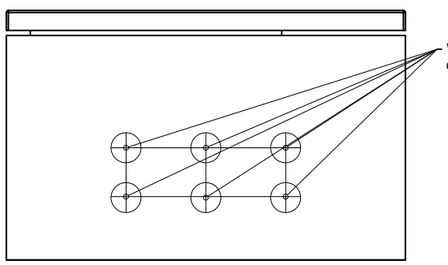


Internal view



PE BAR IS GROUNDED ON INTERNAL PLATE
OF THE PANEL BOX

Bottom view



AUXILIARY CONTROL PANEL	
PROTECTION DEGREE :	IP65
VENTILATION :	NATURAL
BOX MATERIAL :	STAINLESS STEEL 15/10
INTERNAL REMOVABLE PLATE :	STELL 15/10

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CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	09/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
01	27/03/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
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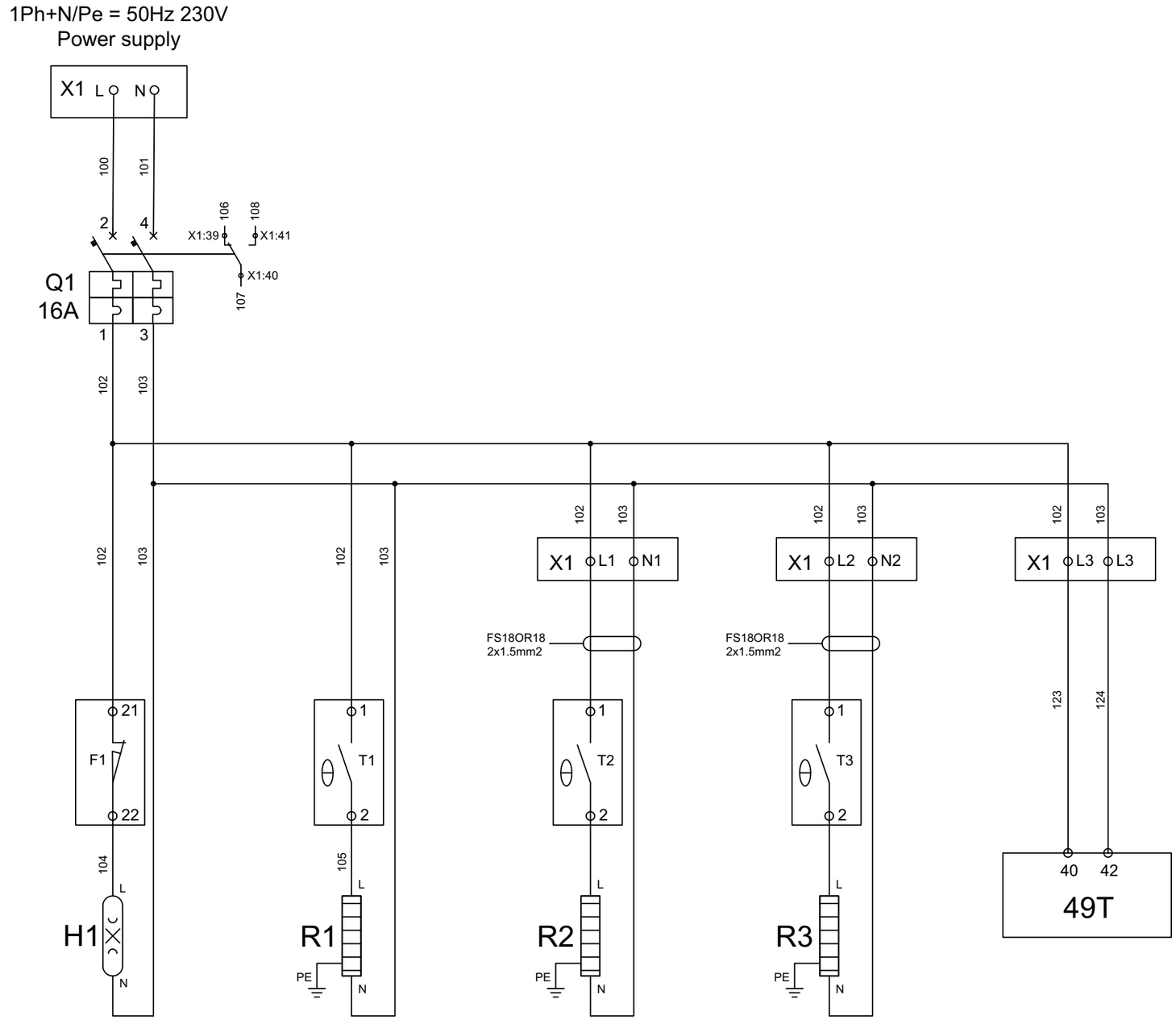
TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
LAYOUT – AUXILIARY CONTROL PANEL

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

A3 | DRAWING NO. 1723001697-EL-DG-00012 | SHEET 003 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00012 Rev. 02



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	09/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
01	27/03/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
00	16/02/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)

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CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
INTERNAL POWER CIRCUIT DIAGRAM

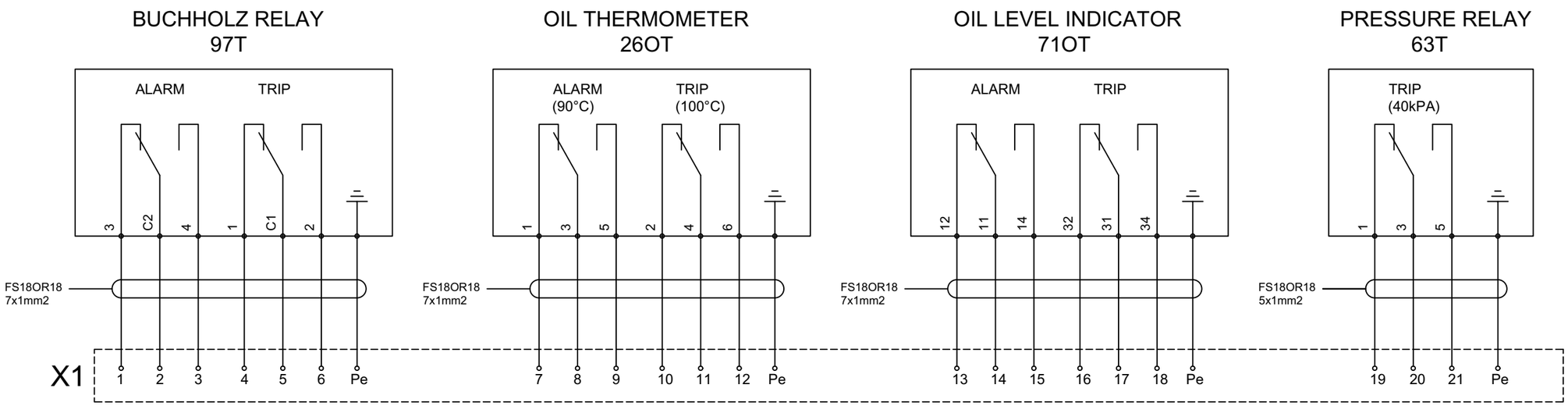
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

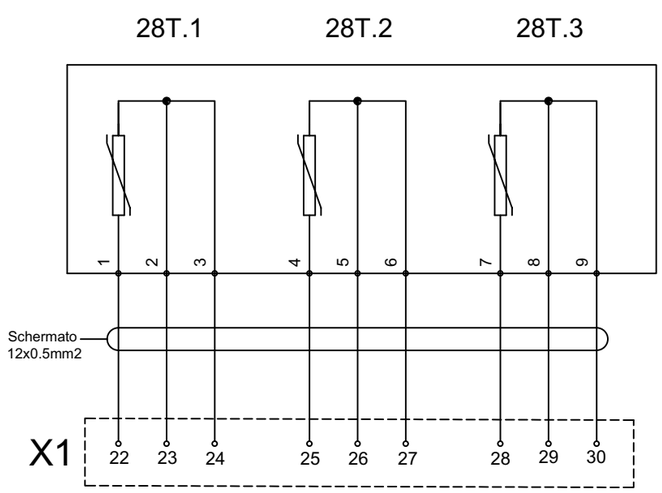
A3 | DRAWING NO. 1723001697-EL-DG-00012 | SHEET 004 | REV. 02

File Name : 1723001697-EL-DG-00012 Rev. 02

F.to UNI A3: 420mmx297mm

PROTECTION DEVICES ON TRANSFORMER





REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	09/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
01	27/03/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
00	16/02/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
PROTECTION DEVICES ON TRANSFORMER

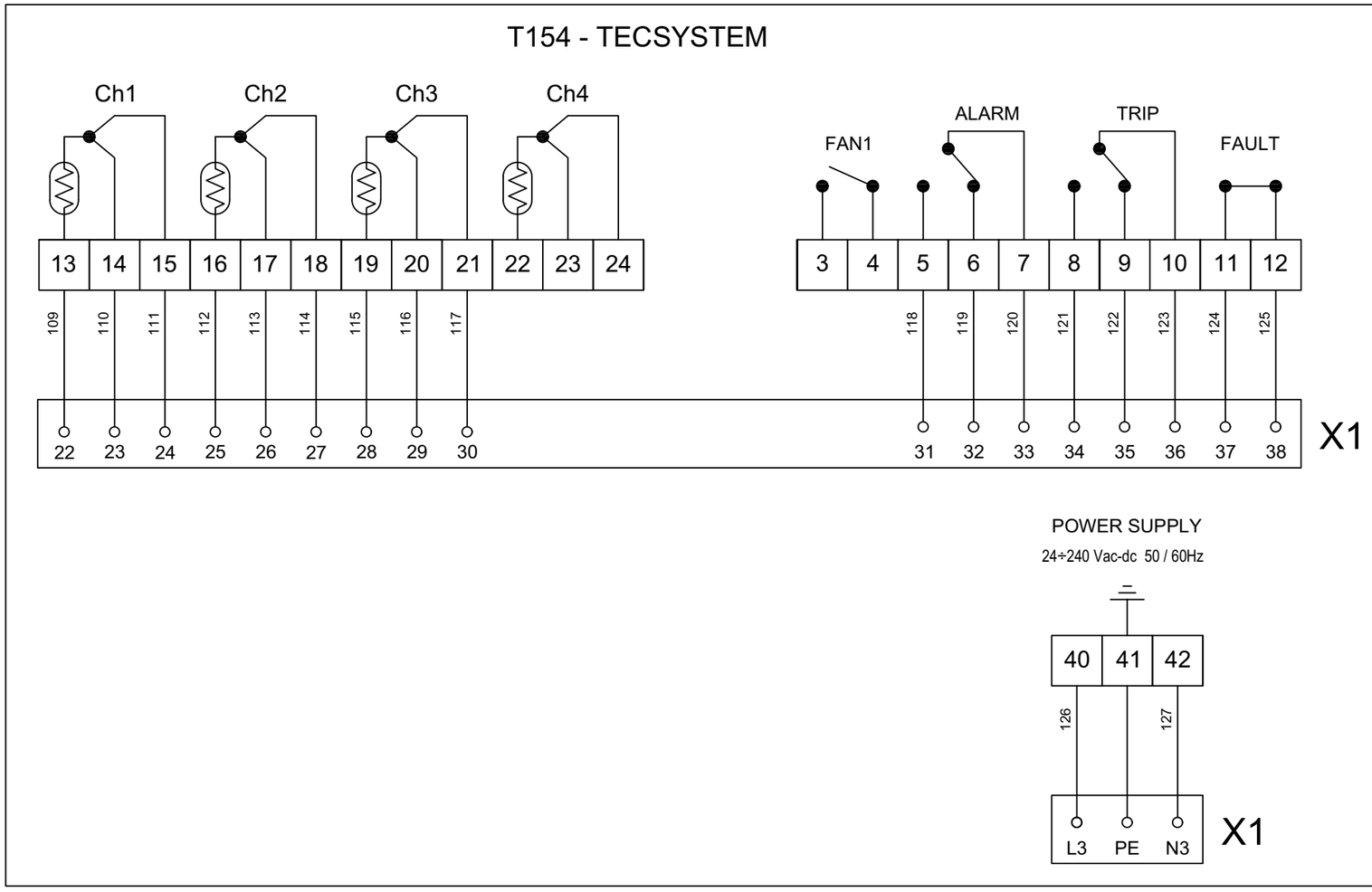
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1723001697-EL-DG-00012 | SHEET 005 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00012 Rev. 02

WINDING TEMPERATURE INDICATOR - 49T



SETTING:

- OIL WINDING: 95°C
- TRIP WINDING: 105°C

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	09/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
01	27/03/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
00	16/02/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
THERMAL CONTROL UNIT

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

SCALE : NTS

A3

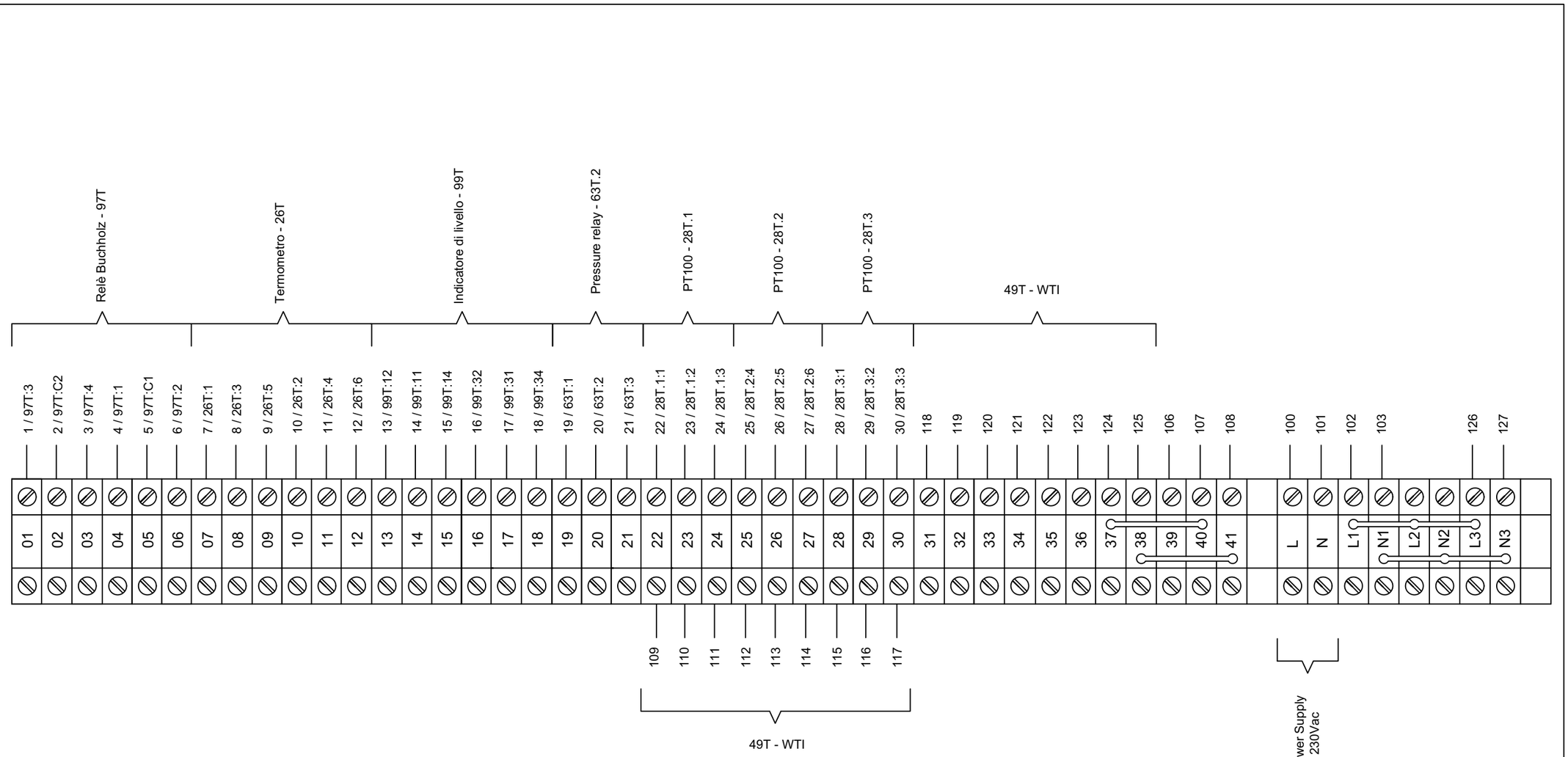
DRAWING NO. 1723001697-EL-DG-00012

SHEET 006

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00012 Rev. 02



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	09/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
01	27/03/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
00	16/02/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
TERMINAL STRIP

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

SCALE : NTS

A3

DRAWING NO. 1723001697-EL-DG-00012

SHEET 007

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00012 Rev. 02

Label	Description	Supplier	Model No.	Quantity	
Q1	MCB	ABB	S202 - C16 + S2C - H6R	1	
H1	CONTROL PANEL LAMP	ARTELETA	230V - 8W	1	
F1	MICROSWITCH	PIZZATO	FM 1815-S1	1	
R1	CONTROL PANEL HEATER - 15W	FANDIS	HWM015	1	
T1	CONTROL PANEL THERMOSTAT	FANDIS	TRT-10A230V-NCF	1	
R2	H.V. 6.6kV - CABLE BOX HEATER - 100W	FANDIS	HWM0100	1	
T2	H.V. 6.6kV - CABLE BOX HEATER THERMOSTAT	FANDIS	TRT-10A230V-NCF	1	
R3	L.V. 420V - CABLE BOX HEATER - 100W	FANDIS	HWM0100	1	
T3	L.V. 420V - CABLE BOX HEATER THERMOSTAT	FANDIS	TRT-10A230V-NCF	1	
49T	THERMAL CONTROL UNIT	TECSYSTEM	T154	1	
X1	TERMINAL STRIP	PHOENIX	ST2.5	46	

MF Trasformatori srl

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	09/05/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
01	27/03/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)
00	16/02/24	ML	MF	MF	ISSUE FOR INFORMATION (IFI)

TITLE : BASE LOAD POWER HUB (BLPH)
TR-200ED1 Termination and Wiring Diagram
EQUIPMENT LIST

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

SCALE : NTS

A3

DRAWING NO. 1723001697-EL-DG-00012

SHEET 008

REV. 02

F.to UNI A3: 420mmx297mm

File Name : 1723001697-EL-DG-00012 Rev. 02

Row		S-720D Data Sheet for Transformers				Issue
2	Tag No. :	*TR-200ED1*				01
3	Service :	*6.6/0.8 KV, 0.5MVA Power Transformer*				01
4	Ref. Clause	Description			Additional notes	
5		**1. General**				
6		Manufacturer :	MF Trasformatori srl			01
7		Vendor :	MF Trasformatori srl			01
8		Equipment identifier :	TR-200ED1			
9		Quantity :	1			
10	9,3	Type of liquid preservation system :	conservator with bladder or diaphragm type			01
11	4.1, 5.7.1, A.1.1 a) to x)	Service :	Distribution transformer			
12		Conformity assessment system :	D			
13		**2. Environmental conditions**				
14	5.5, A.1.1a) to x)	Altitude (if more than 1000m or 3280ft) :	not more than 1000 m	m		
15	4.2 a) to e), 4.2 f, A.1.1 a) to x)	Minimum ambient temperature :	-8,4	°C		
16	4.2 a) to e), 4.2 f , A.1.1 a) to x)	Maximum ambient temperature :	25	°C		
17	4.2 a) to e), A.1.1 a) to x)	Yearly average ambient temperature :	10,5	°C		
18	5.5, A.1.1 a) to x)	Design ambient temperature (if more than 40 °C or 104 °F) :	not more than 40°C	°C	Offshore (Netherlands)	
19	4.2 a) to e), 4.2 f, A.1.1 a) to x)	Relative humidity at maximum operating temperature (if more than 90 %) :	95	%		
20	4.2 f	Climatic conditions (K) for liquid immersed transformer :	4K26			
21	4.2 f	Special climatic conditions (Z) for liquid immersed transformer :	4Z1,4Z5,4Z14, 4Z15, 4Z17, 4Z10			
22	4.2 f	Biological conditions (B) for liquid immersed transformer :	4B2			
23	4.2 f	Chemically active substances (C) for liquid immersed transformer :	4CX			
24	4.2 f	Mechanically active substances (S) for liquid immersed transformer :	4S11			
25	4.2 f	Mechanical conditions (M) for liquid immersed transformer :	4M11			
26	9.6.18.1, 9.6.18.3	Corrosion class :	CX			
27	A.1.1 a) to x)	Seismic zone as per IEC 60721-2-6, figure 5 :	zone 2			
28	4.2 f , 4.2 i, 5.7.4.2, A.1.1 a) to x)	Location :	offshore fixed			
29	A.1.1 a) to x)	Unusual service conditions :	No			
30	5.7.3, 5.7.3	Sound power level :	50	dB(A)		01
31		**3. Hazardous area classification**				
32	4.2 g, A.1.1 a) to x)	Hazardous area classification zone :	non hazardous			
33	4.2 g, A.1.1 a) to x)	Hazardous area classification gas group :	N/A			
34	4.2 g, A.1.1 a) to x)	Hazardous area classification temperature class :	N/A			
35		**4. Technical data**				
36		**4.1 Electrical system data**				
37	5.4.1, A.1.1 a) to x)	Rated voltage (HV) :	6,6	kV		
38	5.4.1	Rated voltage (LV) :	0,8	kV		
39	5.4.1	Rated voltage (tertiary) :	N/A	kV		
40	5.4.2, A.1.1 a) to x)	Rated frequency :	50	Hz		
41	A.1.1 a) to x), A.1.2 a) to t)	System short circuit apparent power :	26,67	MVA		
42	6.4.3.e	Minimum full load power factor :	0,8			
43	A.1.1 a) to x), A.1.2 a) to t)	Supply voltage harmonic content :	5	%		
44		**4.2 Transformer/reactor data**				
45		**4.2.1 General**				
46		**Power frequency withstand voltage**				
47	A.1.1 a) to x)	Power frequency withstand voltage - HV winding :	20	kV		
48	A.1.1 a) to x)	Power frequency withstand voltage - LV winding :	3	kV		
49	A.1.1 a) to x)	Power frequency withstand voltage - tertiary winding :	N/A	kV		
50	A.1.1 a) to x)	Power frequency withstand voltage - neutral terminal :	3	kV		01
51		**Lightning impulse withstand voltage**				
52	A.1.1 a) to x)	Lightning impulse withstand voltage - HV winding :	60	kV		
53	A.1.1 a) to x)	Lightning impulse withstand voltage - LV winding :	N/A	kV		
54	A.1.1 a) to x)	Lightning impulse withstand voltage - tertiary winding :	N/A	kV		
55	A.1.1 a) to x)	Lightning impulse withstand voltage - neutral terminal :	N/A	kV		
56	5.7.2, 7.1.1 , A.1.1 a) to x)	Number of phases :	3			
57	6.4.3.a, A.1.1 a) to x)	Direction of power flow :	step-down			
58	7.1.5, 5.7.2, 7.1.1, A.1.1 a) to x)	Connection and phase displacement symbol (vector group) :	Dyn11			
59	A.1.1 a) to x), A.1.2 a) to t), B.4	Percentage impedance on air natural rating at principal tap :	6	%		
60	5.7.2	High limit for zero sequence impedance :	N/A	ohms/ph		01
61	5.7.2	Low limit for zero sequence impedance :	N/A	Ohms/ph		01
62	5.1.1, A.1.1 a) to x)	Rated power in air natural mode (HV) :	500	kVA		
63	5.1.1, A.1.1 a) to x)	Rated power in air natural mode (LV) :	500	kVA		
64	5.1.1, A.1.1 a) to x)	Rated power in air natural mode (tertiary) :	N/A	kVA		
65	5.1.1, 5.1.3, A.1.1 a) to x)	Rated power in forced cooling mode (HV) :	N/A	kVA		
66	5.1.1, 5.1.3, A.1.1 a) to x)	Rated power in forced cooling mode (LV) :	N/A	kVA		
67	5.1.1, 5.1.3, A.1.1 a) to x)	Rated power in forced cooling mode (tertiary) :	N/A	kVA		

Row		S-720D Data Sheet for Transformers				Issue
2	Tag No. :	*TR-200ED1*				01
3	Service :	*6.6/0.8 KV, 0.5MVA Power Transformer*				01
68	5.4.3	Variation in V/Hz ratio from no load to rated load when exceeding 105 % :	Not more than 105	%		
69	A.1.1 a) to x), A.1.2 a) to t), A.2 a) to f)	Parallel operation :	No			
70	5.1.1	Requirement of 1.8 times overloading for transformer feeding a group of motors :	No			
71	5.8, A.1.1 a) to x)	Insulating liquid :	synthetic organic liquid		MIDEL 7131	01
72	A.1.1 a) to x), A.1.2 a) to t), Table 1	Tolerance on total losses when not in accordance with IEC 60076-1 :	N/A	%		
73	6.5, A.1.1 a) to x), A.1.2 a) to t), Table 1	Tolerance on impedance value when not in accordance with IEC 60076-1 :	N/A	%		
74		**4.2.2 Neutral terminal**				
75	9,4	Level of DC current in neutral :	<5	%		
76	A.1.1 a) to x)	Transformer neutral earthing for HV winding :	N/A			
77	A.1.1 a) to x)	Transformer neutral earthing for LV winding :	solid			
78	A.1.1 a) to x)	Transformer neutral earthing for tertiary winding :	N/A			
79	9,2	Sizing of the low voltage neutral terminal :	100	%		
80		**4.2.3 Winding**				
81	A.1.1 a) to x)	Winding conductor material :	copper			
82	5.7.2	Requirement of delta connected stabilizing winding :	No			
83	5.7.2	Method of earthing of delta connected stabilizing winding :	N/A			
84	A.1.1 a) to x)	Winding class of insulation :	A			01
85	A.1.1 a) to x)	Non-uniform (graded) insulation :	No			01
86	A.1.1 a) to x)	High temperature insulation :	No			01
87	A.1.2 a) to t)	Thermally upgraded paper :	No			01
88		**4.2.4 Termination**				
89	A.1.1 a) to x), A.1.2 a) to t)	Main external termination details (HV) :	cable box			
90	A.1.1 a) to x), A.1.2 a) to t)	Main external termination details (LV) :	cable box			
91	A.1.1 a) to x), A.1.2 a) to t)	Main external termination details (tertiary) :	N/A			
92	A.1.1 a) to x), A.1.2 a) to t)	Main external termination details (neutral) :	cable box			
93	A.1.1 a) to x), A.1.2 a) to t)	Cable box type :	air insulated			
94	A.1.1 a) to x)	Main cable box design :	supplier standard			
95	A.1.1 a) to x)	Cable type :	insulated			
96	A.1.1 a) to x)	Number of cables (HV) :	3			01
97	A.1.1 a) to x)	Number of cables (LV) :	3			01
98	A.1.1 a) to x)	Number of cables (tertiary) :	N/A			
99	9.6.11.1.4, A.1.1 a) to x)	Cable conductor size (HV) :	70	mm²		01
100	9.6.11.1.4	Cable conductor size (LV) :	300	mm²		01
101	9.6.11.1.4	Cable conductor size (tertiary) :	N/A	Select		
102	9.6.11.1.4, A.1.1 a) to x)	Number of cores per cable (HV) :	1			01
103	9.6.11.1.4	Number of cores per cable (LV) :	1			01
104	9.6.11.1.4	Number of cores per cable (tertiary) :	N/A			
105	9.6.11.1.4, A.1.1 a) to x)	Number of cables per phase (HV) :	1			01
106	9.6.11.1.4	Number of cables per phase (LV) :	1			01
107	9.6.11.1.4	Number of cables per phase (tertiary) :	N/A			
108	5.6, A.1.1 a) to x)	Separate neutral terminal box :	No			01
109	9.6.9.5, A.1.1 a) to x)	Canopy required for cable box :	No			
110	9.6.9.9.7	Breather with dessicant or drain for main cable boxes :	No			01
111	A.1.1 a) to x)	Busduct type :	N/A			
112	A.1.1(a to x)	**Bushings**				
113	A.1.1 a) to x)	Type of bushings (HV) :	Porcelain			01
114	A.1.1 a) to x)	Type of bushings (LV) :	Porcelain			01
115	A.1.1 a) to x)	Type of bushings (tertiary) :	N/A			
116	A.1.1 a) to x)	Type of bushings (neutral) :	Porcelain			01
117		**4.2.5 Tap changer**				
118	6.1, A.1.1 a) to x)	Tap changer required and type :	DETC			
119	6.4.2.a, 6.4.3.c	Voltage variation required on: :	HV			
120	A.1.1 a) to x)	Type of de-energized tap changer (DETC) :	Hand operated			
121	9.6.17.2.2	Tap changer switching medium :	liquid			
122	6.2.a, 6.2.b, 6.2.c	Category of voltage variation :	CFVV			
123	6.4.1, 6.4.2.b, 6.4.3.b, 6.4.3.c, A.1.1 a) to x), B.4	Tapping range :	±2x2,5	%		01
124	6.4.1, 6.4.2.b, 6.4.3.b, 6.4.3.c, A.1.1 a) to x)	Number of tapping positions :	5 steps			
125	6.4.3.b	Principal tapping position :	symmetrical			
126	6,3	Maximum current tapping position :	46	A		01
127	9.6.17.3.4	Remote tap-changer cabinet for OLTC :	No			01
128		**4.2.6 Cooling**				
129	5.2, 5.1.3, A.1.1 a) to x)	Type of cooling :	KNAN			
130	5.1.3, 9.3, A.1.2 a) to t)	Temperature rise of insulating liquid when not in accordance with IEC 60076-2 :	N/A			
131	5.1.3, A.1.2 a) to t)	Temperature rise of winding when not in accordance with IEC 60076-2 or IEC 60076-11 :	N/A			
132	4.2 a) to e)	Cooling water inlet temperature when not in accordance with IEC 60076-2 and IEC 60076-11 :	N/A			
133	5,2	Provision for mounting of cooling fans :	N/A			

Row		S-720D Data Sheet for Transformers				Issue
2	Tag No. :	*TR-200ED1*				01
3	Service :	*6.6/0.8 KV, 0.5MVA Power Transformer*				01
134	A.1.1 a) to x)	AF fan motor cabinet :	N/A			
135		**4.2.7 Miscellaneous requirements**				
136		**a. Construction**				
137	A.1.1 a) to x)	Type of cover for liquid immersed transformer and reactor :	bolted			01
138	A.1.1 a) to x)	Surface finish of tank and radiators :	zinc coated			01
139	9.6.18.1	Painting class required :	VH			
140	A.1.1 a) to x)	Paint shade :	Suplier Standard			
141		**b. Interface**				
142	A.1.1 a) to x)	Auxiliary supply voltage details for cooling fans :	N/A	V		
143	A.1.1 a) to x)	Auxiliary supply voltage details for RTCC :	N/A	V		
144	8.3 d) to k)	Requirement of current transformer in neutral terminal box :	No			01
145	A.1.1 a) to x)	Current transformer ratio :	N/A	A		01
146	A.1.1 a) to x)	Current transformer accuracy class :	N/A			01
147	A.1.1 a) to x)	Current transformer burden :	N/A	VA		01
148		**c. Transport**				
149	5.7.4.1, A.1.2 a) to t)	Limiting transportation dimensions (height) :	2460 ±20	mm		01
150	5.7.4.1, A.1.2 a) to t)	Limiting transportation dimensions (width) :	1495 ±20	mm		01
151	5.7.4.1, A.1.2 a) to t)	Limiting transportation dimensions (depth) :	2086 ±20	mm		01
152	5.7.4.1, A.1.2 a) to t)	Limiting transportation weight :	3340	kg		01
153	A.1.1(a to x)	Impact recorder requirement during transportation :	No			
154	5.7.4.2	Acceleration in excess of 1 g during transportation :	Yes			01
155		**4.3 Reactor specific requirements**				
156	A.1.1 a) to x)	Application :	N/A			
157	A.1.1 a) to x)	Rated current :	N/A	A		
158	A.1.1 a) to x)	Rated short circuit current :	N/A	A		
159	A.1.1 a) to x)	Time to withstand rated short circuit current :	N/A	s		
160	6.5, A.1.1 a) to x)	Impedance at rated voltage and current :	N/A	Ohms		
161		**5. Accessories**				
162	9.1.2, A.1.1 a) to x)	Lifting lugs :	Yes			
163	9.3, A.1.1 a) to x)	Silica gel breather for main tank :	Yes			01
164	A.1.1 a) to x)	Type of silica gel breather :	Manual			01
165	A.1.1 a) to x), Annex F, Table F.1	Liquid level indicator :	Yes			
166	A.1.1 a) to x), Annex F, Table F.1	Magnetic liquid level gauge with alarm and trip contacts :	Yes			
167	9.6.3.4, 9.6.3.5, A.1.1 a) to x), Annex F, Table F.1	Buchholz relay with alarm and trip contacts :	Yes			01
168	9.6.1.1, A.1.1 a) to x), Annex F	Pressure Relief Device (PRD) for transformer/reactor tank :	No			01
169	9.6.1.1	Pressure relief device for OLTC :	No			01
170	9.6.10.3.2	Pressure relief device for liquid filled cable box :	N/A			
171	9.6.1.3	Facility for directing emissions of liquid from the relief device in the direction specified :	No			01
172	A.1.1 a) to x)	Sudden pressure relay :	Yes			
173	A.1.1 a) to x), Annex F, Table F.1	Liquid temperature Indicator with alarm and trip contacts :	Yes			
174	A.1.1 a) to x), Annex F, Table F.2	Winding temperature indicator with alarm and trip contacts :	Yes			
175	A.1.1 a) to x), Annex F, Table F.3	Winding temperature measurement type :	PT100 RTD			
176	A.1.1 a) to x)	Cooling fans :	N/A			
177	A.1.1 a) to x)	Redundancy of cooling fans :	N/A			
178	A.1.1 a) to x), Annex F, Table F.1	Control panel for fan starters (for AF type transformer) :	N/A			
179	A.1.1 a) to x), Annex F, Table F.2	Marshalling box :	Yes			
180	A.1.1 a) to x)	HV cable box :	Yes			
181	A.1.1 a) to x)	LV cable box :	Yes			
182	A.1.1 a) to x)	Tertiary cable box :	N/A			
184	9.6.13, A.1.1 a) to x)	Surge arrester requirement :	No			
185	9.6.13	Surge arrester class :	N/A			
186	Annex F	Requirement of online dissolved gas analysis (DGA) :	No			
187	Annex F	Requirement of fiber optic temperature sensing :	No			
188	Annex F	Number of channels of fiber optic temperature sensor :	No			
189	9.6.6.2	Core earthing terminals at accessible location. :	Yes			
190	9.6.6.3, A.1.1 a) to x)	Earthing cable lug size :	Suitable for 35mm² earthing cable	mm		01
193	9,3	Alarm contact for diaphragm failure for transformer with diaphragm in conservator :	No			01
194	A.1.1 a) to x)	Bi-directional rollers :	Yes			
195	4.2 f	Anti-condensation heater for cable box :	Yes			
196	9.6.17.3.5	Anti-condensation heater for remote tap-changer cabinet :	No			01
197	9.1.2. Note	Requirement of ladder :	No			01
198		**6. Design data from vendor**				
199		**6.1 Electrical parameters**				
200	A.1.1 a) to x), A.1.2 a) to t)	No-load loss at rated voltage and principal tap :	0,459	kW		01
201	A.1.1 a) to x), A.1.2 a) to t)	Load loss at rated voltage and principal tap :	3,9	kW		01

Row						Issue
2	Tag No. :	*TR-200ED1*				01
3	Service :	*6.6/0.8 KV, 0.5MVA Power Transformer*				01
202	A.1.1 a) to x)	Percentage regulation at unity power factor :	0,96	%		01
203	A.1.1 a) to x)	Percentage regulation at 0.8 lagging power factor :	4,286	%		01
204	5.1.1, A.1.1 a) to x)	Efficiency at unity power factor, 50 % load :	99,43	%		01
205	5.1.1, A.1.1 a) to x)	Efficiency at unity power factor, 100 % load :	99,14	%		01
206	5.1.1, 6.4.3.e, A.1.1 a) to x)	Efficiency at 0.8 lagging power factor, 50 % load :	99,29	%		01
207	5.1.1, 6.4.3.e, A.1.1 a) to x)	Efficiency at 0.8 lagging power factor, 100 % load :	98,92	%		01
208	6.5, 6.5, 6.5 , A.1.1 a) to x), B.4	Percentage impedance on AN rating at principal tap :	6	%		01
209	5.7.2 , A.1.1 a) to x)	Zero sequence impedance :	0,074	Ohms/ph		01
210		**6.2 Construction**				
211	A.1.1 a) to x)	Winding conductor material :	copper			01
212		**Winding type**				
213	A.1.1 a) to x)	HV :	Non-foil			01
214	A.1.1 a) to x)	LV :	foil			01
215	A.1.1 a) to x)	Tertiary :	Select			01
216	A.1.1 a) to x)	Weight of core and windings :	1750	kg		01
217	A.1.1 a) to x), A.1.2 a) to t)	Total weight with insulating liquid :	3340	kg		01
218	A.1.1 a) to x)	Weight of insulating liquid :	540	kg		01
219	5.8, A.1.1 a) to x)	Insulating liquid :	synthetic organic liquid			01
220	A.1.1 a) to x)	On-load tap changer make :	N/A			01
221	A.1.1 a) to x)	On-load tap changer power required :	N/A	kW		01
222	A.1.1 a) to x), A.1.2 a) to t)	Transformer overall assembled length :	2460 ±20	mm		01
223	A.1.1 a) to x), A.1.2 a) to t)	Transformer overall assembled width :	1495 ±20	mm		01
224	A.1.1 a) to x), A.1.2 a) to t)	Transformer overall assembled height :	2086 ±20	mm		01
225	A.1.1 a) to x)	Dimension details for remote tap changer cabinet length :	N/A	mm		01
226	A.1.1 a) to x)	Dimension details for remote tap changer cabinet width :	N/A	mm		01
227	A.1.1 a) to x)	Dimension details for remote tap changer cabinet height :	N/A	mm		01
228	A.1.1 a) to x), A.1.2 a) to t)	Transportation weight :	3340	kg		01
229	5.7.3, A.1.1 a) to x), A.1.2 a) to t)	Sound power level :	50	dB(A)		01
230	5.8, A.1.1 a) to x), A.1.2 a) to t)	Use of environmentally harmful materials :	No			01
231	4.2.f	Seismic zone certification :	No			01
232		**7. Testing requirements**				
233	11.1.3.a	Temperature rise test :	Yes			
234	6.6.b	Temperature rise test at tapping other than the maximum current tapping :	No			
235	11.1.3.d	Power consumption of fans and liquid pump motors :	N/A			
236	11.1.3.b, A.1.2 a) to t)	Dielectric type tests :	Yes			
237	11.1.3.c	Sound level test :	Yes			
238	11.1.3.e	Measurement of no-load loss and current at 90 % and 110 % of rated voltage :	Yes			
239	11.1.4.a, A.1.2 a) to t)	Dielectric special tests :	No			
240	11.1.4.b, A.1.2 a) to t)	Winding hot-spot temperature-rise measurements :	No			
241	11.1.4.c, A.1.2 a) to t)	Determination of capacitances windings-to-earth and between windings :	Yes			01
242	11.1.4.e, A.1.2 a) to t)	Determination of transient voltage transfer characteristics :	Yes			
243	11.1.4.f, A.1.2 a) to t)	Measurement of zero-sequence impedance :	Yes			
244	11.1.4.g, A.1.2 a) to t)	Short-circuit withstand test :	Yes			
245	11.1.4.i, A.1.2 a) to t)	Vacuum deflection test :	No			
246	11.1.4.j, A.1.2 a) to t)	Pressure deflection test :	No			
247	11.1.4	Pressure deflection test for OLTC tank :	No			
248	11.1.4.k, A.1.2 a) to t)	Vacuum tightness test :	No			
249	11.1.4	Vacuum tightness test for OLTC tank :	No			
250	11.1.4.l, A.1.2 a) to t)	Measurement of frequency response :	No			
251	11.1.4.m, A.1.2 a) to t)	Check of external coating :	Yes			
252	A.1.2 a) to t)	Measurement of dissolved gasses before and after dielectric tests :	Yes			
253	11.1.4.o, A.1.2 a) to t)	Mechanical test :	Yes			
254	11.1.4	Simulated transformer/motor on load start test for unit transformer :	N/A			
255	11.1.4	Routine test for Ex 'P' type transformer in accordance with IEC 60079-13 :	N/A			
256	11.1.4	Routine tests for Ex 'O' type transformer in accordance with IEC 60079-6 :	N/A			

MF Trasformatori srl

CERTIFICATE N° 0724089

DATE 25/07/2024

CHECK CONTROL TRANSFORMER

Integred diagnostic method for the control of electric devices

KIT N° 1 SERIAL NUMBER 181023/2 CUSTOMER N° 523/23 SITE ---

DESCRIPTION	TYPE INSTRUMENT	MANUFACTURER	POWER (KVA)	VOLTAGE V1/V2	COMMUTATOR X NO-LOAD ☐ UNDER CHARGE	HEAT SINKING FLUID	INSTALLATION	MANUF. YEAR	SILICA GEL
STANDARD FEATURES OF THE EQUIPMENT	TRANSFORMER	MF	1600	6600 / 420	MAIN TANK	KNAN	---	2024	YES ☐ NO ☐

SPECIFICATIONS OF THE ANALYSED FLUID	OIL TYPE	OIL WEIGHT (kg)	NOME OF PRODUCER	COMMERCIAL CODE OR NAME
	SYNTHETIC OIL	750		MIDEL 7131

DRAWING DATA	SAMPLER'S NAME	DATA SAMPLING	DATA OF RICEIPT	OIL T deg C	AMB. T deg C	DRAWING POSITION	OIL LEVEL	LEAKS OIL	COLOUR OF SILICAGEL
	MF TRASFORMATORI	23/07/2024	23/07/2024	--	---	BUCHHOLZ		☐ YES X NO	☐ BLUE ☐ ROSE

PARTICULAR MAINTENANCE DONE ON THE TRANSFORMER	DATE	DESCRIPTION

PURCHASER ROSETTI MARINO SPA

L. PIGNATELLI ON BEHALF OF CROSS WIND

☑ WITNESS ☐ INFORMATION

☐ REVIEW ☐ SPOT WITNESS

DATE 25/7/2024

Witnessed X Reviewed ☐

Lastene Bevoni

on behalf of RMG

Date 25-07-2024

IT IS FORBIDDEN TO REPRODUCE EVEN IN PARTIALLY THIS CERTIFICATE WITHOUT AUTHORIZATION OF MF TRASFORMATORI SRL

MF TRASFORMATORI: Sede Amm.:Via S.Anna 25011 Calcinato(BS) PIVA 03550350171 Capitale Sociale € 3'000'000 Tel. 030/9980253 030/9636020 Fax. 030/9980218

MF Trasformatori srl

CERTIFICATE N° 0724089

DATE 25/07/2024

Results of analysed parameters

KIT N° 1 MANUFACTURING N° 181023/2 CUSTOMER N° 523/23 SITE --- POWER (KVA) 1600

ANALYSIS DATE	MEASURE UNIT	23/07/2024				VALORE DI SOGLIA EN 61203	VALORE OLIO EN 61099	NORMA DI RIFERMENTO
ANALYTIC PARAMETERS		ANALYST BEDUSCHI S.	ANALYST	ANALYST	ANALYST			
		VALUE	VALUE	VALUE	VALUE			
CARBON MONOXIDE CO	µl/l	47				300	80	NORME ANSI CEI 10 - 10 EN 60599 CEI 10 - 28
HYDROGEN H2	µl/l	<2				100	15	
METHANE CH4	µl/l	<2				120	5	
ETHYLENE C2H4	µl/l	<2				50	2	
ETHANE C2H6	µl/l	<2				65	5	
ACETHYLENE C2H2	µl/l	<2				35	1	
BURNING GAS	µl/l	47				720	108	
C2H2/C2H4	-----	/				/	/	
CH4/H2	-----	/				/	/	
C2H4/C2H6	-----	/				/	/	
I.E.C. CODES	-----	0 0 0				/	/	
OXYGEN O2	µl/l	2540				17500	3000	CEI 10 - 10 EN 60599 CEI 10 - 28 MF
NYTROGEN N2	µl/l	6041				72500	10000	
CARBON DIOXIDE CO2	µl/l	204				2500	250	
CO2/CO	µl/l	4,34				/	/	
TOTAL GASES	µl/l	8832				93000	/	
BREAKDOWN-VOLTAGE	KV	79,3				> 30	> 50	CEI 61203 / CEI 61099
ASPECT	-----	CLEAR				LIMPIDO	LIMPIDO	
COLOUR	-----	100				< 200	< 200	

NOTE: the sampling will be stocked for one month in our laboratory

MF TRASFORMATORI: Sede Amm.:Via S.Anna 25011 Calcinato(BS) PIVA 03550350171 Capitale Sociale € 3'000'000 Tel. 030/9980253 030/9636020 Fax. 030/9980218

L. PIGNATELLI ON BEHALF OF CROSSWIND

☒ WITNESS ☐ INFORMATION

☐ REVIEW ☐ SPOT WITNESS

DATE 25/7/2024

Witnessed ☒ Reviewed ☐

Lastene Bevoni

on behalf of RMG

Date 25-07-2024

MF Trasformatori srl

CERTIFICATE N° 0724089

DATE 25/07/2024

KIT N° 1 SERIAL N° 181023/2 CUSTOMER N° 523/23 SITE --- POWER (KVA) 1600

Main trend parameters















L. PIGNATELLI ON BEHALF OF CROSSKINS

☑ WITNESS ☐ INFORMATION

☐ REVIEW ☐ SPOT WITNESS

DATE 25/7/2024

Witnessed ☒ Reviewed ☐
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

Diagnosis and degradation of the transformer

General insulation conditions	NORMAL
Fluid conditions	NORMAL
Active part conditions	NORMAL
Solid insulation condition	NORMAL
Important increments of the analysed parameters	///////

Advised operation

Next diagnostic control	AFTER 12 MONTHS
Other diagnostic proves	///
Fuid operations	///
General operation	///
Note	////

ORDINE DEGLI INGEGNERI DELLA PROVINCIA DI BRESCIA
A 6659
Ingegnere
MARCO FESTA
Industriale

CERTIFICATION RELEASED BY MFS LABORATORY.

MF Trasformatori srl
Sede Amm. e Stabilimento: Tel. 030/9636020-028-596
Loc. S.Anna, 22 / 24 FAX 030/9980218
25011 Calcinato (BS) - Italy Partita Iva 03550350171
info@mftrasformatori.it Codice Fiscale 01547220176

Member of CISQ Federation
RINA CERTIFIED MANAGEMENT SYSTEM ISO 9001 - ISO 14001
THE GLOBAL COMPACT WE SUPPORT

ROSETTI MARINO SPA

TEST REPORT No. 181023/2

Customer : ROSETTI MARINO SPA **Serial No.:** 181023/2

MF Job No. 523/23 **Project No. :** 1600ToECO6,6/0.42 - TR-200DE1

CE **REFERENCE STANDARDS :**
EU/548/2014
ECO - TRANSFORMER

Reference Standards: UE/548/2014 & CEI EN 60076 - 1

DATE: 10/11 REVISION: 1

RATING PLATE DATA

Power (kVA) :	1600			Type :	OIL
Primary Voltage (kV) :	6,6 ±2×2,5%			Connection Group :	Dyn11
Primary Current (A):	140,0			Short-circuit Voltage (%) :	6
Primary Insul. Class (kV) :	AC 20	BIL	60	Thermal Insulation Class :	A / A
Secondary Voltage (V) :	420			Temperature Rise (K) :	60/65
Secondary Current (A) :	2199			Transformer Weight (Kg)	5050
Secondary Insul. Class : (kV) :	AC 3	BIL	0	Oil Weight (Kg) :	750
Frequency (Hz) :	50				

TRANSFORMER RATIO MEASUREMENT AND CHECK OF POLARITY AND CONNECTIONS

Tap-Changer Pos.		Primary Voltage	Secondary Voltage	U-Phase	V-Phase	W-Phase	Nominal Ratio
+ +	1	6930	420	28,549	28,550	28,549	28,58
+	2	6765	420	27,882	27,882	27,881	27,90
0	3	6600	420	27,215	27,215	27,216	27,22
-	4	6435	420	26,546	26,547	26,546	26,54
- -	5	6270	420	25,877	25,878	25,877	25,86

The polarity and connection check have been carried out during the transformer ratio measurement.
Measured Connection: *Dyn11*

WINDING RESISTANCE MEASUREMENT

MV	R-1U1V	0,1628	Ohm
	R-1V1W	0,1631	Ohm
	R-1W1U	0,1648	Ohm

Measured at ambient temperature : 32,8 ° C

LV	R-2U2V	0,5712	mOhm
	R-2V2W	0,5664	mOhm
	R-2W2U	0,5805	mOhm

CHECK OF AUXILIARIES

Testing	Grounded Winding
auxiliary	Grounded

Test Voltage (V)	Test Frequency	Test Duration
2500	50 Hz	60 Seconds

During the test no voltage failure occurred.

Result : POSITIVE

Name and signature of authorized person:	Date	Witnessed by :
SANDRINI MATTIA	25/07/24	----------

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Partita IVA IT 03550350171

L. PIGNATELLI ON BEHALF OF CROSSWIND

☑ WITNESS ☐ INFORMATION
☐ REVIEW ☐ SPOT WITNESS
DATE 25/7/2024

Witnessed ☒ Reviewed ☐
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

MF Trasformatori srl
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THE GLOBAL COMPACT WE SUPPORT

Reference Standards: UE/548/2014 & CEI EN 60076 - 1

DATE: 10/11 REVISION: 1

TEST REPORT No. 181023/2

INSULATION TEST WITH APPLIED VOLTAGE

Testing Winding	Grounded Winding	Tap-Changer Position	Test Voltage (V)	Test Frequency	Test Duration
MV	LV	3	20000	50 Hz	60 Seconds

During the test no voltage failure occurred.

Result : POSITIVE

Testing Winding	Grounded Winding	Tap-Changer Position	Test Voltage (V)	Test Frequency	Test Duration
LV	MV	3	3000	50 Hz	60 Seconds

During the test no voltage failure occurred.

Result : POSITIVE

INSULATION TEST WITH INDUCED VOLTAGE

Fed Winding	Tap-Changer Position	Test Voltage (V)	Test Frequency	Test Duration
LV	3	840	100 Hz	60 Seconds

During the test no voltage failure occurred.

Result : POSITIVE

MEASUREMENT OF NO-LOAD LOSSES AND NO-LOAD CURRENT

Vm Phase Volt	Vm Line Volt	I U-Phase Ampere	I V-Phase Ampere	I W-Phase Ampere	Im Ampere	Losses Watt	Test Frequency	Io %
242,58	420	3,472	2,546	3,314	3,11	1061	50 Hz	0,14

Fed Winding
LV

Test Temperature	
32,8	°C

Measured No-Load Losses (W) : 1061 Contract No-Load Losses (W) : 1080 Tolerance : + 0%

MEASUREMENT OF SHORT-CIRCUIT VOLTAGE, SHORT-CIRCUIT IMPEDANCE AND LOAD-LOSSES

AmbT : 32,ℓ °C

Vm Phase Volt	Vm Line Volt	I U-Phase Ampere	I V-Phase Ampere	I W-Phase Ampere	Im Ampere	Losses Watt	Test Frequency	Fed Winding	Winding in S/C	Reference Power	
179,48	311	111,73	110,04	110,95	110,91	6355	50 Hz	MV	LV	1600	kVA

Detected Load-Losses at 75 °C (W) : 11376 Contract Load-Losses (W) : 12000 Tolerance : + 0%

Detected Short-circuit Voltage at 75 °C (%) : 5,95 Contract Short-circuit Voltage (%) : 6 Tolerance : ± 10 %

Measured Total Losses (W) : 12437 Contract Total Losses (W) : 13080 Tolerance : + 0%

TIGHTNESS TEST / OIL LEAKAGE TEST

An adequate pressure of 30kPa was applied and maintained for 8 hours. This pressure was applied using a column of liquid (oil).

Result of check : POSITIVE

Name and signature of authorized person:	Date	Witnessed by :
SANDRINI MATTIA	25/07/24	----------

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L. PIGNATELLI ON BEHALF OF CROSSWIND

☑ WITNESS ☐ INFORMATION
☐ REVIEW ☐ SPOT WITNESS

DATE 25/7/2024

Witnessed ☒ Reviewed ☐
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

MF Trasformatori srl
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THE GLOBAL COMPACT WE SUPPORT

Reference Standards: UE/548/2014 & CEI EN 60076 - 1

DATE: 10/11 REVISION: 1

TEST REPORT No. 181023/2

MEASUREMENT OF INSULATION RESISTANCE ----- MV - (LV + G) ------

5 kV - 1 minute : 2,03 GΩ

MEASUREMENT OF INSULATION RESISTANCE ----- LV - (MV + G) ------

1 kV - 1 minute : 2,64 GΩ

TIGHTNESS TEST

Result of check : POSITIVE

MEASUREMENT OF CAPACITANCE AND DISSIPATION FACTOR ----- MV - (LV+ G) ------

C : 7,754 nF @ 12 kV Dissipation Factor : 0,298% @ 12 kV

MEASUREMENT OF CAPACITANCE AND DISSIPATION FACTOR ----- LV - (MV+ G) ------

C : 11,92 nF @ 1 kV Dissipation Factor : 0,342% @ 1 kV

MEASUREMENT OF ZERO-SEQUENCE IMPEDANCE

V :1,4192 I1 : 160,58 I2 : 161,02 Im : 160,8 Z (V/Im) . 0,0088 Z (ZX3) : 0,02648 Ω/PHASE
26,47761 mΩ/PHASE

ENCLOSURE PAINTING CHECK

Enclosure painting : RAL 7031 CHECK POSITIVE

FUNCTIONAL TEST ON ALL ACCESSORIES

THE FUNCTIONALITY OF THE AUXILIARY ACCESSORIES WAS CHECKED DURING THE FAT CHECK POSITIVE

MEASUREMENT OF INSULATION RESISTANCE & APPLIED MAGNETIC CORE - (TANK - CORE-FRAME)

2,5 kV - 1 min. 50 Hz During the test no voltage failure occurred. Result : POSITIVE

MEASUREMENT OF INSULATION RESISTANCE & APPLIED MAGNETIC CORE-FRAME - (TANK - CORE)

2,5 kV - 1 min. 50 Hz During the test no voltage failure occurred. Result : POSITIVE

Name and signature of authorized person:	Date	Witnessed by :
SANDRINI MATTIA	25/07/24	----------

MF Trasformatori srl
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L. PIGNATELLI ON BEHALF OF CISQ RINA

☑ WITNESS ☐ INFORMATION
☐ REVIEW ☐ SPOT WITNESS
DATE 25/7/2024

Witnessed ☒ Reviewed ☐
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

Directive 2009/125/EU

DECLARATION OF CONFORMITY

No. 374/23

WE

MF Trasformatori srl

DECLARE THAT

the transformer 1600ToECO6,6/0.42 - TR-200DE1 *no.* 181023/2

Type

OIL

L. PIGNATELLI ON BEHALF OF CROSS WIND

☐ WITNESS ☐ INFORMATION
☑ REVIEW ☐ SPOT WITNESS
DATE 25/7/2024

Respects requirements of the Directive 2009/125/EU

with reference to Regulation
EU/548/2014

Other Specifications

.....

.....

Name and signature of authorized person
Ing. Festa M.

Date

25/07/24

MF Trasformatori srl
Località S. Anna N. 22/24
25011 CALCINATO BRESCIA
Tel. +39 (0)30-9636596
Codice Fiscale 01547220176
Partita IVA IT 03550350171

Witnessed ☐ Reviewed ☒
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

Directive 2014/30/EU

DECLARATION OF CONFORMITY

No. 291/24

WE

MF Trasformatori srl

DECLARE THAT

the transformer 1600ToECO6,6/0.42 - TR-200DE1 no. 181023/2

Type

OIL

Respects the electromagnetic compatibility requirements
Directive 2014/30/EU

with reference to the harmonized standards
EN61000-6-1 Electromagnetic compatibilty emissions
EN61000-6-3 Electromagnetic compatibility immunity

L. PIGNATELLI ON BEHALF OF
CROSS WORKS

☐ WITNESS ☐ INFORMATION
☑ REVIEW ☐ SPOT WITNESS

DATE 25/7/2024

Name and signature of authorized person
Ing. Festa M.

Date

25/07/24

MF Trasformatori srl
Località S. Anna N. 22/24
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Witnessed ☐ Reviewed ☒
Lastene Bevoni
on behalf of RHG
Date 25-07-2024

MF Trasformatori srl

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Codice Fiscale 01547220176

Oil Certificate

Calcinato, 25/07/24

WE

MF Trasformatori s.r.l.

DECLARE THAT

the oil contained inside the MF transformer no. 181023/2

TYPE

MIDEL 7131

is in conformity with the Standards CEI EN 60296

" Fluids for electrotechnical applications - new mineral insultating oils for transformers"

L. PIGNATELLI ON BEHALF OF CROSSWIND

☐ WITNESS ☐ INFORMATION
☐ REVIEW ☐ SPOT WITNESS
DATE 25/7/2024

Signature and stamp
Ing. Festa M.

MF Trasformatori srl
Località S. Anna N. 22/24
25011 CALCINATO BRESCIA
Tel. +39 (0)30-9636596
Codice Fiscale 01547220176
Partita IVA IT 03550350171

Witnessed ☐ Reviewed ☒
Lastene Bevoni
on behalf of RMG
Date 25-07-2024

MF Trasformatori srl

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Codice Fiscale 01547220176

WARRANTY

Calcinato, 25/07/24

Starting from this date the transformer is guaranteed for 36 MAX 48 against any manufacturing defect (accessories not included).
The incorrect use and/or modifications, which have not been expressly approved by the manufacturer - the removal of trade marks included - imply automatically the expiration of this guarantee.

Transformer No.: *181023/2*

L. PIGNATELLI ON BEHALF OF CROSSWIND

☐ WITNESS ☐ INFORMATION
☒ REVIEW ☐ SPOT WITNESS
DATE 25/7/2024

Signature and stamp
Ing. Festa M.

MF Trasformatori srl
Località S. Anna N. 22/24
25011 CALCINATO BRESCIA
Tel. +39 (0)30-9636596
Codice Fiscale 01547220176
Partita IVA IT 03550350171

Witnessed ☐ Reviewed ☒
Lastena Bevoni
on behalf of RMG
Date 25-07-2024

ITEM	Tag	83003-CEL-L1	: LV SWBD 800/460V / 6.6/0.8 kV Transformer			Dwg	123A90-DDL-EL-LIS-20148
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)			Module	LD_B-200/LD
TASK	code	C10001826		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX09 LV Power Cable

CABLE DATA

Type: Cu Cl.2/EPR/LSZH | Cores/Size mm²: 1X300 mm2 | Color: GREY

From: SG-200D2 | To: TR-200ED1

1	Confirm cable is as specified in project cable schedule	OK
2	Visual Check cable physical integrity.	OK
3	Check is installed in accordance with layout drawing (segregation, distance…).	OK
4	Check cable is supported and fixed to rack according to project specification.	Note
5	Check bending radius is within the specified limits.	OK
6	Confirm cable glands suit for cable type, correctly mounted and tightened.	OK
7	Check gland plate for single core cables is non ferrous (non -magnetic).	OK
8	Confirm cable labelling is in accordance with specifications.	PL
9	Check cable is correctly loomed and segregated in accordance with specification.	OK
10	Check cable earthing against lastest drawings.	NA
11	Check cores marking are in accordance with termination diagram	PL
12	Check terminations are in accordance with latest termination diagram	OK
13	If required produce Red Line Mark Up for "AS BUILT"	

REFER TO FINAL SHEET FOR ACCEPTANCE

ROSETTI MARINO PROVERLIS CROSSWIND

ITEM	Tag	83003-CEL-L1	: LV SWBD 800/460V / 6.6/0.8 kV Transformer			Dwg	123A90-DDL-EL-LIS-20148
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)			Module	LD_B-200/LD
TASK	code	C10001826		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX09 LV Power Cable

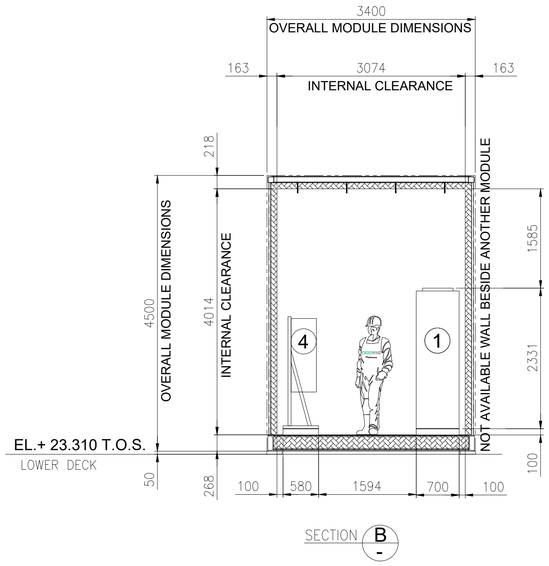
	CONTINUITY			
5	CORE CONTINUITY Ω	PH 1	0,7	
6		PH 2	NA	
7		PH 3	NA	
8	ARMOUR CONTINUITY Ω		NA	
9	PROTECTIVE CONDUCTOR CONTINUITY Ω		NA	
	INSULATION			
10	CORES / ARMOUR+EARTH MΩ	PH1 / PH2-PH3-A-E	>1999	
11		PH2 / PH1-PH3-A-E	NA	
12		PH3 / PH1-PH2-A-E	NA	
13	CABLE IS CORRECTLY RE-CONNECTED.		Yes	

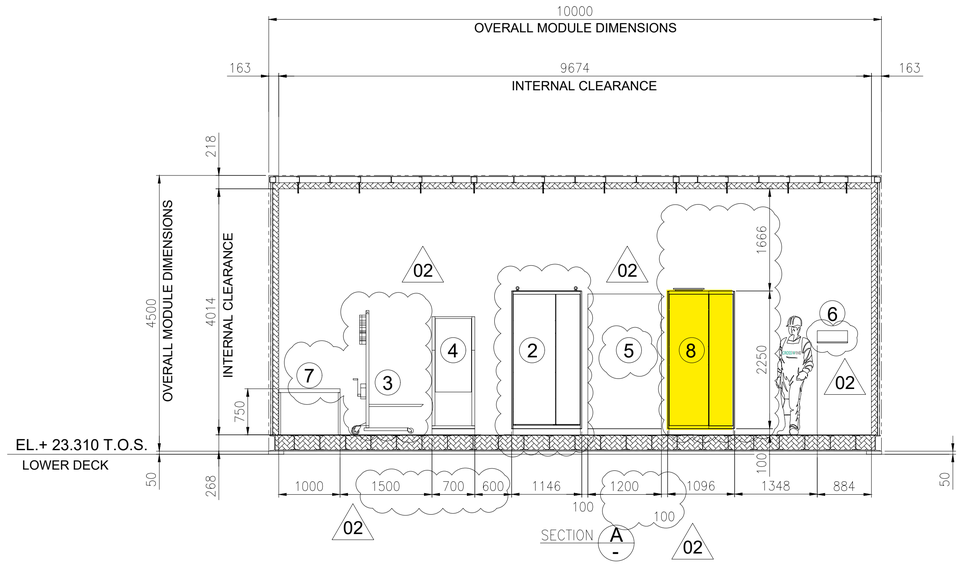
TESTING INSTRUMENTS USED			
TYPE / SERIAL N° :	MEGGER : KEW3125A SERIAL: W8330207	TYPE / SERIAL N° :	MULTIMETER: FLUKE 175 SERIAL:AW1/018(17140769)
Calibration certificate N° and date:	N°7722/24 _ 10/07/2024	Calibration certificate N° and date:	N°7715/24 _ 10/07/2024

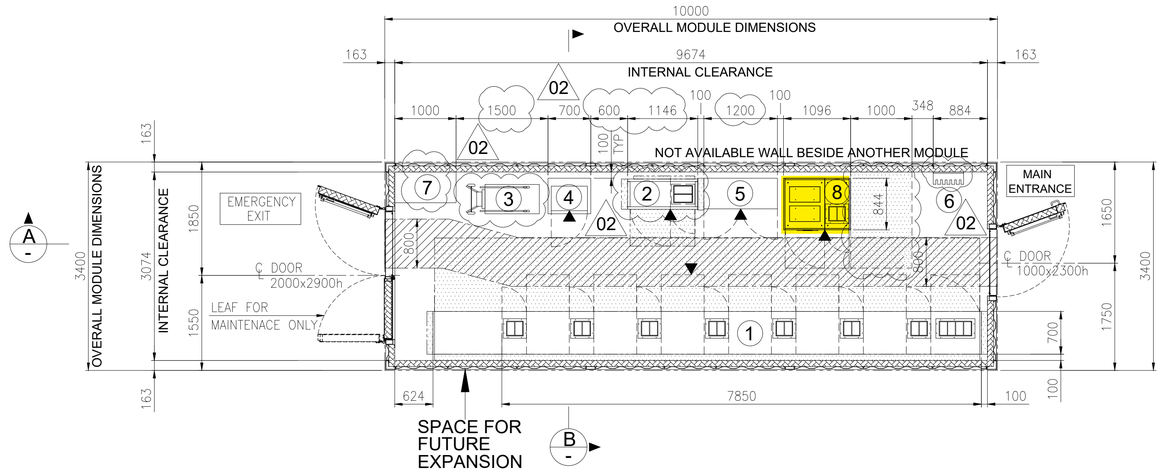
Comments: Nota 4: refer to PL C30000679

	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Francesco Zucca	Giovanni Tangianu	
Date	2024-11-29	2024-12-05	
Signature	PROVERLIS Digitaly signed by Francesco Zucca 2024-11-29T10:37:54.248Z	PROVERLIS Digitaly signed by Giovanni Tangianu 2024-12-05T16:28:58.250Z	

DRAWING NO. 123A90-DDL-EL-DL-20105 REV. 02







EQUIPMENT LAYOUT

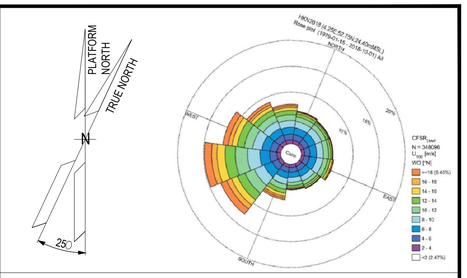
"B-200" LV (400V) SWITCHGEAR ROOM

BOTTOM PLAN

1

EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	NOTE
1	SG-200N1	400V SWITCHGEAR	7850	700	2331	
2	DP-200N1	DISTRIBUTION BOARD FOR LIGHTING AND SMALL POWER B.O.P.	1146	520	2250	
3	-	SERVICE TROLLEY FOR 400V SWITCHGEAR	1034	490	2030	
4	CN-200N1	ICCP PANEL	700	580	1830	
5	B200-HSB-001	DISTRIBUTION & HVAC PANEL - LV ROOM	1200	600	1900	02
6	-	TOOL BOX	495	200	200	
7	-	TABLE	1000	500	750	
8	SG-200D2	ACB PANEL FOR SOLAR PACKAGE	1096	844	2294	



NOTES

1. U.N.O. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DELETED.
3. DOCUMENT VALID ONLY FOR ELECTRICAL COMPONENT, FOR OTHER SCOPE LOCATION AND INFORMATION, PLEASE REFER TO VENDORS AND PROJECT DOCUMENTS.
4. FOR OTHER ITEMS, CORRECT LOCATION AND INFORMATION, PLEASE REFER TO VENDORS AND DEDICATED PROJECT DOCUMENTATION.
5. HEIGHT OF ALL PANELS IN THE EQUIPMENT LIST TABLE IS WITHOUT THE BASE FRAME (100mm)

02

LEGEND

U.N.O. _____ UNLESS NOTED OTHERWISE

T.O.S. _____ TOP OF STEEL

_____ ESCAPE CORRIDOR - WIDTH 800mm.

_____ MAINTENANCE AREA - VENDOR REQUIREMENT

_____ SWITCHGEAR ROOM ENCLOUSURE

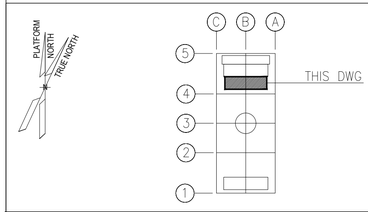
_____ FRONT OF EQUIPMENT

REFERENCES

DOCUMENT TITLE	DOCUMENT NUMBER
SG-200N1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00007
SG-200D2 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00008
DP-200N1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00009
AC UPS – GENERAL ARRANGEMENT AND DIMENSIONAL DRAWINGS	1724000372-EL-DA-00004
AC UPS – BATTERY LAYOUT INTERCONNECTING DIAGRAM	1724000372-EL-DG-00011
B-200 -GENERAL ARRANGEMENT DRAWINGS - E&I SHELTER	1724000049-AR-DA-00015
ICCC PANEL GENERAL ARRANGEMENT DRAWING	144671-CORR-TF-FAB-DWG-0003

02

KEY PLAN



REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/05/2024	FMO	LMA/AMA	LMA/MDO	ACCEPTED FOR CONSTRUCTION (AFC)
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	08/11/2023	DSF	CB/AMA	DYFO/MDO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION

FDL DWG: **123A90-FDL-EL-DL-20105**

REV.:	DATE:	SIGNATURE:
2_A	08/08/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

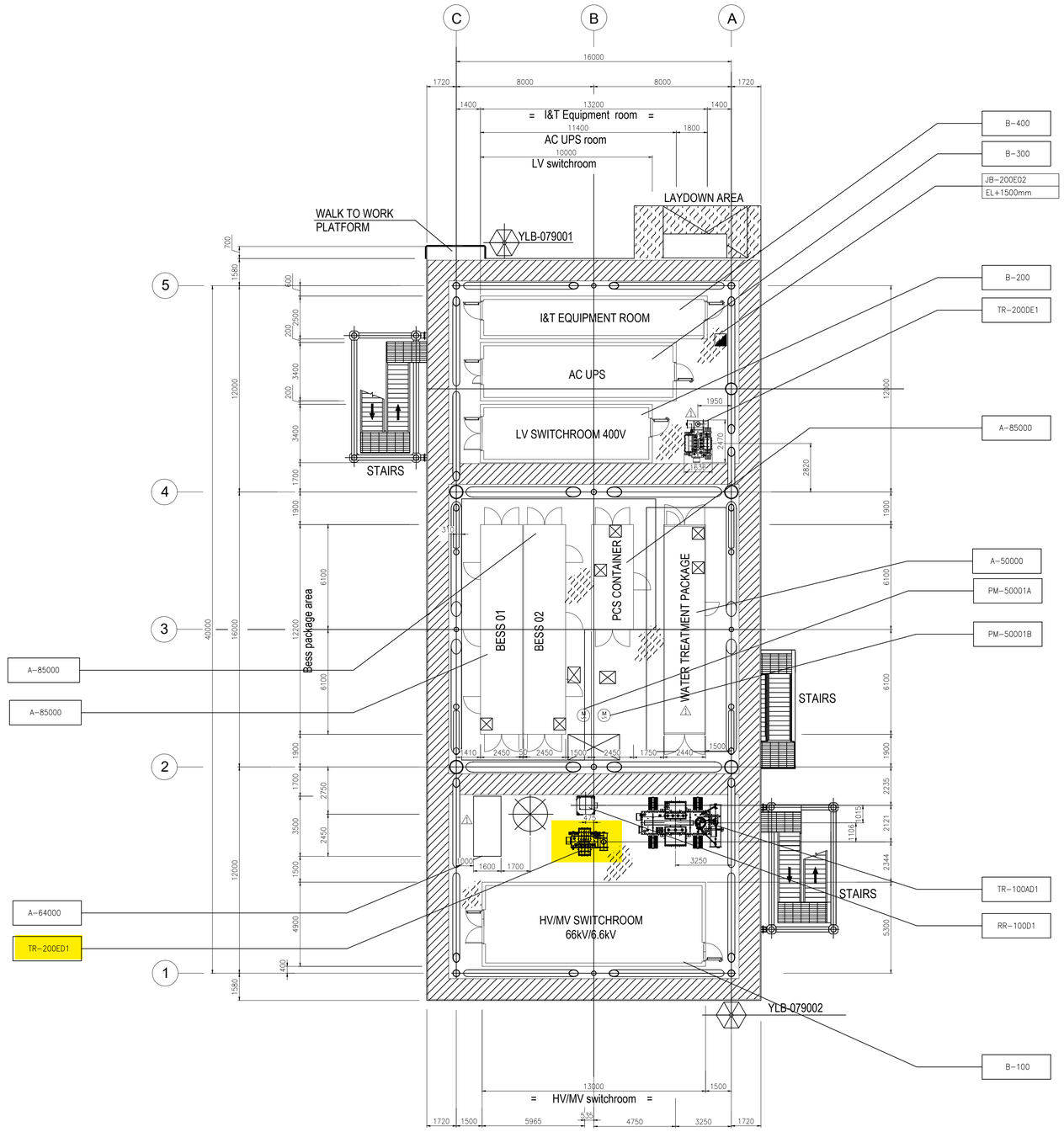
TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LV SWITCHROOM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:50
DRAWN FMO	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 27/05/2024
A1	DRAWING NO. 123A90-DDL-EL-DL-20105	SHEET 001	REV. 02

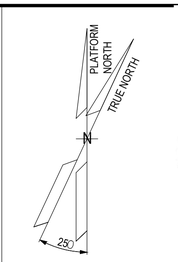
File Name : 123A90-DDL-EL-DL-20105_REV02.dwg

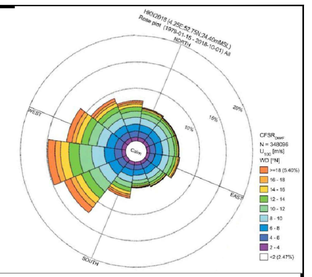
DRAWING NO. 123A90-DDL-EL-DL-20101

REV. 01



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





NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

(M)	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20101**

REV.:	DATE:	SIGNATURE:
1_A	08/08/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND | ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN SAM	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 04/03/24
A1	DRAWING NO. 123A90-DDL-EL-DL-20101	SHEET 001	REV. 01

File Name : 123A90-DDL-EL-DL-20101-Electrical Equipment Layout – Lower Deck

FROM	TO

DESCRIPTION: SOLAR PV POWER CABLE JB
TAG NUMBER: JB-200E1

L1 — BK — 83002-CEL-L1 1x300 mm² — BK — SFL1
L2 — BK — 83002-CEL-L2 1x300 mm² — BK — SFL2
L3 — BK — 83002-CEL-L3 1x300 mm² — BK — SFL3

DESCRIPTION: LV SWBD 800/460V
TAG NUMBER: SG-200D2
COLUMN: C1 (INCOMING)

DESCRIPTION: LV SWBD 800/460V
TAG NUMBER: SG-200D2
COLUMN: C1 (OUTGOING)

L1 — BK — 83003-CEL-L1 1x300 mm² — BK — 1U
L2 — BK — 83003-CEL-L2 1x300 mm² — BK — 1V
L3 — BK — 83003-CEL-L3 1x300 mm² — BK — 1W

DESCRIPTION: 6.6/0.8 KV TRANSFORMER
TAG NUMBER: TR-200ED1
LV SIDE TERMINAL BOX

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DG-20149
REV.: 2_C | DATE: 02/12/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

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)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
SOLAR PV POWER CABLE JB & LV SWBD 800/460V

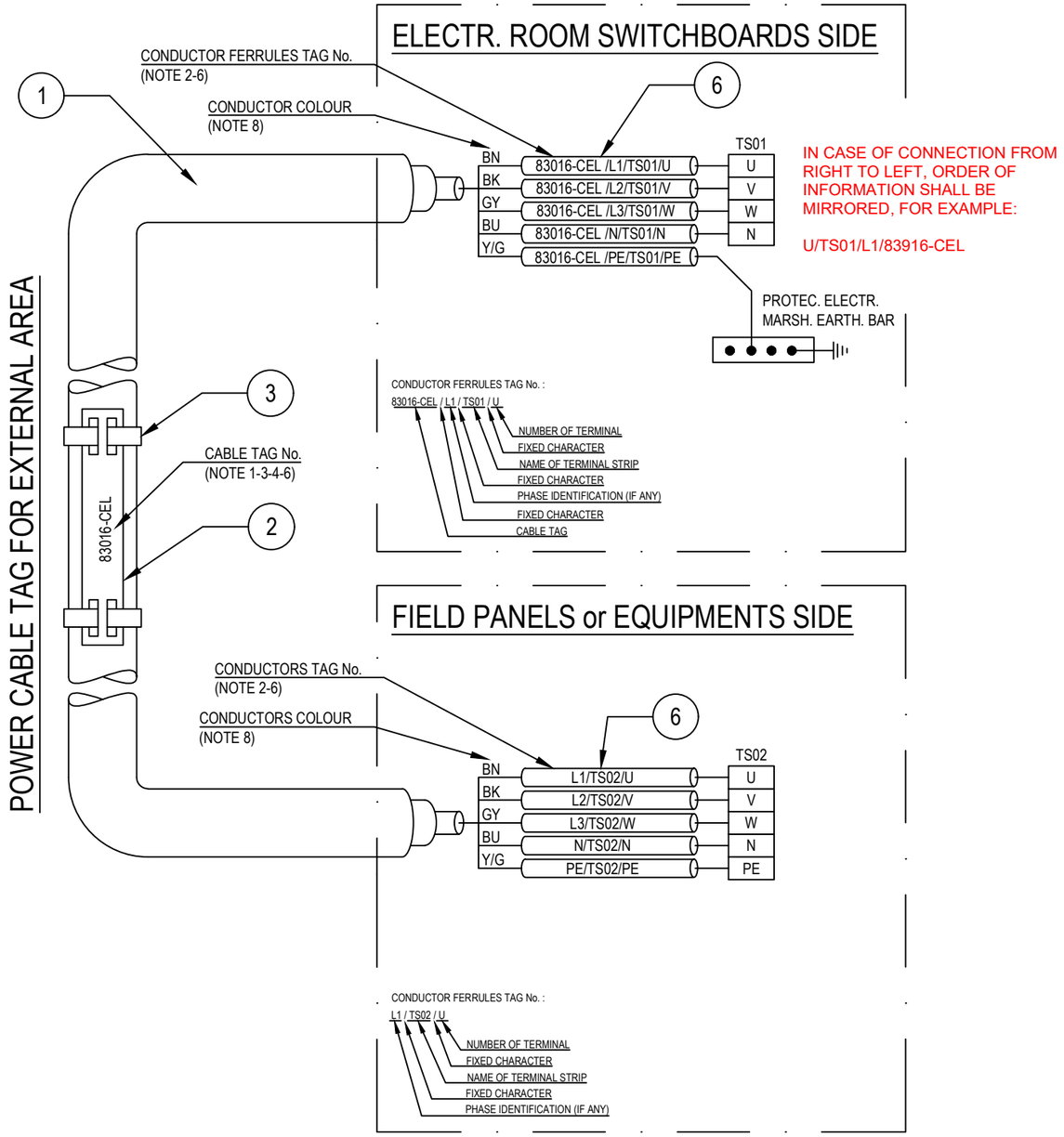
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : 1:X

A3 | DRAWING NO. 123A90-DDL-EL-DG-20149 | SHEET 018 | REV. 02

F.to UNI A3: 420mmx297mm

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

C02



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	UNARMOURED CABLE				
2	CABLE TAG FOR EXTERNAL AREA	HDG/SS			NOTE 1 NOTE 4
3	TIE FOR CABLE TAG IN EXTERNAL AREA	HDG/SS			
4	CABLE TAG FOR INTERNAL AREA	PVC			NOTE 1 NOTE 5
5	TIE FOR CABLE TAG IN INTERNAL AREA	NYLON 6.6			
6	CORE FERRULES	PVC			

NOTES:

1) ALL CABLES SHALL BE IDENTIFIED AT EACH TERMINATION AND EACH SIDE OF ANY OBSTACLE (E.G. CABLE TRANSIT ON WALLS INSIDE SHELTER AND FLOOR DECK CROSSING, BY THEIR RESPECTIVE TAGS/NUMBERS, AS INDICATED ON THE CABLE SCHEDULE.
CABLE IDENTIFICATION SHALL BE ALSO DONE BELOW AND IN THE SWITCHBOARD CABLE COMPARTMENT.

2) CABLE CORE FERRULES SHALL BE FITTED AT EVERY TERMINATION. THESE FERRULES SHALL BE OF ENGRAVED PLASTIC SLIP ON, INTERLOCKED AND SELF GRIP TYPE.

3) ON CABLE TRAYS OR LADDERS, CABLES SHALL BE IDENTIFIED AT EACH END, AND EVERY 25 METERS.

4) THE CABLE TAG FOR EXTERNAL AREA SHALL DONE BY 316L STAINLESS STEEL LABELS, TAG (H=5mm) SHALL BE LASER PRINTED PREFERABLY OR EMBOSSED, LABEL HELD BY TWO 316L STAINLESS STEEL TIES.

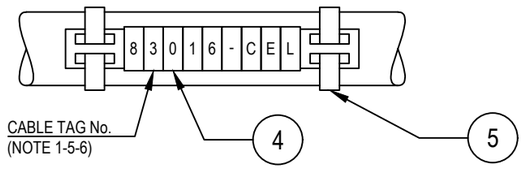
5) THE CABLE TAG FOR INTERNAL AREA SHALL BE DONE BY ENGRAVED PLASTIC SLIP ON CHARACTERS ONTO PLASTIC TIE, BLACK LETTER (H=5mm) ON WHITE.

6) CABLE AND CONDUCTOR TAG ARE INDICATIVE ONLY.

7) WITHIN TECHNICAL BUILDING, PROTECTIVE CONDUCTOR SHALL BE TAGGED BETWEEN FOLLOWING ITEMS:
- PANEL (SWITCHBOARD, SWITCHGEAR, DISTRIBUTION BOARD, ETC) AND EARTH BAR
- EARTH BAR AND EARTH BOSS

8) ONLY IF NECESSARY, SHRINK TUBES OF THE APPROPRIATE COLOR WILL BE INSTALLED TO COVER THE WRONG CONDUCTOR COLOR, THIS WILL BE PERFORMED IN EACH SIDE OF THE CABLES WHERE NECESSARY.

POWER CABLE TAG FOR INTERNAL AREA



VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20092**

REV.:	DATE:	SIGNATURE:
2_B	28/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	28/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	04/07/24	NLK	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-POWER SYSTEM & CABLE INSTALLATION
CABLES INSTALLATION SYSTEM IDENTIFICATION FOR POWER CABLES

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

A3 | DRAWING NO. 123A90-DDL-EL-DD-20092 | SHEET 007 | REV. 02

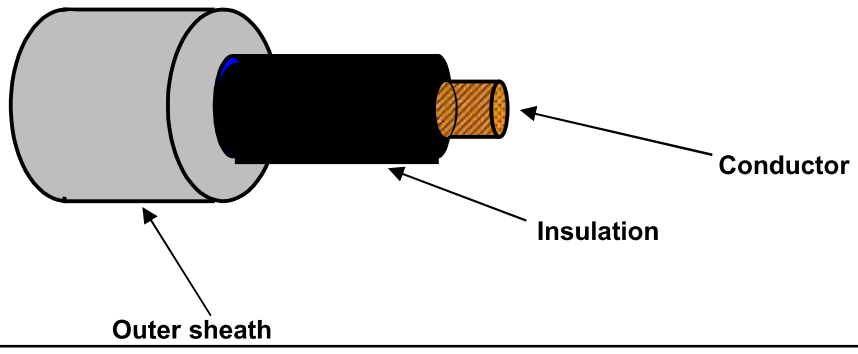
F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20092 REV.02.DWG

Tag Number	Category	Discipline	Eng Status	NativeDoc	Layout	Parent Tag	Main Function	Secondary Function	Area	From Tag	From Main Function	From Area	To Tag	To Main Function	To Area	Material ID	Material Desc.	Gland Standard	From Gland	From Entry	From Fitting	To Gland	To Entry	To Fitting	Routing	Routing Manual
83003-CEL-L1	Cable	EL	VFC	123A90-DDL-EL-LIS-20148						SG-200D2	LV 0,8/0,4 kV MCC Switchgear (Solar)	Lower Deck (B-200)	TR-200ED1	6,6 / 0,8 kV 0,5 MVA Transformer	Lower Deck	ELECV01-1X300	Cable Cu Cl.2/EPR/LSZH 0,6/1kV 1Cx300mm² - Grey	M40	n.a.			T1_M40_Single				L-300-101-LVT-032 / L-600-101-LVT-020 / L-600-101-LVT-018 / L-600-101-LVT-017 / E-MCT-201 / L-750-101-LVT-011 / L-300-101-LVT-003 / L-300-101-LVT-002

Cu Cl.2/EPR/LSZH 0,6/1 KV

1CX300 - L.V. POWER CABLE - Flame Retardant



TECHNICAL FEATURES

Conductor :	**STRANDED COMPACTED** plain/bare annealed copper wires	IEC 60228 Class 2
Insulation :	EPR compound, quality to IEC 60092.360, Nominal Thickness 2,4 mm	
Core colour code :	**Black**	
Pair Assembling :	Not required	
Pair Wrapping:	Not required	
Drain wire :	Not required	
Pair Shield :	Not required	
Shield Insulation :	Not Required	
Total Assembling :	Not Required	
Overall Wrapping:	Not required	
Drain wire :	Not required	
Overall Shield:	Not required	
Inner covering :	Not required	
Inner covering color code:	Not required	
Armour :	Not required	
Outer sheath :	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type **SHF1** to IEC 60093.360, Average Thickness 1,6 mm	
Outer sheath color code:	**Grey**	
Outer printing (INKJET) :	**FLEI - ELECTRIC CABLE - 1000V - 1CX300 SQMM - EPR/LSZH - 0,6/1 KV - IEC 60332.1.2 - IEC 60332.3.22 - Year of Manufacture - CE + Meter Marking**	
Outer diameter :	(29,4 ± 10%) mm	
Bending radius :	cable outer diameter x 10	(in fixed installation)
Spark test :	16 kV a.c.	(on insulation)
	12 kV a.c.	(on outer sheath)
Conductors DC Resistance :		IEC 60228 Class 2
Insulation Resistance :	≥ 330 MΩ x Km (@ 20°C)	
Applicable Standards		
Design Guidelines :	**IEC 60092.353**	
ON COMPLETE CABLE		
Flame Retardant test :	IEC 60332.1.2 - IEC 60332.3.22	
Acid Gas generation :	IEC 60754.1/2	
Smoke density/Light Transmittance	IEC 61034.2 (LT ≥ 60%)	
Temperature Range :		
ON INSULATION	(max +90°C)	(max continuous operation temperature of conductors)
	(max +250°C)	(max conductors temperature during short-circuit for 5 seconds)
ON COMPLETE CABLE		
During Operation :	(-20°C up to +90°C)	(in fixed installation)
During installation :	(- 5°C up to +50°C)	
Note :	**To meet the requirements of installation and use in Zone 1 & Zone 2 (IEC 60079-14) and "Gas & Vapour Tight" the cable must be provided with Penetrating Outer sheath together with correct ATEX approved equipment or accessories.**	

Office	Date	Sign	Rev.	Date	Sign
Drawn by :	29/03/2024	Messa			
Checked :	29/03/2024	Spaccasassi			
Approved :	29/03/2024	Cucinotta			

The data provided, lending assent for the treatment, will be used to the sense of the article 13 of of the Regulation (UE) 2016/679, also through outsiders, in order to allow the realization of the fulfilments informatives, administrative, commercial and accounting related to the contractual relationship. Integral copy of the informative could be requested at our offices.

All proprietary rights reserved according to law. This document shall be not reproduced without written permission. FLEI reserves the right to change characteristics and technical data of product shown at any time.

ITEM	Tag	83003-CEL-L2	: LV SWBD 800/460V / 6.6/0.8 kV Transformer			Dwg	123A90-DDL-EL-LIS-20148
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)			Module	LD_B-200/LD
TASK	code	C10001827		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX09 LV Power Cable

CABLE DATA

Type: Cu Cl.2/EPR/LSZH | Cores/Size mm²: 1X300 mm2 | Color: GREY

From: SG-200D2 | To: TR-200ED1

1	Confirm cable is as specified in project cable schedule	OK
2	Visual Check cable physical integrity.	OK
3	Check is installed in accordance with layout drawing (segregation, distance…).	OK
4	Check cable is supported and fixed to rack according to project specification.	Note
5	Check bending radius is within the specified limits.	OK
6	Confirm cable glands suit for cable type, correctly mounted and tightened.	OK
7	Check gland plate for single core cables is non ferrous (non -magnetic).	OK
8	Confirm cable labelling is in accordance with specifications.	PL
9	Check cable is correctly loomed and segregated in accordance with specification.	OK
10	Check cable earthing against lastest drawings.	NA
11	Check cores marking are in accordance with termination diagram	PL
12	Check terminations are in accordance with latest termination diagram	OK
13	If required produce Red Line Mark Up for "AS BUILT"	

REFER TO FINAL SHEET FOR ACCEPTANCE

ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	83003-CEL-L2	: LV SWBD 800/460V / 6.6/0.8 kV Transformer		Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		Module	LD_B-200/LD	
TASK	code	C10001827	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity CCK	Discipline Electrical	Form	CPX09	LV Power Cable

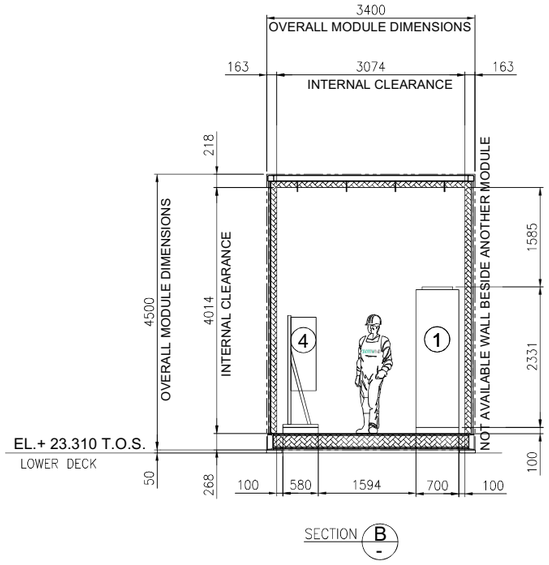
	CONTINUITY			
5	CORE CONTINUITY Ω	PH 1	0,7	
6		PH 2	NA	
7		PH 3	NA	
8	ARMOUR CONTINUITY Ω		NA	
9	PROTECTIVE CONDUCTOR CONTINUITY Ω		NA	
	INSULATION			
10	CORES / ARMOUR+EARTH MΩ	PH1 / PH2-PH3-A-E	>1999	
11		PH2 / PH1-PH3-A-E	NA	
12		PH3 / PH1-PH2-A-E	NA	
13	CABLE IS CORRECTLY RE-CONNECTED.		Yes	

TESTING INSTRUMENTS USED			
TYPE / SERIAL N° :	MEGGER : KEW3125A SERIAL: W8330207	TYPE / SERIAL N° :	MULTIMETER: FLUKE 175 SERIAL:AW1/018(17140769)
Calibration certificate N° and date:	N°7722/24 _ 10/07/2024	Calibration certificate N° and date:	N°7715/24 _ 10/07/2024

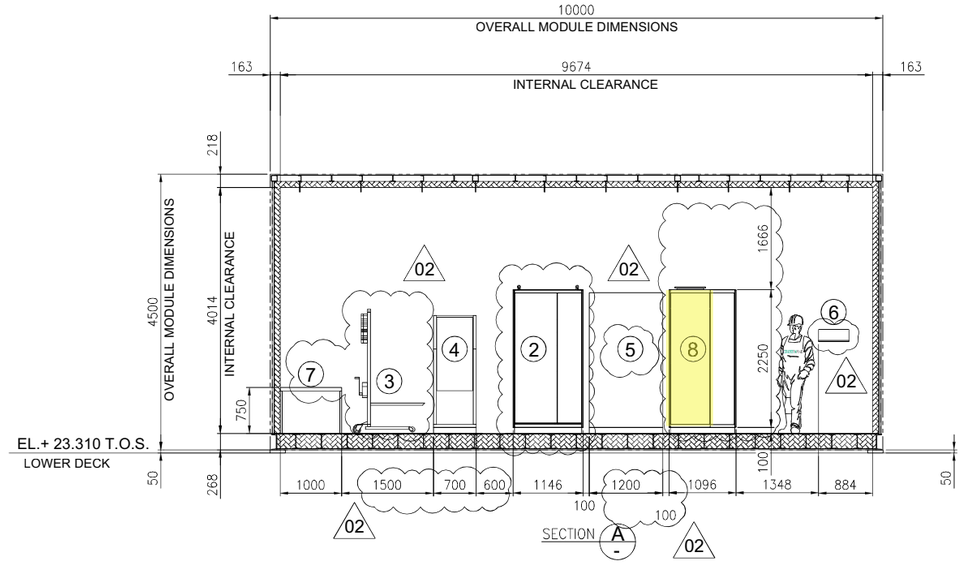
Comments: Nota 4: refer to PL C30000679

	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Francesco Zucca	Giovanni Tangianu	
Date	2024-11-29	2024-12-05	
Signature	PROVERLIS Digitaly signed by Francesco Zucca 2024-11-29T10:38:15.619Z	PROVERLIS Digitaly signed by Giovanni Tangianu 2024-12-05T16:41:07.370Z	

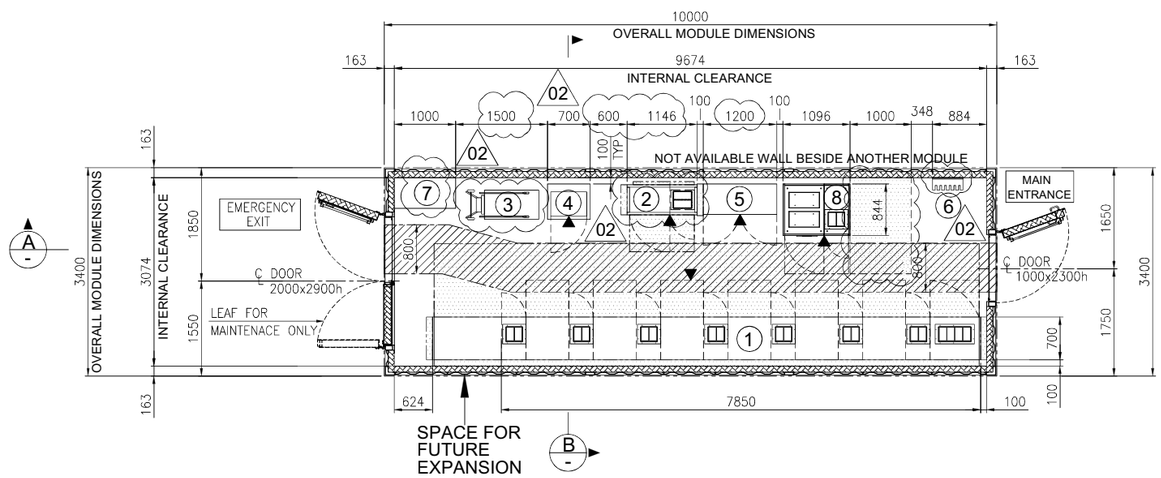
DRAWING NO. 123A90-DDL-EL-DL-20105 REV. 02



SECTION B



SECTION A



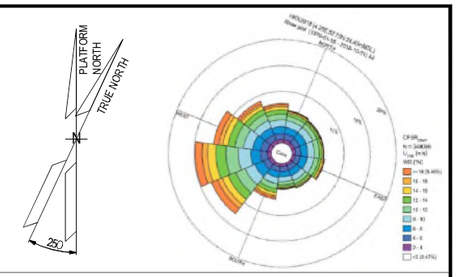
A

B

EQUIPMENT LAYOUT

"B-200" LV (400V) SWITCHGEAR ROOM

BOTTOM PLAN



NOTES

1. U.N.O. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DELETED.
3. DOCUMENT VALID ONLY FOR ELECTRICAL COMPONENT, FOR OTHER SCOPE LOCATION AND INFORMATION, PLEASE REFER TO VENDORS AND PROJECT DOCUMENTS.
4. FOR OTHER ITEMS, CORRECT LOCATION AND INFORMATION, PLEASE REFER TO VENDORS AND DEDICATED PROJECT DOCUMENTATION.
5. HEIGHT OF ALL PANELS IN THE EQUIPMENT LIST TABLE IS WITHOUT THE BASE FRAME (100mm)

02

LEGEND

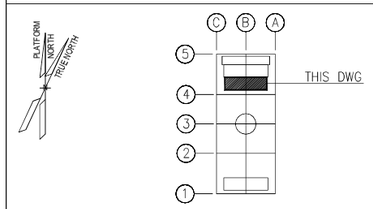
U.N.O. _____ UNLESS NOTED OTHERWISE
T.O.S. _____ TOP OF STEEL
_____ ESCAPE CORRIDOR - WIDTH 800mm.
_____ MAINTENANCE AREA - VENDOR REQUIREMENT
_____ SWITCHGEAR ROOM ENCLOUSURE
_____ FRONT OF EQUIPMENT

REFERENCES

DOCUMENT TITLE	DOCUMENT NUMBER
SG-200N1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00007
SG-200D2 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00008
DP-200N1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00009
AC UPS – GENERAL ARRANGEMENT AND DIMENSIONAL DRAWINGS	1724000372-EL-DA-00004
AC UPS – BATTERY LAYOUT INTERCONNECTING DIAGRAM	1724000372-EL-DG-00011
B-200 -GENERAL ARRANGEMENT DRAWINGS - E&I SHELTER	1724000049-AR-DA-00015
ICCC PANEL GENERAL ARRANGEMENT DRAWING	144671-CORR-TF-FAB-DWG-0003

02

KEY PLAN



1 EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	NOTE
1	SG-200N1	400V SWITCHGEAR	7850	700	2331	
2	DP-200N1	DISTRIBUTION BOARD FOR LIGHTING AND SMALL POWER B.O.P.	1146	520	2250	
3	-	SERVICE TROLLEY FOR 400V SWITCHGEAR	1034	490	2030	
4	CN-200N1	ICCP PANEL	700	580	1830	
5	B200-HSB-001	DISTRIBUTION & HVAC PANEL - LV ROOM	1200	600	1900	02
6	-	TOOL BOX	495	200	200	
7	-	TABLE	1000	500	750	
8	SG-200D2	ACB PANEL FOR SOLAR PACKAGE	1096	844	2294	

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20105**

REV.:	DATE:	SIGNATURE:
2_A	08/08/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/05/2024	FMO	LMA/AMA	LMA/MDO	ACCEPTED FOR CONSTRUCTION (AFC)
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	08/11/2023	DSF	CB/AMA	DYFO/MDO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

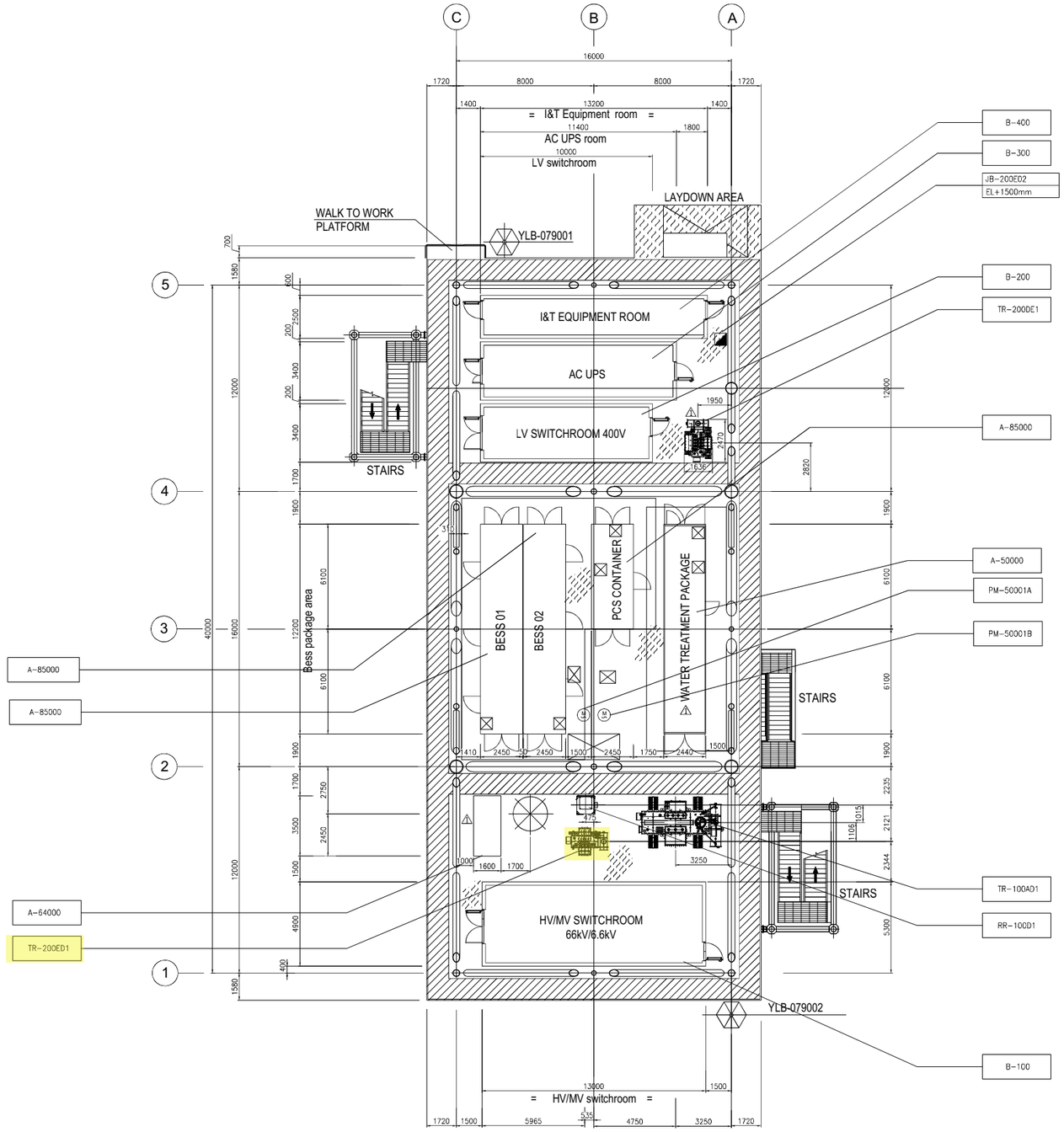
TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LV SWITCHROOM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:50
DRAWN FMO	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 27/05/2024
A1	DRAWING NO. 123A90-DDL-EL-DL-20105	SHEET 001	REV. 02

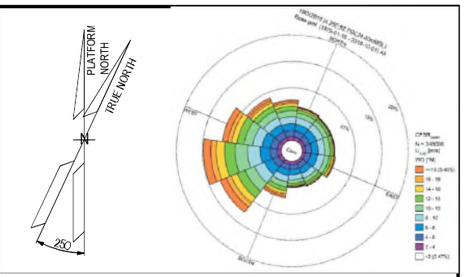
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DRAWING NO. 123A90-DDL-EL-DL-20101

REV. 01



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



NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

(M)	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
⚠ 123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20101**

REV.:	DATE:	SIGNATURE:
1_A	08/08/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND | ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN SAM	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 04/03/24
A1	DRAWING NO. 123A90-DDL-EL-DL-20101	SHEET 001	REV. 01

File Name : 123A90-DDL-EL-DL-20101-Electrical Equipment Layout – Lower Deck

FROM	TO

DESCRIPTION: SOLAR PV POWER CABLE JB
TAG NUMBER: JB-200E1

L1 — BK — 83002-CEL-L1 1x300 mm² — BK — SFL1
L2 — BK — 83002-CEL-L2 1x300 mm² — BK — SFL2
L3 — BK — 83002-CEL-L3 1x300 mm² — BK — SFL3

DESCRIPTION: LV SWBD 800/460V
TAG NUMBER: SG-200D2
COLUMN: C1 (INCOMING)

DESCRIPTION: LV SWBD 800/460V
TAG NUMBER: SG-200D2
COLUMN: C1 (OUTGOING)

L1 — BK — 83003-CEL-L1 1x300 mm² — BK — 1U
L2 — BK — 83003-CEL-L2 1x300 mm² — BK — 1V
L3 — BK — 83003-CEL-L3 1x300 mm² — BK — 1W

DESCRIPTION: 6.6/0.8 KV TRANSFORMER
TAG NUMBER: TR-200ED1
LV SIDE TERMINAL BOX

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DG-20149
REV.: 2_C | DATE: 02/12/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

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)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
SOLAR PV POWER CABLE JB & LV SWBD 800/460V

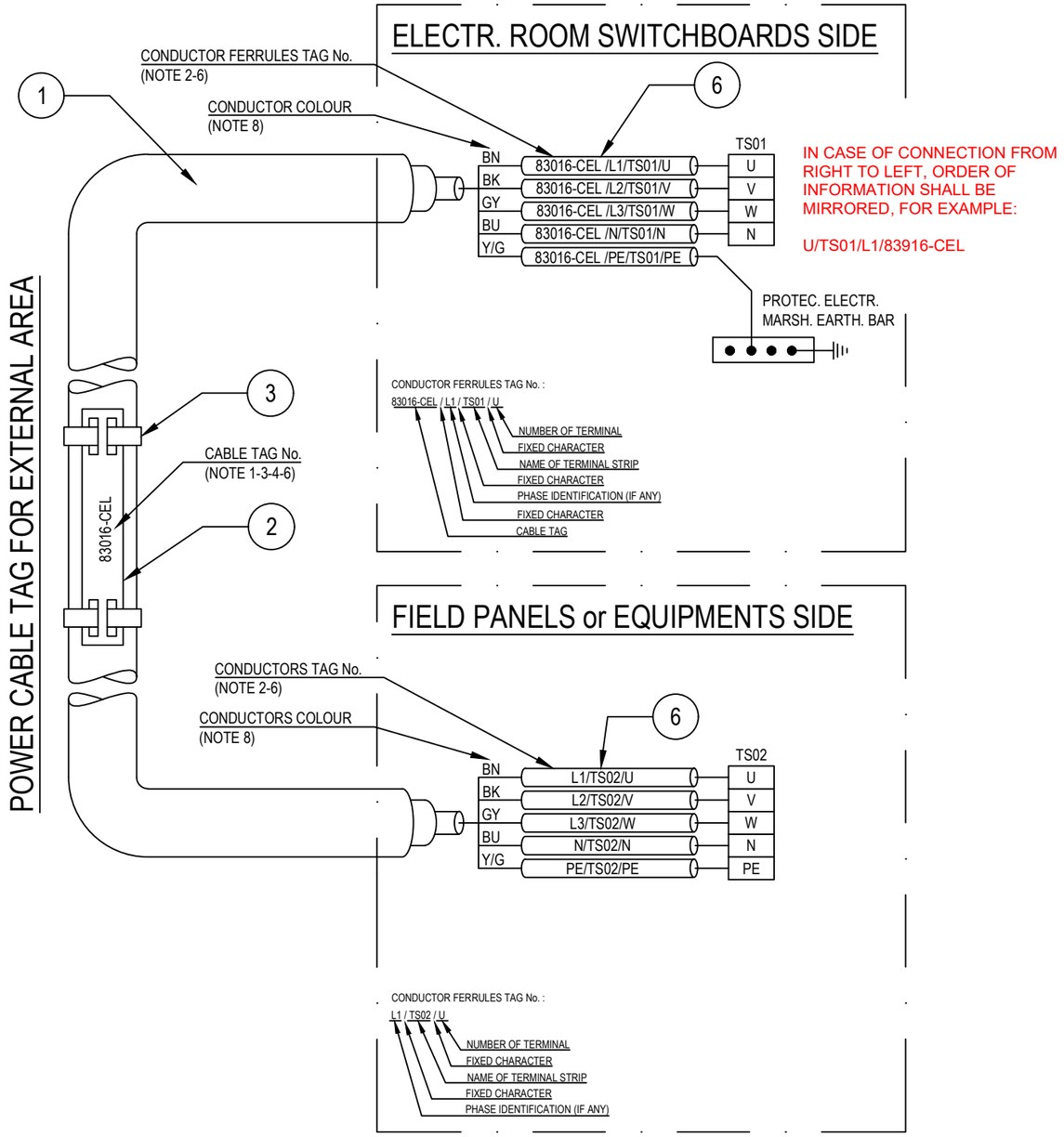
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : 1:X

A3 | DRAWING NO. 123A90-DDL-EL-DG-20149 | SHEET 018 | REV. 02

F.to UNI A3: 420mmx297mm

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

C02



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	UNARMOURED CABLE				
2	CABLE TAG FOR EXTERNAL AREA	HDG/SS			NOTE 1 NOTE 4
3	TIE FOR CABLE TAG IN EXTERNAL AREA	HDG/SS			
4	CABLE TAG FOR INTERNAL AREA	PVC			NOTE 1 NOTE 5
5	TIE FOR CABLE TAG IN INTERNAL AREA	NYLON 6.6			
6	CORE FERRULES	PVC			

NOTES:

1) ALL CABLES SHALL BE IDENTIFIED AT EACH TERMINATION AND EACH SIDE OF ANY OBSTACLE (E.G. CABLE TRANSIT ON WALLS INSIDE SHELTER AND FLOOR DECK CROSSING, BY THEIR RESPECTIVE TAGS/NUMBERS, AS INDICATED ON THE CABLE SCHEDULE.
CABLE IDENTIFICATION SHALL BE ALSO DONE BELOW AND IN THE SWITCHBOARD CABLE COMPARTMENT.

2) CABLE CORE FERRULES SHALL BE FITTED AT EVERY TERMINATION. THESE FERRULES SHALL BE OF ENGRAVED PLASTIC SLIP ON, INTERLOCKED AND SELF GRIP TYPE.

3) ON CABLE TRAYS OR LADDERS, CABLES SHALL BE IDENTIFIED AT EACH END, AND EVERY 25 METERS.

4) THE CABLE TAG FOR EXTERNAL AREA SHALL DONE BY 316L STAINLESS STEEL LABELS, TAG (H=5mm) SHALL BE LASER PRINTED PREFERABLY OR EMBOSSED, LABEL HELD BY TWO 316L STAINLESS STEEL TIES.

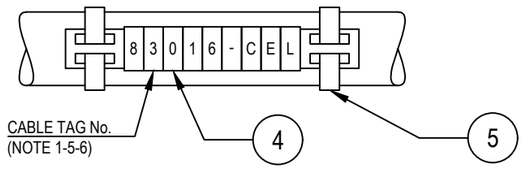
5) THE CABLE TAG FOR INTERNAL AREA SHALL BE DONE BY ENGRAVED PLASTIC SLIP ON CHARACTERS ONTO PLASTIC TIE, BLACK LETTER (H=5mm) ON WHITE.

6) CABLE AND CONDUCTOR TAG ARE INDICATIVE ONLY.

7) WITHIN TECHNICAL BUILDING, PROTECTIVE CONDUCTOR SHALL BE TAGGED BETWEEN FOLLOWING ITEMS:
- PANEL (SWITCHBOARD, SWITCHGEAR, DISTRIBUTION BOARD, ETC) AND EARTH BAR
- EARTH BAR AND EARTH BOSS

8) ONLY IF NECESSARY, SHRINK TUBES OF THE APPROPRIATE COLOR WILL BE INSTALLED TO COVER THE WRONG CONDUCTOR COLOR, THIS WILL BE PERFORMED IN EACH SIDE OF THE CABLES WHERE NECESSARY.

POWER CABLE TAG FOR INTERNAL AREA



VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20092**

REV.:	DATE:	SIGNATURE:
2_B	28/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	28/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	04/07/24	NLK	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-POWER SYSTEM & CABLE INSTALLATION
CABLES INSTALLATION SYSTEM IDENTIFICATION FOR POWER CABLES

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

A3 | DRAWING NO. 123A90-DDL-EL-DD-20092 | SHEET 007 | REV. 02

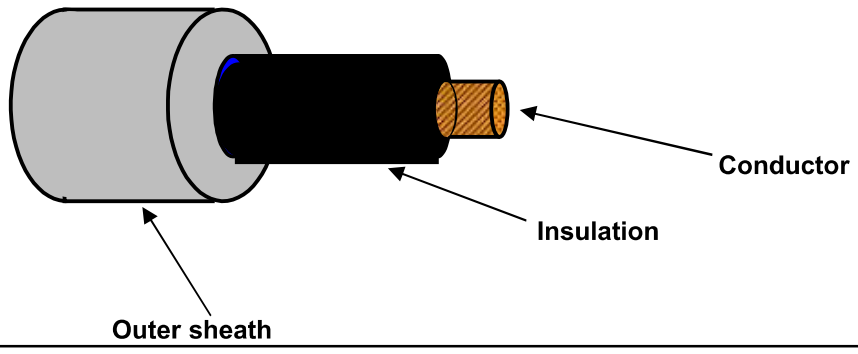
F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20092 REV.02.DWG

Tag Number	Category	Discipline	Eng Status	NativeDoc	Layout	Parent Tag	Main Function	Secondary Function	Area	From Tag	From Main Function	From Area	To Tag	To Main Function	To Area	Material ID	Material Desc.	Gland Standard	From Gland	From Entry	From Fitting	To Gland	To Entry	To Fitting	Routing	Routing Manual
83003-CEL-L2	Cable	EL	VFC	123A90-DDL-EL-LIS-20148						SG-200D2	LV 0,8/0,4 kV MCC Switchgear (Solar)	Lower Deck (B-200)	TR-200ED1	6,6 / 0,8 kV 0,5 MVA Transformer	Lower Deck	ELECV01-1X300	Cable Cu Cl.2/EPR/LSZH 0,6/1kV 1Cx300mm² - Grey	M40	n.a.			T1_M40_Single				L-300-101-LVT-032 / L-600-101-LVT-020 / L-600-101-LVT-018 / L-600-101-LVT-017 / E-MCT-201 / L-750-101-LVT-011 / L-300-101-LVT-003 / L-300-101-LVT-002

Cu Cl.2/EPR/LSZH 0,6/1 KV

1CX300 - L.V. POWER CABLE - Flame Retardant



TECHNICAL FEATURES

Conductor :	**STRANDED COMPACTED** plain/bare annealed copper wires	IEC 60228 Class 2
Insulation :	EPR compound, quality to IEC 60092.360, Nominal Thickness 2,4 mm	
Core colour code :	**Black**	
Pair Assembling :	Not required	
Pair Wrapping:	Not required	
Drain wire :	Not required	
Pair Shield :	Not required	
Shield Insulation :	Not Required	
Total Assembling :	Not Required	
Overall Wrapping:	Not required	
Drain wire :	Not required	
Overall Shield:	Not required	
Inner covering :	Not required	
Inner covering color code:	Not required	
Armour :	Not required	
Outer sheath :	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type **SHF1** to IEC 60093.360, Average Thickness 1,6 mm	
Outer sheath color code:	**Grey**	
Outer printing (INKJET) :	**FLEI - ELECTRIC CABLE - 1000V - 1CX300 SQMM - EPR/LSZH - 0,6/1 KV - IEC 60332.1.2 - IEC 60332.3.22 - Year of Manufacture - CE + Meter Marking**	
Outer diameter :	(29,4 ± 10%) mm	
Bending radius :	cable outer diameter x 10	(in fixed installation)
Spark test :	16 kV a.c.	(on insulation)
	12 kV a.c.	(on outer sheath)
Conductors DC Resistance :		IEC 60228 Class 2
Insulation Resistance :	≥ 330 MΩ x Km (@ 20°C)	
Applicable Standards		
Design Guidelines :	**IEC 60092.353**	
ON COMPLETE CABLE		
Flame Retardant test :	IEC 60332.1.2 - IEC 60332.3.22	
Acid Gas generation :	IEC 60754.1/2	
Smoke density/Light Transmittance	IEC 61034.2 (LT ≥ 60%)	
Temperature Range :		
ON INSULATION	(max +90°C)	(max continuous operation temperature of conductors)
	(max +250°C)	(max conductors temperature during short-circuit for 5 seconds)
ON COMPLETE CABLE		
During Operation :	(-20°C up to +90°C)	(in fixed installation)
During installation :	(- 5°C up to +50°C)	
Note :	**To meet the requirements of installation and use in Zone 1 & Zone 2 (IEC 60079-14) and "Gas & Vapour Tight" the cable must be provided with Penetrating Outer sheath together with correct ATEX approved equipment or accessories.**	

Office	Date	Sign	Rev.	Date	Sign
Drawn by :	29/03/2024	Messa			
Checked :	29/03/2024	Spaccasassi			
Approved :	29/03/2024	Cucinotta			

The data provided, lending assent for the treatment, will be used to the sense of the article 13 of of the Regulation (UE) 2016/679, also through outsiders, in order to allow the realization of the fulfilments informatives, administrative, commercial and accounting related to the contractual relationship. Integral copy of the informative could be requested at our offices.

All proprietary rights reserved according to law. This document shall be not reproduced without written permission. FLEI reserves the right to change characteristics and technical data of product shown at any time.

ITEM	Tag	83003-CEL-L3	: LV SWBD 800/460V / 6.6/0.8 kV Transformer			Dwg	123A90-DDL-EL-LIS-20148
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)			Module	LD_B-200/LD
TASK	code	C10001828		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX09 LV Power Cable

CABLE DATA

Type: Cu Cl.2/EPR/LSZH | Cores/Size mm²: 1X300 mm2 | Color: GREY

From: SG-200D2 | To: TR-200ED1

1	Confirm cable is as specified in project cable schedule	OK
2	Visual Check cable physical integrity.	OK
3	Check is installed in accordance with layout drawing (segregation, distance…).	OK
4	Check cable is supported and fixed to rack according to project specification.	NA
5	Check bending radius is within the specified limits.	OK
6	Confirm cable glands suit for cable type, correctly mounted and tightened.	OK
7	Check gland plate for single core cables is non ferrous (non -magnetic).	OK
8	Confirm cable labelling is in accordance with specifications.	PL
9	Check cable is correctly loomed and segregated in accordance with specification.	OK
10	Check cable earthing against lastest drawings.	NA
11	Check cores marking are in accordance with termination diagram	PL
12	Check terminations are in accordance with latest termination diagram	OK
13	If required produce Red Line Mark Up for "AS BUILT"	

REFER TO FINAL SHEET FOR ACCEPTANCE

ROSETTI MARINO PROVERLIS CROSSWIND

ITEM	Tag	83003-CEL-L3	: LV SWBD 800/460V / 6.6/0.8 kV Transformer			Dwg	123A90-DDL-EL-LIS-20148
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)			Module	LD_B-200/LD
TASK	code	C10001828		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX09 LV Power Cable

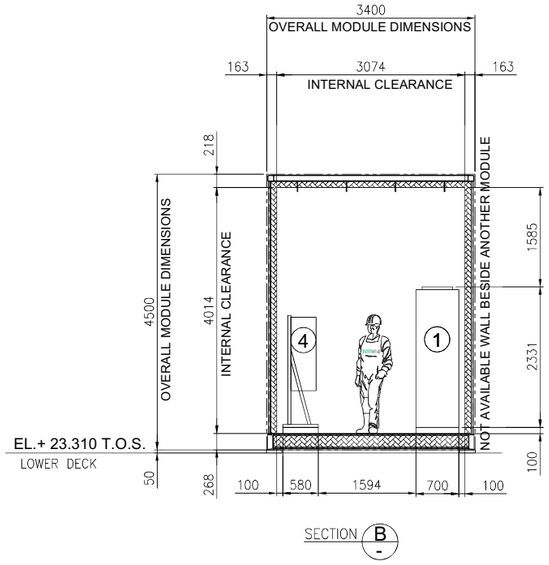
CONTINUITY				
5	CORE CONTINUITY Ω	PH 1	0,5	
6		PH 2	NA	
7		PH 3	NA	
8	ARMOUR CONTINUITY Ω		NA	
9	PROTECTIVE CONDUCTOR CONTINUITY Ω		NA	
INSULATION				
10	CORES / ARMOUR+EARTH MΩ	PH1 / PH2-PH3-A-E	>1999	
11		PH2 / PH1-PH3-A-E	NA	
12		PH3 / PH1-PH2-A-E	NA	
13	CABLE IS CORRECTLY RE-CONNECTED.		Yes	

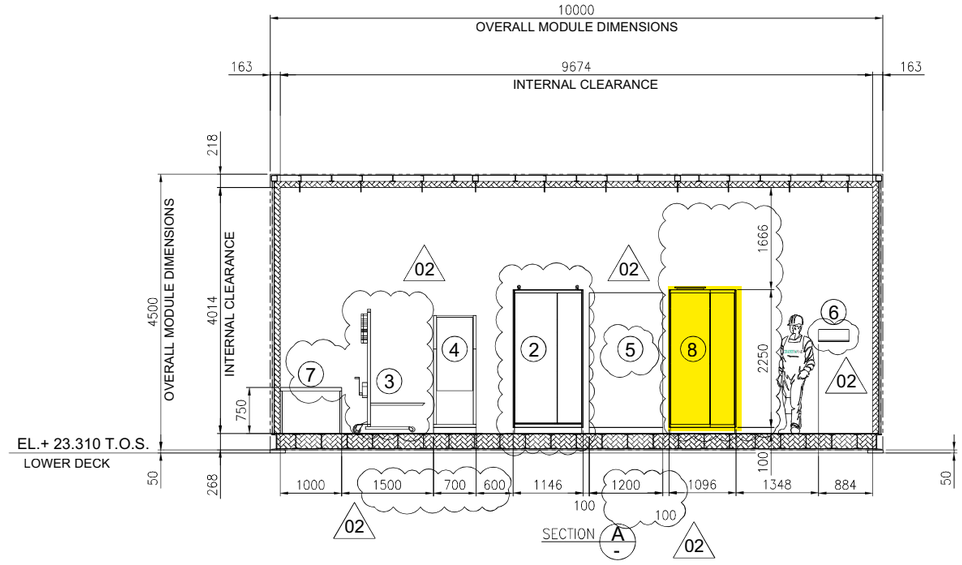
TESTING INSTRUMENTS USED			
TYPE / SERIAL N° :	MEGGER : KEW3125A SERIAL: W8330207	TYPE / SERIAL N° :	MULTIMETER: FLUKE 175 SERIAL:AW1/018(17140769)
Calibration certificate N° and date:	N°7722/24 _ 10/07/2024	Calibration certificate N° and date:	N°7715/24 _ 10/07/2024

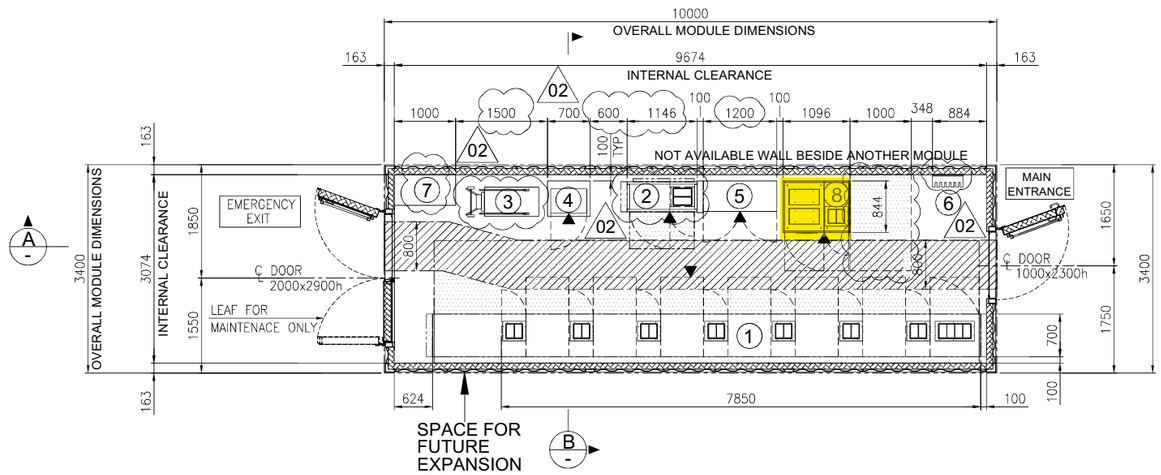
Comments: Nota 4: refer to PL C30000679

	Performed by	☉ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Francesco Zucca	Giovanni Tangianu	
Date	2024-11-29	2024-12-05	
Signature	PROVERLIS Digitaly signed by Francesco Zucca 2024-11-29T10:38:48.633Z	PROVERLIS Digitaly signed by Giovanni Tangianu 2024-12-05T16:49:39.436Z	

DRAWING NO. 123A90-DDL-EL-DL-20105 REV. 02







EQUIPMENT LAYOUT

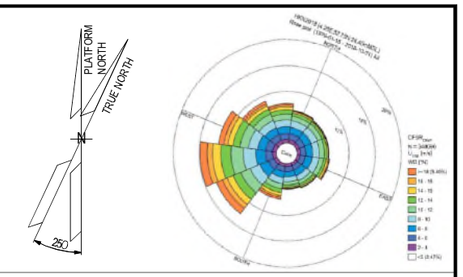
"B-200" LV (400V) SWITCHGEAR ROOM

BOTTOM PLAN

1

EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	NOTE
1	SG-200N1	400V SWITCHGEAR	7850	700	2331	
2	DP-200N1	DISTRIBUTION BOARD FOR LIGHTING AND SMALL POWER B.O.P.	1146	520	2250	
3	-	SERVICE TROLLEY FOR 400V SWITCHGEAR	1034	490	2030	
4	CN-200N1	ICCP PANEL	700	580	1830	
5	B200-HSB-001	DISTRIBUTION & HVAC PANEL - LV ROOM	1200	600	1900	02
6	-	TOOL BOX	495	200	200	
7	-	TABLE	1000	500	750	
8	SG-200D2	ACB PANEL FOR SOLAR PACKAGE	1096	844	2294	



NOTES

1. U.N.O. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DELETED.
3. DOCUMENT VALID ONLY FOR ELECTRICAL COMPONENT, FOR OTHER SCOPE LOCATION AND INFORMATION, PLEASE REFER TO VENDORS AND PROJECT DOCUMENTS.
4. FOR OTHER ITEMS, CORRECT LOCATION AND INFORMATION, PLEASE REFER TO VENDORS AND DEDICATED PROJECT DOCUMENTATION.
5. HEIGHT OF ALL PANELS IN THE EQUIPMENT LIST TABLE IS WITHOUT THE BASE FRAME (100mm)

02

LEGEND

U.N.O. _____ UNLESS NOTED OTHERWISE

T.O.S. _____ TOP OF STEEL

_____ ESCAPE CORRIDOR - WIDTH 800mm.

_____ MAINTENANCE AREA - VENDOR REQUIREMENT

_____ SWITCHGEAR ROOM ENCLOUSURE

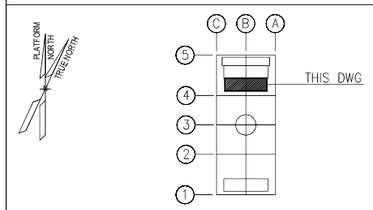
_____ FRONT OF EQUIPMENT

REFERENCES

DOCUMENT TITLE	DOCUMENT NUMBER
SG-200N1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00007
SG-200D2 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00008
DP-200N1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00009
AC UPS – GENERAL ARRANGEMENT AND DIMENSIONAL DRAWINGS	1724000372-EL-DA-00004
AC UPS – BATTERY LAYOUT INTERCONNECTING DIAGRAM	1724000372-EL-DG-00011
B-200 -GENERAL ARRANGEMENT DRAWINGS - E&I SHELTER	1724000049-AR-DA-00015
ICCC PANEL GENERAL ARRANGEMENT DRAWING	144671-CORR-TF-FAB-DWG-0003

02

KEY PLAN



VALID FOR CONSTRUCTION

FDL DWG: **123A90-FDL-EL-DL-20105**

REV.:	DATE:	SIGNATURE:
2_A	08/08/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/05/2024	FMO	LMA/AMA	LMA/MDO	ACCEPTED FOR CONSTRUCTION (AFC)
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	08/11/2023	DSF	CB/AMA	DYFO/MDO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

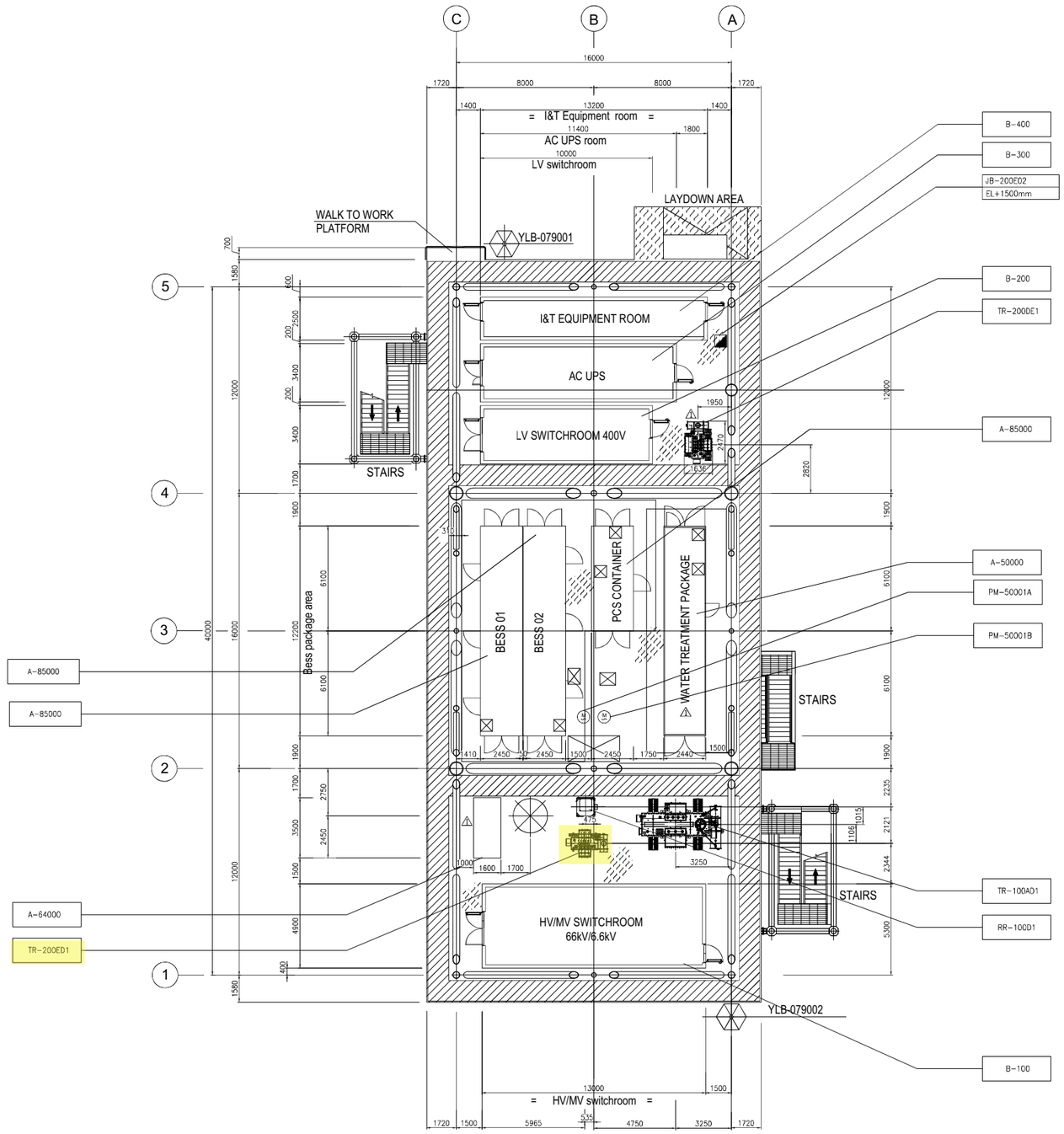
TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LV SWITCHROOM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:50
DRAWN FMO	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 27/05/2024
A1	DRAWING NO. 123A90-DDL-EL-DL-20105	SHEET 001	REV. 02

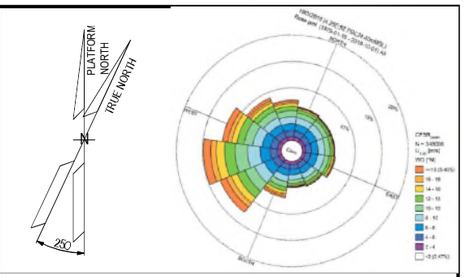
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DRAWING NO. 123A90-DDL-EL-DL-20101

REV. 01



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



NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

M	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
⚠ 123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20101**

REV.:	DATE:	SIGNATURE:
1_A	08/08/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND | ROSETTI MARINO

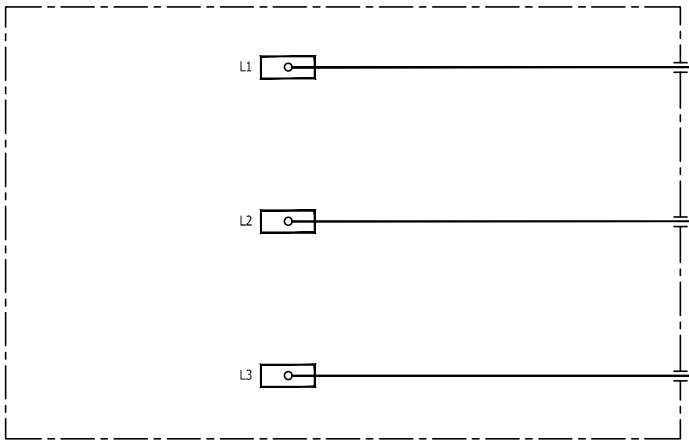
TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN SAM	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 04/03/24
A1	DRAWING NO. 123A90-DDL-EL-DL-20101	SHEET 001	REV. 01

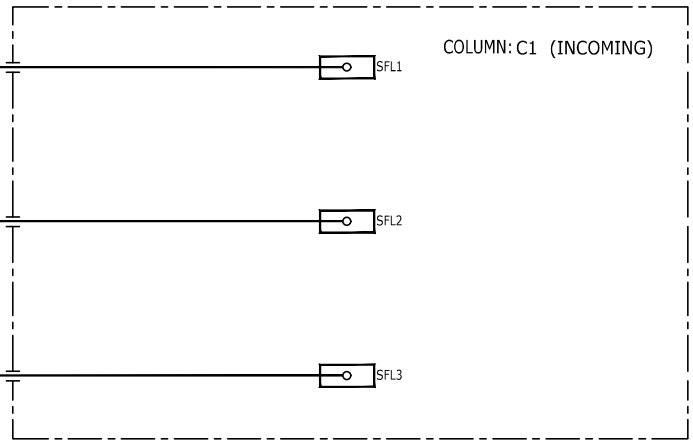
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FROM	TO

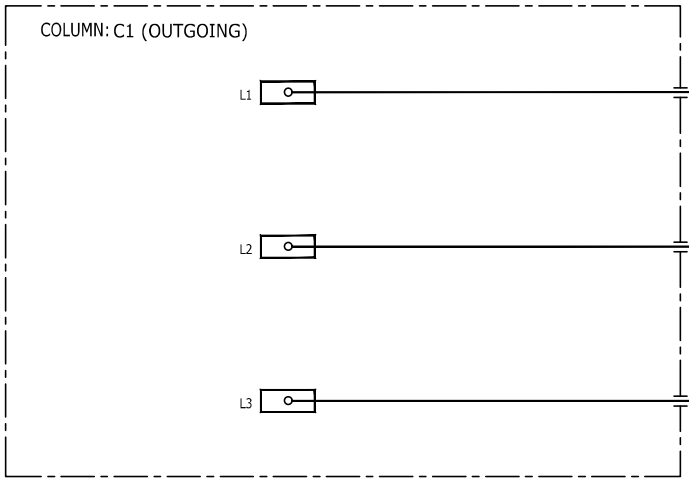
DESCRIPTION: SOLAR PV POWER CABLE JB
TAG NUMBER: JB-200E1



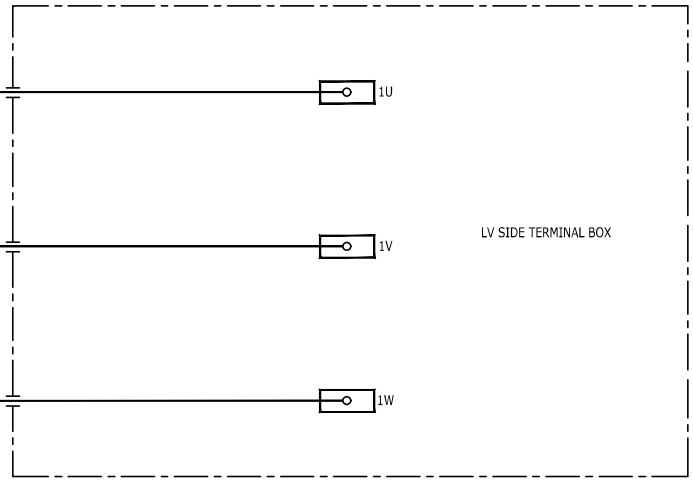
DESCRIPTION: LV SWBD 800/460V
TAG NUMBER: SG-200D2



DESCRIPTION: LV SWBD 800/460V
TAG NUMBER: SG-200D2



DESCRIPTION: 6.6/0.8 KV TRANSFORMER
TAG NUMBER: TR-200ED1



VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DG-20149
REV.: 2_C | DATE: 02/12/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

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)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
SOLAR PV POWER CABLE JB & LV SWBD 800/460V

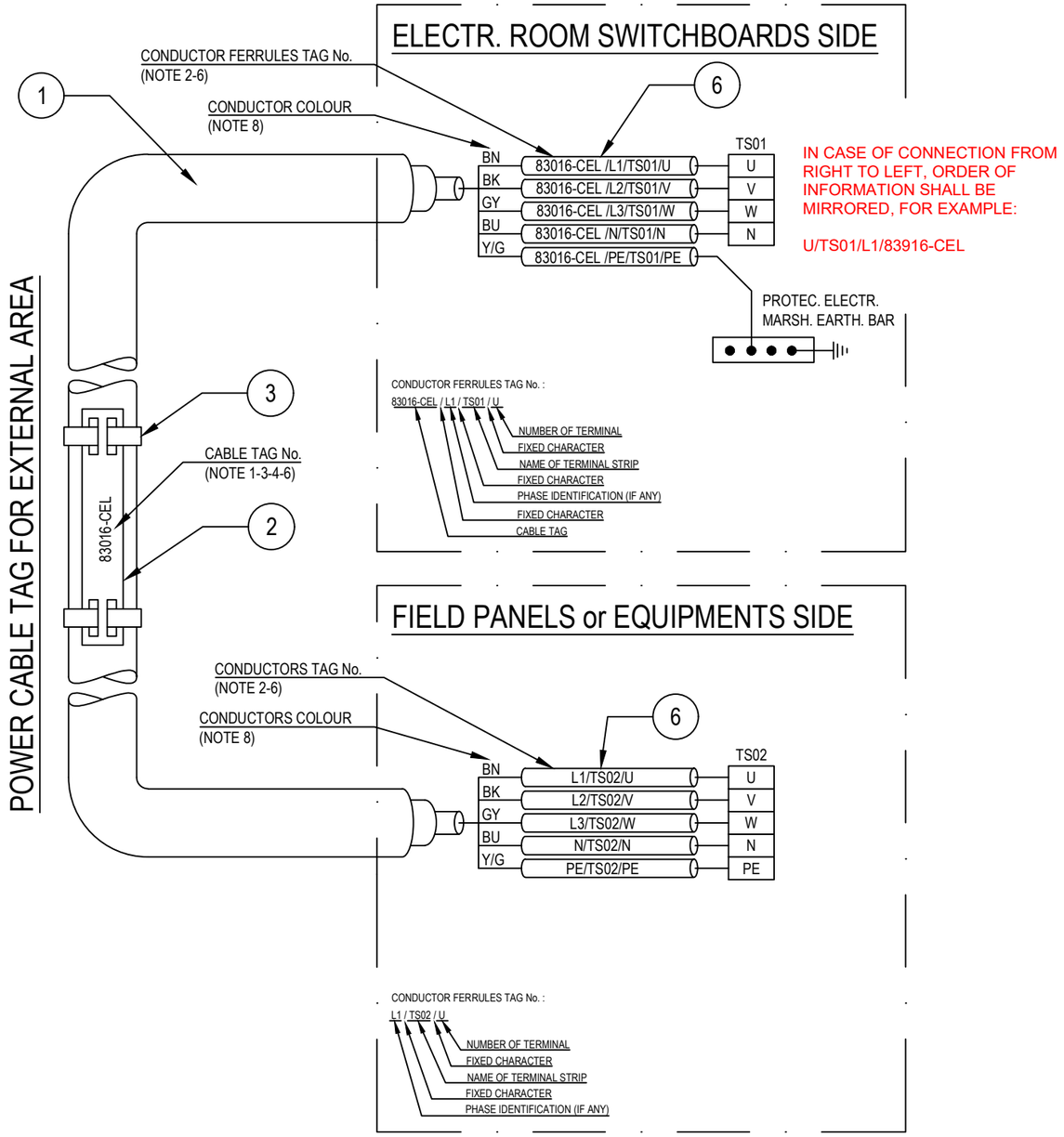
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : 1:X

A3 | DRAWING NO. 123A90-DDL-EL-DG-20149 | SHEET 018 | REV. 02

F.to UNI A3: 420mmx297mm

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

C02



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	UNARMOURED CABLE				
2	CABLE TAG FOR EXTERNAL AREA	HDG/SS			NOTE 1 NOTE 4
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5	TIE FOR CABLE TAG IN INTERNAL AREA	NYLON 6.6			
6	CORE FERRULES	PVC			

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1) ALL CABLES SHALL BE IDENTIFIED AT EACH TERMINATION AND EACH SIDE OF ANY OBSTACLE (E.G. CABLE TRANSIT ON WALLS INSIDE SHELTER AND FLOOR DECK CROSSING, BY THEIR RESPECTIVE TAGS/NUMBERS, AS INDICATED ON THE CABLE SCHEDULE.
CABLE IDENTIFICATION SHALL BE ALSO DONE BELOW AND IN THE SWITCHBOARD CABLE COMPARTMENT.

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3) ON CABLE TRAYS OR LADDERS, CABLES SHALL BE IDENTIFIED AT EACH END, AND EVERY 25 METERS.

4) THE CABLE TAG FOR EXTERNAL AREA SHALL DONE BY 316L STAINLESS STEEL LABELS, TAG (H=5mm) SHALL BE LASER PRINTED PREFERABLY OR EMBOSSED, LABEL HELD BY TWO 316L STAINLESS STEEL TIES.

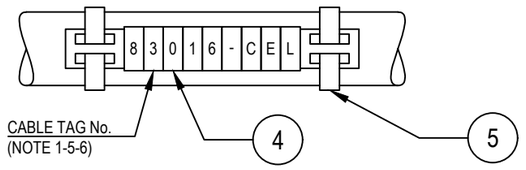
5) THE CABLE TAG FOR INTERNAL AREA SHALL BE DONE BY ENGRAVED PLASTIC SLIP ON CHARACTERS ONTO PLASTIC TIE, BLACK LETTER (H=5mm) ON WHITE.

6) CABLE AND CONDUCTOR TAG ARE INDICATIVE ONLY.

7) WITHIN TECHNICAL BUILDING, PROTECTIVE CONDUCTOR SHALL BE TAGGED BETWEEN FOLLOWING ITEMS:
- PANEL (SWITCHBOARD, SWITCHGEAR, DISTRIBUTION BOARD, ETC) AND EARTH BAR
- EARTH BAR AND EARTH BOSS

8) ONLY IF NECESSARY, SHRINK TUBES OF THE APPROPRIATE COLOR WILL BE INSTALLED TO COVER THE WRONG CONDUCTOR COLOR, THIS WILL BE PERFORMED IN EACH SIDE OF THE CABLES WHERE NECESSARY.

POWER CABLE TAG FOR INTERNAL AREA



VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20092**

REV.:	DATE:	SIGNATURE:
2_B	28/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	28/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	04/07/24	NLK	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-POWER SYSTEM & CABLE INSTALLATION
CABLES INSTALLATION SYSTEM IDENTIFICATION FOR POWER CABLES

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

A3 | DRAWING NO. 123A90-DDL-EL-DD-20092 | SHEET 007 | REV. 02

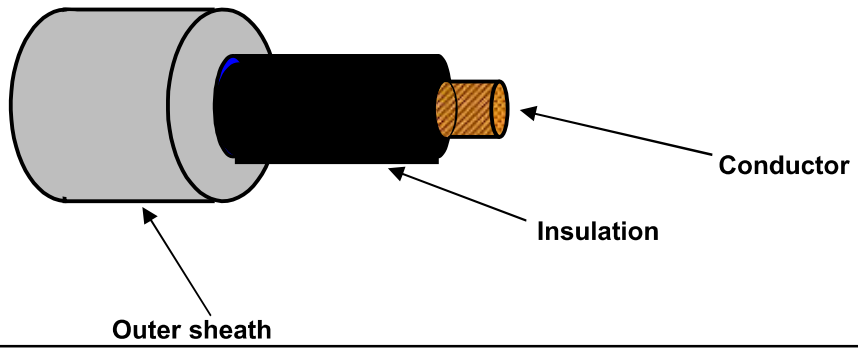
F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20092 REV.02.DWG

Tag Number	Category	Discipline	Eng Status	NativeDoc	Layout	Parent Tag	Main Function	Secondary Function	Area	From Tag	From Main Function	From Area	To Tag	To Main Function	To Area	Material ID	Material Desc.	Gland Standard	From Gland	From Entry	From Fitting	To Gland	To Entry	To Fitting	Routing	Routing Manual
83003-CEL-L3	Cable	EL	VFC	123A90-DDL-EL-LIS-20148						SG-200D2	LV 0,8/0,4 kV MCC Switchgear (Solar)	Lower Deck (B-200)	TR-200ED1	6,6 / 0,8 kV 0,5 MVA Transformer	Lower Deck	ELECV01-1X300	Cable Cu Cl.2/EPR/LSZH 0,6/1kV 1Cx300mm² - Grey	M40	n.a.			T1_M40_Single				L-300-101-LVT-032 / L-600-101-LVT-020 / L-600-101-LVT-018 / L-600-101-LVT-017 / E-MCT-201 / L-750-101-LVT-011 / L-300-101-LVT-003 / L-300-101-LVT-002

Cu Cl.2/EPR/LSZH 0,6/1 KV

1CX300 - L.V. POWER CABLE - Flame Retardant



TECHNICAL FEATURES

Conductor :	**STRANDED COMPACTED** plain/bare annealed copper wires	IEC 60228 Class 2
Insulation :	EPR compound, quality to IEC 60092.360, Nominal Thickness 2,4 mm	
Core colour code :	**Black**	
Pair Assembling :	Not required	
Pair Wrapping:	Not required	
Drain wire :	Not required	
Pair Shield :	Not required	
Shield Insulation :	Not Required	
Total Assembling :	Not Required	
Overall Wrapping:	Not required	
Drain wire :	Not required	
Overall Shield:	Not required	
Inner covering :	Not required	
Inner covering color code:	Not required	
Armour :	Not required	
Outer sheath :	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type **SHF1** to IEC 60093.360, Average Thickness 1,6 mm	
Outer sheath color code:	**Grey**	
Outer printing (INKJET) :	**FLEI - ELECTRIC CABLE - 1000V - 1CX300 SQMM - EPR/LSZH - 0,6/1 KV - IEC 60332.1.2 - IEC 60332.3.22 - Year of Manufacture - CE + Meter Marking**	
Outer diameter :	(29,4 ± 10%) mm	
Bending radius :	cable outer diameter x 10	(in fixed installation)
Spark test :	16 kV a.c.	(on insulation)
	12 kV a.c.	(on outer sheath)
Conductors DC Resistance :		IEC 60228 Class 2
Insulation Resistance :	≥ 330 MΩ x Km (@ 20°C)	
Applicable Standards		
Design Guidelines :	**IEC 60092.353**	
ON COMPLETE CABLE		
Flame Retardant test :	IEC 60332.1.2 - IEC 60332.3.22	
Acid Gas generation :	IEC 60754.1/2	
Smoke density/Light Transmittance	IEC 61034.2 (LT ≥ 60%)	
Temperature Range :		
ON INSULATION	(max +90°C)	(max continuous operation temperature of conductors)
	(max +250°C)	(max conductors temperature during short-circuit for 5 seconds)
ON COMPLETE CABLE		
During Operation :	(-20°C up to +90°C)	(in fixed installation)
During installation :	(- 5°C up to +50°C)	
Note :	**To meet the requirements of installation and use in Zone 1 & Zone 2 (IEC 60079-14) and "Gas & Vapour Tight" the cable must be provided with Penetrating Outer sheath together with correct ATEX approved equipment or accessories.**	

Office	Date	Sign	Rev.	Date	Sign
Drawn by :	29/03/2024	Messa			
Checked :	29/03/2024	Spaccasassi			
Approved :	29/03/2024	Cucinotta			

The data provided, lending assent for the treatment, will be used to the sense of the article 13 of of the Regulation (UE) 2016/679, also through outsiders, in order to allow the realization of the fulfilments informatives, administrative, commercial and accounting related to the contractual relationship. Integral copy of the informative could be requested at our offices.

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ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	83011-CEC	: Solar transformer / 6.6KV HV Switchgear		Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		Module	LD_B-200/LD_B-100	
TASK	code	C10002138	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity CCK	Discipline Electrical	Form	CPX10	Multicore Electrical Control Cable

CABLE DATA

Type: Cu Cl.2/XLPE/LSZH | Cores/Size mm²: 7X1,5 mm2 | Color: GREY

From: CP-200E2 | To: SG-100D1

1	Check cable physical integrity	OK
2	Check cable data against latest cable schedule.	OK
3	Check cable routing against latest drawings (segregation, distance…).	PL
4	Check cable is supported and fixed to rack according to latest project Specification.	PL
5	Check bending radius is within the specified limits.	OK
6	Check cable and core marking against latest drawings	OK
7	Check cable labelling is in accordance with latest specification.	PL
8	Check cable glands suit for cable type and are in accordance with latest specification.	PL
9	Check terminations are in accordance with latest termination diagram.	Note
10	Check cable earthing against lastest drawings.	NA
11	Check gland plate for single core cables is non magnetic.	NA
12	If required produce Red Line Mark Up for "AS BUILT"	

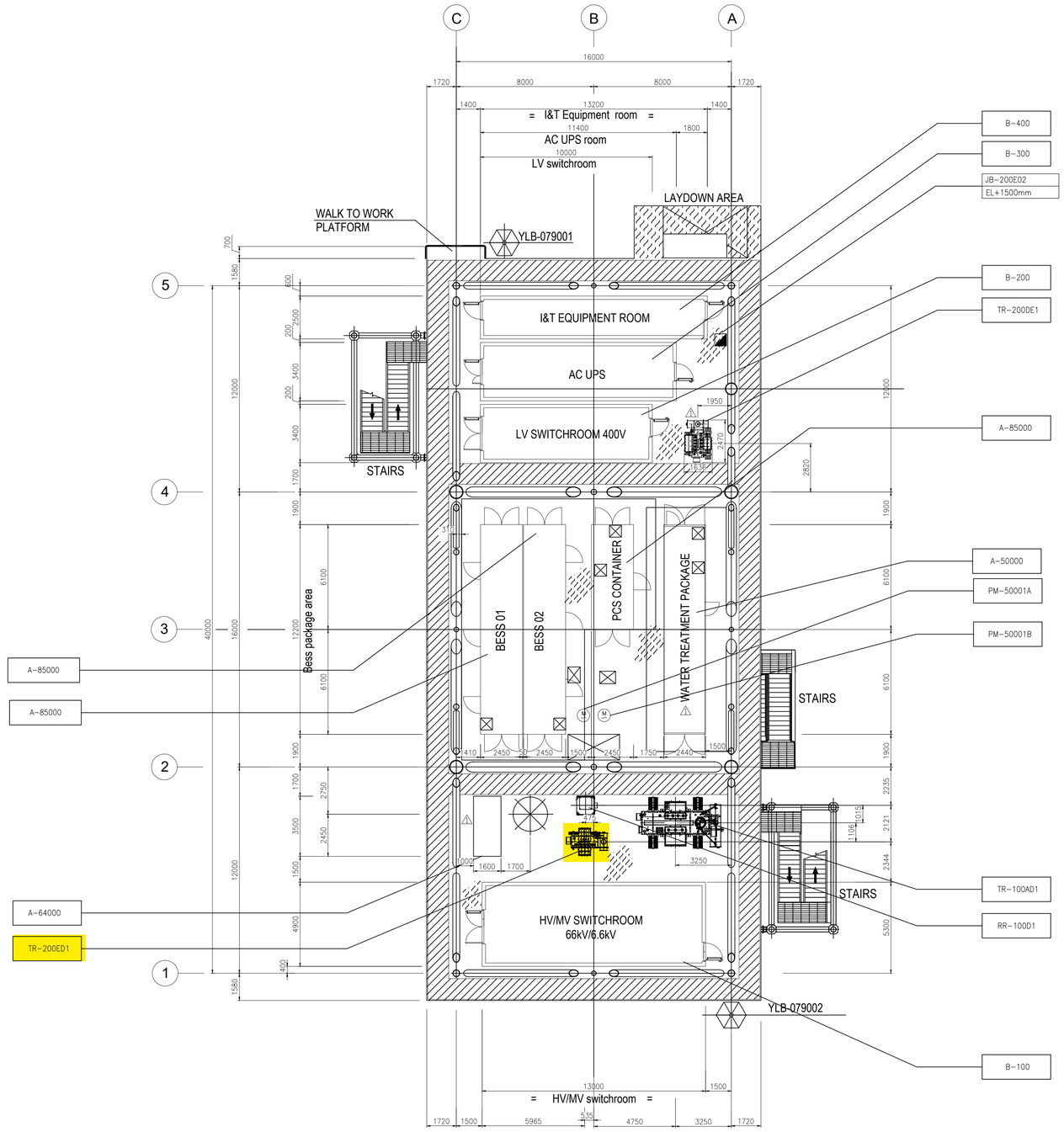
CONTINUITY	CORE 1 / All cores+screen+armour+earth	1,0
	CORE 2 / All cores+screen+armour+earth	1,0
	CORE 3 / All cores+screen+armour+earth	1,0
	CORE 4 / All cores+screen+armour+earth	1,0
	CORE 5 / All cores+screen+armour+earth	1,0
	CORE 6 / All cores+screen+armour+earth	1,0
	CORE 7 / All cores+screen+armour+earth	1,0
	CORE 8 / All cores+screen+armour+earth	NA
	CORE 9 / All cores+screen+armour+earth	NA
	CORE 10 / All cores+screen+armour+earth	NA
INSULATION	CORE 1	>999
	CORE 2	>999
	CORE 3	>999
	CORE 4	>999
	CORE 5	>999
	CORE 6	>999
	CORE 7	>999
	CORE 8	NA
	CORE 9	NA
	CORE 10	NA
	SCREEN	NA
	EARTH	NA
	ARMr	NA
	TEST VOLTS	1000

TESTING INSTRUMENTS USED

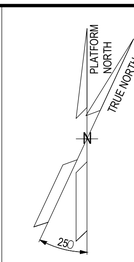
TYPE / SERIAL N° : KEW3125A S/N: W8330207 Calibration certificate N° and date: N°7722/24 _ 10/07/2024	TYPE / SERIAL N° : FLUKE 175 S/N:AW1/018(17140769) Calibration certificate N° and date: N°7715/24 _ 10/07/2024
TYPE / SERIAL N° : Calibration certificate N° and date:	TYPE / SERIAL N° : Calibration certificate N° and date:

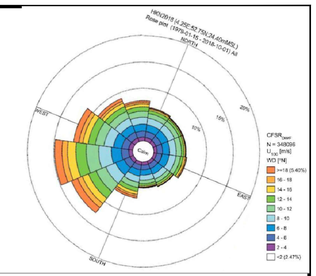
Comments: Note 4 : refer to PL C30000679
Note 9: cable terminations must be reconnected during the commissioning phase.

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Francesco Zucca	Giovanni Tangianu	
Date	2024-11-29	2024-12-09	
Signature	PROVERLIS Digitaly signed by Francesco Zucca 2024-11-29T10:40:57.320Z	PROVERLIS Digitaly signed by Giovanni Tangianu 2024-12-09T08:58:57.219Z	



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





NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

(M)	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
⚠ 123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND | ROSETTI MARINO

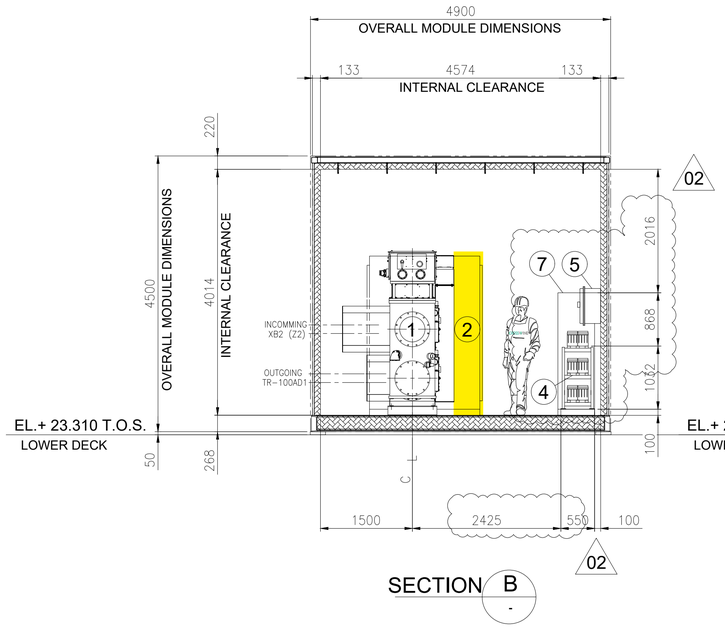
TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE 1:150
DRAWN SAM | CHECKED FMA/AMA | APPROVED FPA/DLO | DATE 04/03/24
A1 | DRAWING NO. 123A90-DDL-EL-DL-20101 | SHEET 001 | REV. 01

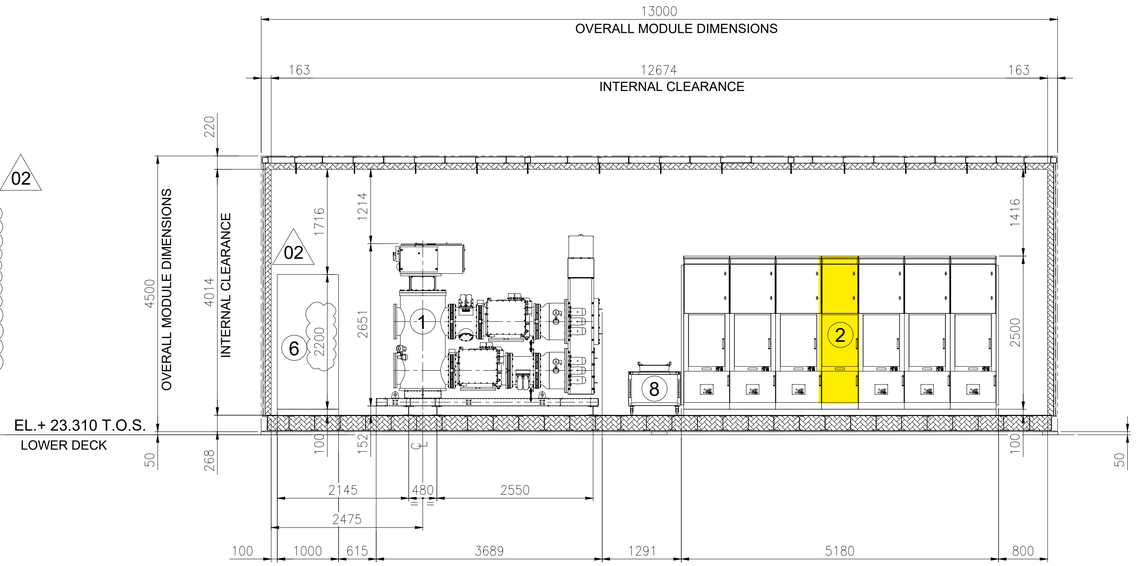
DRAWING NO. 123A90-DDL-EL-DL-20101 REV. 01

File Name : 123A90-DDL-EL-DL-20101-Electrical Equipment Layout – Lower Deck

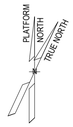
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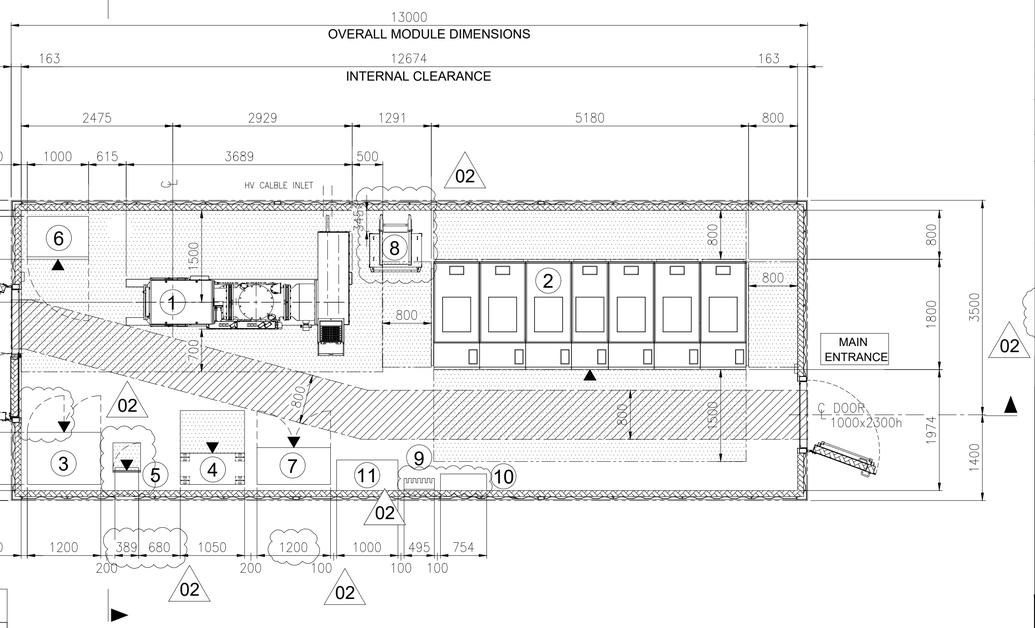


SECTION B -



SECTION A -

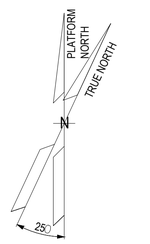


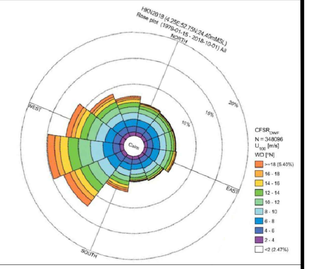


A -

EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	NOTE
1	HNA6-AFA70	66kV SWITCHGEAR (GIS)	3689	2025	2651	
2	SG-100D1	6.6kV SWITCHGEAR	5180	1800	2500	
3	UP-200F1	DC UPS PANEL	1200	850	2105	
4	BA-200F1	DC UPS BATTERY RACK	1050	510	1272	
5	CB-200F1 02	ISOLATOR FOR DC UPS	452	377	634	
6	CP-100E1	66 kV SWITCHGEAR LOCAL CONTROL PANEL	1000	700	2200	02
7	B100-HSB-001	DISTRIBUTION & HVAC PANEL - HV MV ROOM	1200	600	1900	
8	-	SERVICE TROLLEY FOR 6.6kV SWITCHGEAR	943	862	874	
9	-	TOOL BOX	495	200	200	
10	-	SUBSTATION LIFE SAVING & INTERVENTION KIT	754	270	840	
11	-	TABLE	1000	500	750	





NOTES

1. U.N.O. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DELETED
3. DOCUMENT VALID ONLY FOR ELECTRICAL COMPONENT.
4. FOR OTHER ITEMS, CORRECT LOCATION AND INFROMATION, PLEASE REFER TO VENDORS AND DEDICATED PROJECT DOCUMENTATION.
5. HEIGHT OF ALL PANELS IN THE EQUIPMENT LIST TABLE IS WITHOUT THE BASE FRAME (100mm)

02

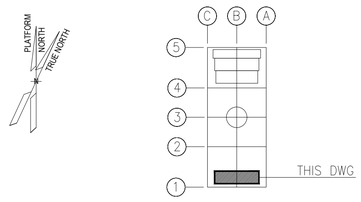
LEGEND

U.N.O. _____ UNLESS NOTED OTHERWISE
T.O.S. _____ TOP OF STEEL
_____ ESCAPE CORRIDOR - WIDTH 800mm.
_____ MAINTENANCE AREA - VENDOR REQUIREMENT
_____ SWITCHGEAR ROOM ENCLOUSURE
_____ FRONT OF EQUIPMENT

REFERENCES

DOCUMENT TITLE	DOCUMENT NUMBER
66kV SWITCHGEAR (GIS) GENERAL ARRANGEMENT DRAWING	1723001595-EL-DA-00006
CIRCUIT AND WIRING DIAGRAM	1723001595-EL-DG-00015
SG-100D1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00006
DC UPS – GENERAL ARRANGEMENT AND DIMENSIONAL DRAWINGS	1724000372-EL-DA-00003
DC UPS – BATTERY LAYOUT AND INTERCONNECTING DIAGRAM	1724000372-EL-DG-00010
B-100 - GENERAL ARRANGEMENT DRAWINGS - E&I SHELTER	1724000049-AR-DA-00014

KEY PLAN



VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20104**

REV.:	DATE:	SIGNATURE:
2_A	08/08/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/05/2024	FMO	LMA/AMA	LMA/MDO	ACCEPTED FOR CONSTRUCTION (AFC)
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	10/11/2023	DSF	CB/AMA	DYFO/MDO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
HV SWITCHROOM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:50
DRAWN GPA	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 27/05/2024

A1	DRAWING NO. 123A90-DDL-EL-DL-20104	SHEET 001	REV. 02

File Name : 123A90-DDL-EL-DL-20104_REV02.dwg

FROM	TO

DESCRIPTION: SOLAR TRANSFORMER
TAG NUMBER: CP-200E2

COLUMN/CUBIC.: -

ALARMS 97T, 26OT, 71OT TO PROTECTION

-X1

BUCHHOLZ RELAY ALARM	X1 / 02	1
	X1 / 03	2
OIL THERMOMETER ALARM	X1 / 08	3
	X1 / 09	4
OIL LEVEL (MIN.) ALARM	X1 / 14	5
	X1 / 15	6
		7

BK — 83011-CEC 7C X 1.5 mm² — BK

DESCRIPTION: 6.6KV HV SWITCHGEAR
TAG NUMBER: SG-100D1

COLUMN/CUBIC.: A2

-XM

1	XM / 33	ALARM 97T
2	XM / 34	
3	XM / 35	ALARM 26OT
4	XM / 36	
5	XM / 37	ALARM 71OT
6	XM / 38	
7		

ALARMS, 49T TO PROTECTION

-X1

WIND. TEMPERATURE ALARM	X1 / 31	1
	X1 / 33	2
OIL LEVEL VERY LOW ALARM	X1 / 17	3
	X1 / 18	4
TRANSFORMER GENERAL ALARM	X1 / 40	5
	X1 / 41	6
		7

BK — 83012-CEC 7C X 1.5 mm² — BK

-XM

1	XM / 41	ALARM 49T
2	XM / 42	
3	XM / 39	ALARM 71OT_1
4	XM / 40	
5	XM / 49	REMOTE OPENING COMMAND
6	XM / 50	
7		

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

REV.:	DATE:	SIGNATURE:
2_C	02/12/24	G.Randi

ROSETTI MARINO SpA

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)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
CP-200ED1A SOLAR TRANSFORMER ALARMS PROTECTION

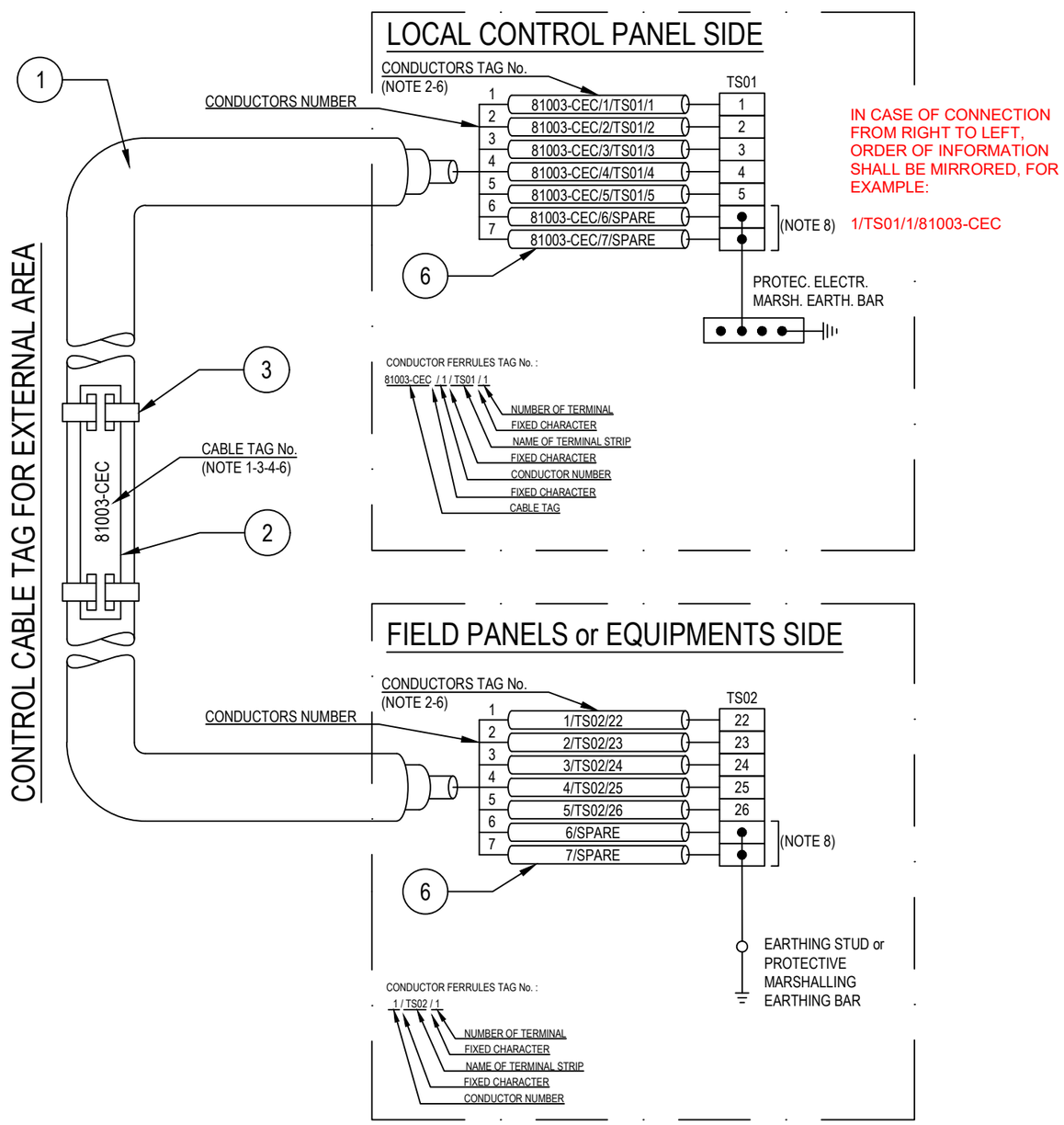
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : 1:X

A3	DRAWING NO.	SHEET	REV.
	123A90-DDL-EL-DG-20149	082	02

F.to UNI A3: 420mmx297mm

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

C04



IN CASE OF CONNECTION FROM RIGHT TO LEFT, ORDER OF INFORMATION SHALL BE MIRRORED, FOR EXAMPLE:

1/TS01/1/81003-CEC

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	UNARMOURED CABLE				
2	CABLE TAG FOR EXTERNAL AREA	HDG/SS			NOTE 1 NOTE 4
3	TIE FOR CABLE TAG IN EXTERNAL AREA	HDG/SS			
4	CABLE TAG FOR INTERNAL AREA	PVC			NOTE 1 NOTE 5
5	TIE FOR CABLE TAG IN INTERNAL AREA	NYLON 6.6			
6	CORE FERRULES	PVC			

NOTES:

1) ALL CABLES SHALL BE IDENTIFIED AT EACH TERMINATION AND EACH SIDE OF ANY OBSTACLE (E.G. CABLE TRANSIT ON WALLS INSIDE SHELTER AND FLOOR DECK CROSSING, BY THEIR RESPECTIVE TAGS/NUMBERS, AS INDICATED ON THE CABLE SCHEDULE.
CABLE IDENTIFICATION SHALL BE ALSO DONE BELOW AND IN THE SWITCHBOARD CABLE COMPARTMENT.

2) CABLE CORE FERRULES SHALL BE FITTED AT EVERY TERMINATION. THESE FERRULES SHALL BE OF ENGRAVED PLASTIC SLIP ON, INTERLOCKED AND SELF GRIP TYPE.

3) ON CABLE TRAYS OR LADDERS, CABLES SHALL BE IDENTIFIED AT EACH END, AND EVERY 50 METERS.

4) THE CABLE TAG FOR EXTERNAL AREA SHALL DONE BY 316L STAINLESS STEEL LABELS, TAG (H=5mm) SHALL BE LASER PRINTED PREFERABLY OR EMBOSSED, LABEL HELD BY TWO 316L STAINLESS STEEL TIES.

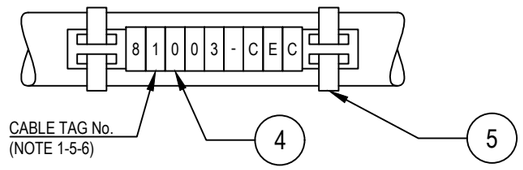
5) THE CABLE TAG FOR INTERNAL AREA SHAL BE DONE BY ENGRAVED PLASTIC SLIP ON CHARACTERS ONTO PLASTIC TIE, BLACK LETTER (H=5mm) ON WHITE.

6) CABLE AND CONDUCTOR TAG ARE INDICATIVE ONLY.

7) THE EARTHING CONNECTION OF THE ARMOUR CABLE IS NOT APPLICABILE IF THE ARMOUR IS CONNECTED TO EARTH WITH METALLIC CABLE GLAND.
WITHIN TECHNICAL BUILDING, PROTECTIVE CONDUCTOR SHALL BE TAGGED BETWEEN FOLLOWING ITEMS:
- PANEL (SWITCHBOARD, SWITCHGEAR, DISTRIBUTION BOARD, ETC) AND EARTH RING
- EARTHING BOSS AND EARTH RING
- EARTH BAR AND EARTH BAR (IF ANY).

8) ONLY IF NECESSARY, SHRINK TUBES OF THE APPROPRIATE COLOR WILL BE INSTALLED TO COVER THE WRONG CONDUCTOR COLOR, THIS WILL BE PERFORMED IN EACH SIDE OF THE CABLES WHERE NECESSARY.

CONTROL CABLE TAG FOR INTERNAL AREA



VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DD-20092

REV.:	DATE:	SIGNATURE:
2_B	28/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	28/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	04/07/24	NLK	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-POWER SYSTEM & CABLE INSTALLATION
CABLES INSTALLATION SYSTEM IDENTIFICATION FOR CONTROL CABLES

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

A3 | DRAWING NO. 123A90-DDL-EL-DD-20092 | SHEET 008 | REV. 02

F.to UNI A3: 420mmx297mm

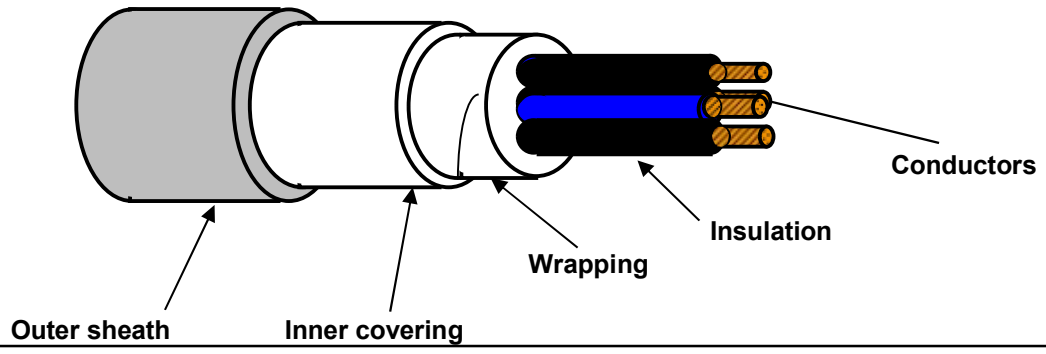
File Name : 123A90-DDL-EL-DD-20092 REV.02.DWG

Tag Number	Category	Discipline	Eng Status	NativeDoc	Layout	Parent Tag	Main Function	Secondary Function	Area	From Tag	From Main Function	From Area	To Tag	To Main Function	To Area	Material ID	Material Desc.	Gland Standard	From Gland	From Entry	From Fitting	To Gland	To Entry	To Fitting	Routing	Routing Manual
83011-CEC	Cable	EL	VFC	123A90-DDL-EL-LIS-20148						CP-200E2	Auxiliary Trafo SOLAR 0,5 MVA Marshalling Box	Lower Deck	SG-100D1	MV 6,6kV Switchgear	Lower Deck (B-100)	ELECV34-7X1,5	Cable Cu Cl.2/XLPE/LSZH 0,6/1kV 7Cx1,5mm² - Grey	M25	T1_M25_Single			n.a.				L-300-101-LVT-002 / L-600-101-LVT-094 / L-300-101-LVT-076 / L-600-101-LVT-012 / L-300-101-LVT-074 / E-MCT-105 / L-600-101-LVT-058 / L-300-101-LVT-059

FLEI s.r.l.

Cu Cl.2/XLPE/LSZH 0,6/1 KV

7CX1,5 - CONTROL CABLE - Flame Retardant



TECHNICAL FEATURES

Conductors :	**STRANDED** plain/bare annealed copper wires	IEC 60228 Class 2
Insulation :	**XLPE** compound, quality to IEC 60092.360, Nominal Thickness 0,7 mm	
Cores colour code :	**Black NUMBERED (from 1 to 7)**	
Pair Assembling :	Not required	
Pair Wrapping:	Not required	
Drain wire :	Not required	
Pair Shield :	Not required	
Shield Insulation :	Not Required	
Total Assembling :	Cores layed up with optimal lay length	
Overall Wrapping:	by plastic tape helically wound	
Drain wire :	Not required	
Overall Shield:	Not required	
Inner covering :	Extruded LSZH compound, Average Thickness 1,0 mm	
Inner covering color code:	**Black or Natural**	
Armour :	Not required	
Outer sheath :	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type **SHF1** to IEC 60093.360, Average Thickness 1,2 mm	
Outer sheath color code:	**Grey**	
Outer printing (INKJET) :	**FLEI - ELECTRIC CABLE - 1000V - 7CX1,5 SQMM - XLPE/LSZH - 0,6/1 KV - IEC 60332.1.2 - IEC 60332.3.22 -**	
	Year of Manufacture - CE + Meter Marking	
Outer diameter :	(13,5 ± 10%) mm	
Bending radius :	cable outer diameter x 10	(in fixed installation)
Voltage test :	3,5 kV a.c. for 5' (Between Cores)	
Conductors DC Resistance :		IEC 60228 Class 2
Insulation Resistance :	≥ 1000 MΩ x Km (@ 20°C)	
Applicable Standards		
Design Guidelines :	**IEC 60092.353**	
ON COMPLETE CABLE		
Flame Retardant test :	IEC 60332.1.2 - IEC 60332.3.22	
Acid Gas generation :	IEC 60754.1/2	
Smoke density/Light Transmittance :	IEC 61034.2 (LT ≥ 60%)	
Temperature Range :		
ON INSULATION	(max +90°C)	(max continuous operation temperature of conductors)
	(max +250°C)	(max conductors temperature during short-circuit for 5 seconds)
ON COMPLETE CABLE		
During Operation :	(-20°C up to +90°C)	(in fixed installation)
During installation :	(- 5°C up to +50°C)	
Note :	**To meet the requirements of installation and use in Zone 1 & Zone 2 (IEC 60079-14) and "Gas & Vapour Tight" the cable must be provided with Penetrating Inner covering together with correct ATEX approved equipment or accessories.**	

Office	Date	Sign	Rev.	Date	Sign
Drawn by :	29/03/2024	Messa			
Checked :	29/03/2024	Spaccasassi			
Approved :	29/03/2024	Cucinotta			

The data provided, lending assent for the treatment, will be used to the sense of the article 13 of of the Regulation (UE) 2016/679, also through outsiders, in order to allow the realization of the fulfilments informatives, administrative, commercial and accounting related to the contractual relationship. Integral copy of the informative could be requested at our offices.

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ROSETTI MARINO — CROSSWIND

ITEM	Tag	83012-CEC	: Solar transformer / 6.6KV HV Switchgear	Dwg	123A90-DDL-EL-LIS-20148		
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)	Module	LD_B-200/LD_B-100		
TASK	code	C10002139	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX10

Multicore Electrical Control Cable

CABLE DATA

Type: Cu Cl.2/XLPE/LSZH — Cores/Size mm²: 7X1,5 mm2 — Color: GREY

From: CP-200E2 — To: SG-100D1

1	Check cable physical integrity	OK
2	Check cable data against latest cable schedule.	OK
3	Check cable routing against latest drawings (segregation, distance…).	PL
4	Check cable is supported and fixed to rack according to latest project Specification.	PL
5	Check bending radius is within the specified limits.	OK
6	Check cable and core marking against latest drawings	PL
7	Check cable labelling is in accordance with latest specification.	PL
8	Check cable glands suit for cable type and are in accordance with latest specification.	OK
9	Check terminations are in accordance with latest termination diagram.	Note
10	Check cable earthing against lastest drawings.	NA
11	Check gland plate for single core cables is non magnetic.	NA
12	If required produce Red Line Mark Up for "AS BUILT"	

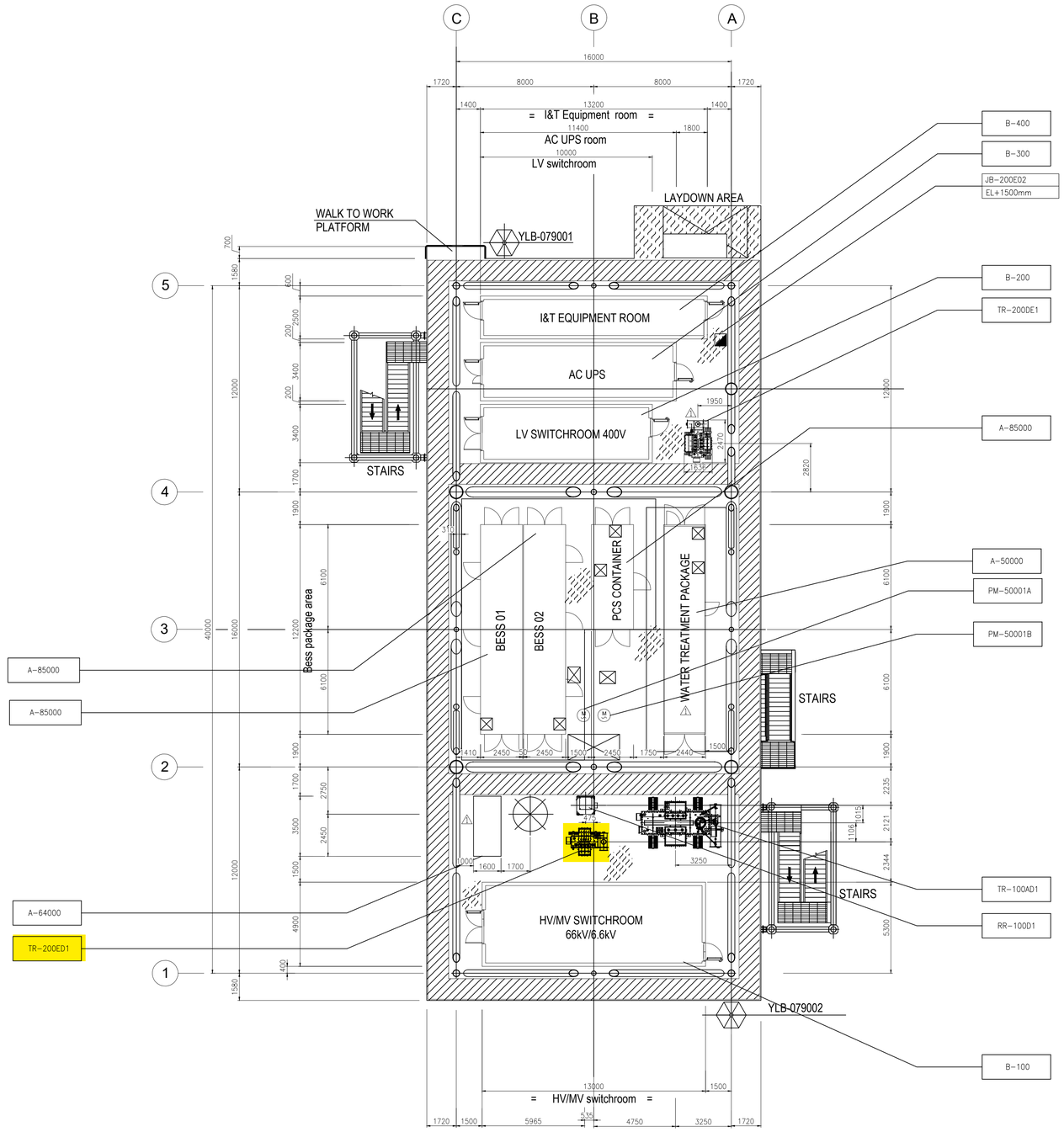
CONTINUITY	CORE 1 / All cores+screen+armour+earth	1,0
	CORE 2 / All cores+screen+armour+earth	1,0
	CORE 3 / All cores+screen+armour+earth	1,0
	CORE 4 / All cores+screen+armour+earth	1,0
	CORE 5 / All cores+screen+armour+earth	1,0
	CORE 6 / All cores+screen+armour+earth	1,0
	CORE 7 / All cores+screen+armour+earth	1,0
	CORE 8 / All cores+screen+armour+earth	NA
	CORE 9 / All cores+screen+armour+earth	NA
	CORE 10 / All cores+screen+armour+earth	NA
INSULATION	CORE 1	>999
	CORE 2	>999
	CORE 3	>999
	CORE 4	>999
	CORE 5	>999
	CORE 6	>999
	CORE 7	>999
	CORE 8	NA
	CORE 9	NA
	CORE 10	NA
	SCREEN	NA
	EARTH	NA
	ARMr	NA
	TEST VOLTS	1000

TESTING INSTRUMENTS USED

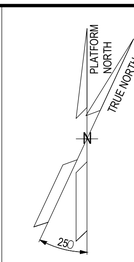
TYPE / SERIAL N° : KEW3125A S/N: W8330207 Calibration certificate N° and date: N°7722/24 _ 10/07/2024	TYPE / SERIAL N° : FLUKE 175 S/N:AW1/018(17140769) Calibration certificate N° and date: N°7715/24 _ 10/07/2024
TYPE / SERIAL N° : Calibration certificate N° and date:	TYPE / SERIAL N° : Calibration certificate N° and date:

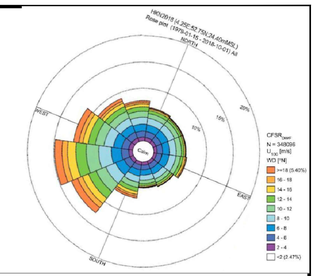
Comments: Note 4 : refer to PL C30000679
Note9_ cable terminations must be reconnected during the commissioning phase.

Page 1/1	Performed by	☑ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Carmelo Bongiovanni	Giovanni Tangianu	
Date	2024-11-22	2024-12-09	
Signature	Digitaly signed by Carmelo Bongiovanni 2024-11-22T17:34:25.896Z	Digitaly signed by Giovanni Tangianu 2024-12-09T08:51:33.709Z	



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





NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

(M)	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
⚠ 123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND | ROSETTI MARINO

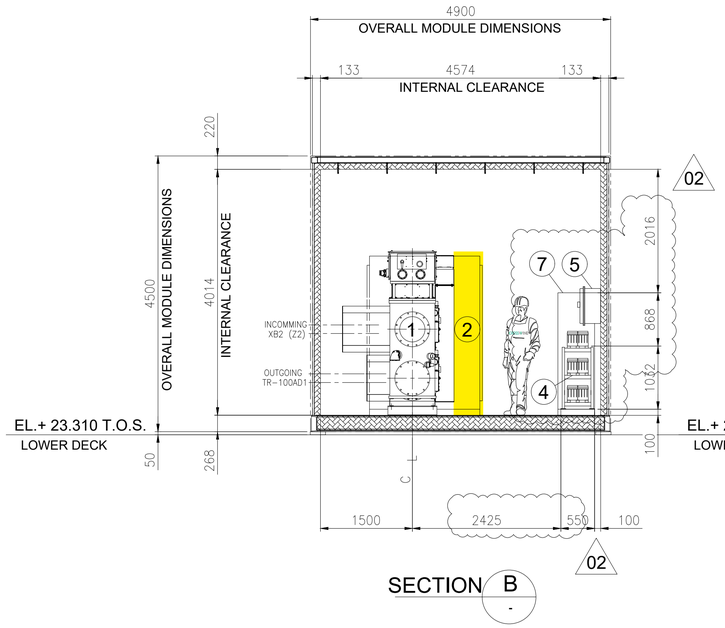
TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE 1:150
DRAWN SAM | CHECKED FMA/AMA | APPROVED FPA/DLO | DATE 04/03/24
A1 | DRAWING NO. 123A90-DDL-EL-DL-20101 | SHEET 001 | REV. 01

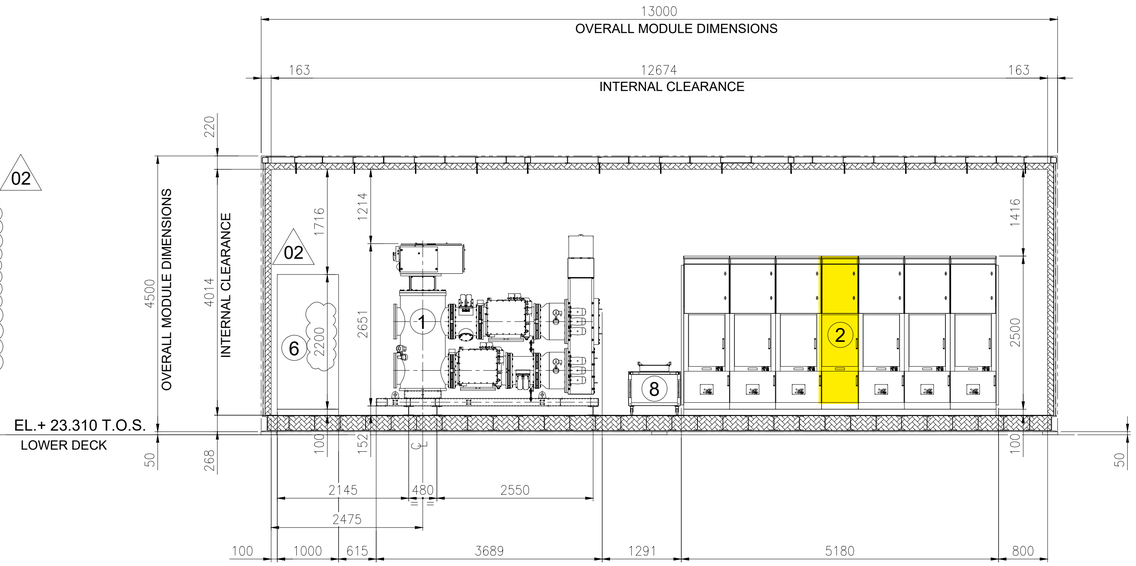
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File Name : 123A90-DDL-EL-DL-20101-Electrical Equipment Layout – Lower Deck

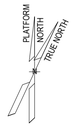
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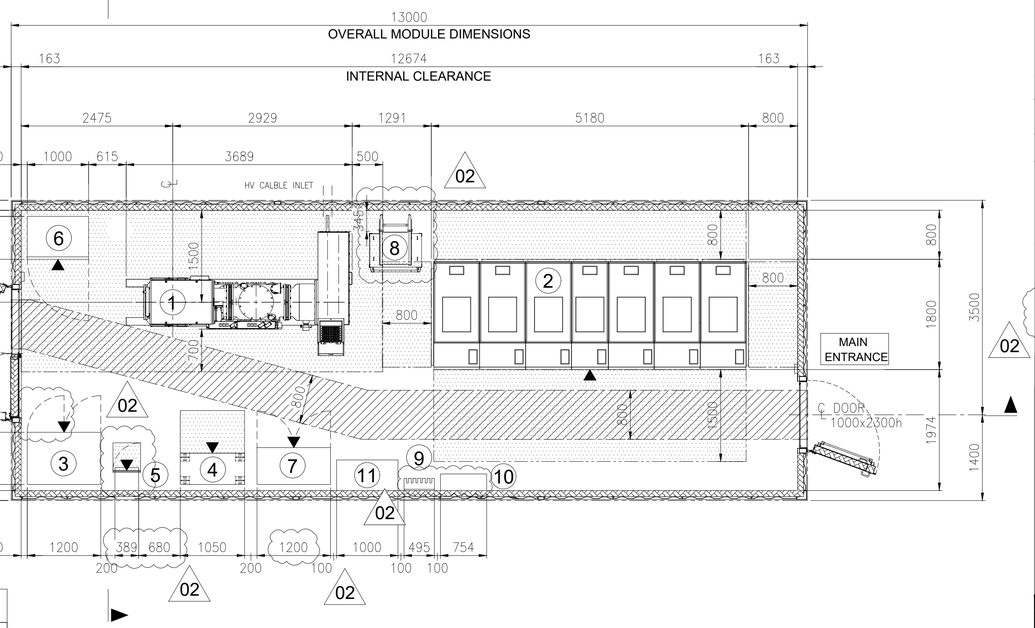


SECTION B -



SECTION A -

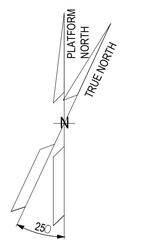


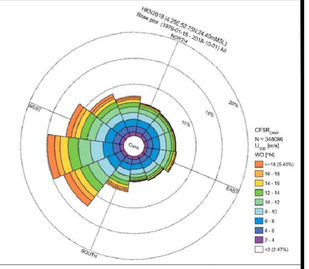


A -

EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	NOTE
1	HNA6-AFA70	66kV SWITCHGEAR (GIS)	3689	2025	2651	
2	SG-100D1	6.6kV SWITCHGEAR	5180	1800	2500	
3	UP-200F1	DC UPS PANEL	1200	850	2105	
4	BA-200F1	DC UPS BATTERY RACK	1050	510	1272	
5	CB-200F1 02	ISOLATOR FOR DC UPS	452	377	634	
6	CP-100E1	66 kV SWITCHGEAR LOCAL CONTROL PANEL	1000	700	2200	02
7	B100-HSB-001	DISTRIBUTION & HVAC PANEL - HV MV ROOM	1200	600	1900	
8	-	SERVICE TROLLEY FOR 6.6kV SWITCHGEAR	943	862	874	
9	-	TOOL BOX	495	200	200	
10	-	SUBSTATION LIFE SAVING & INTERVENTION KIT	754	270	840	
11	-	TABLE	1000	500	750	





NOTES

1. U.N.O. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DELETED
3. DOCUMENT VALID ONLY FOR ELECTRICAL COMPONENT.
4. FOR OTHER ITEMS, CORRECT LOCATION AND INFROMATION, PLEASE REFER TO VENDORS AND DEDICATED PROJECT DOCUMENTATION.
5. HEIGHT OF ALL PANELS IN THE EQUIPMENT LIST TABLE IS WITHOUT THE BASE FRAME (100mm)

02

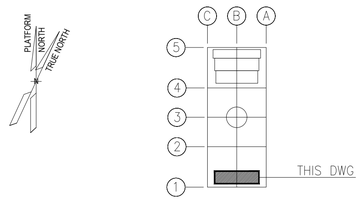
LEGEND

U.N.O. _____ UNLESS NOTED OTHERWISE
T.O.S. _____ TOP OF STEEL
_____ ESCAPE CORRIDOR - WIDTH 800mm.
_____ MAINTENANCE AREA - VENDOR REQUIREMENT
_____ SWITCHGEAR ROOM ENCLOUSURE
_____ FRONT OF EQUIPMENT

REFERENCES

DOCUMENT TITLE	DOCUMENT NUMBER
66kV SWITCHGEAR (GIS) GENERAL ARRANGEMENT DRAWING	1723001595-EL-DA-00006
CIRCUIT AND WIRING DIAGRAM	1723001595-EL-DG-00015
SG-100D1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00006
DC UPS – GENERAL ARRANGEMENT AND DIMENSIONAL DRAWINGS	1724000372-EL-DA-00003
DC UPS – BATTERY LAYOUT AND INTERCONNECTING DIAGRAM	1724000372-EL-DG-00010
B-100 - GENERAL ARRANGEMENT DRAWINGS - E&I SHELTER	1724000049-AR-DA-00014

KEY PLAN



VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20104**

REV.:	DATE:	SIGNATURE:
2_A	08/08/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/05/2024	FMO	LMA/AMA	LMA/MDO	ACCEPTED FOR CONSTRUCTION (AFC)
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	10/11/2023	DSF	CB/AMA	DYFO/MDO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
HV SWITCHROOM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:50
DRAWN GPA	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 27/05/2024

A1	DRAWING NO. 123A90-DDL-EL-DL-20104	SHEET 001	REV. 02

File Name : 123A90-DDL-EL-DL-20104_REV02.dwg

FROM	TO

DESCRIPTION: SOLAR TRANSFORMER
TAG NUMBER: CP-200E2

COLUMN/CUBIC.: -

ALARMS 97T, 26OT, 71OT TO PROTECTION

-X1

BUCHHOLZ RELAY ALARM	X1 / 02	1	
	X1 / 03	2	
OIL THERMOMETER ALARM	X1 / 08	3	
	X1 / 09	4	BK
OIL LEVEL (MIN.) ALARM	X1 / 14	5	
	X1 / 15	6	
		7	

83011-CEC
7C X 1.5 mm²

DESCRIPTION: 6.6KV HV SWITCHGEAR
TAG NUMBER: SG-100D1

COLUMN/CUBIC.: A2

-XM

	XM / 33	1	BK
ALARM 97T	XM / 34	2	
	XM / 35	3	
ALARM 26OT	XM / 36	4	
	XM / 37	5	
ALARM 71OT	XM / 38	6	
		7	

ALARMS, 49T TO PROTECTION

-X1

WIND. TEMPERATURE ALARM	X1 / 31	1	
	X1 / 33	2	
OIL LEVEL VERY LOW ALARM	X1 / 17	3	
	X1 / 18	4	BK
TRANSFORMER GENERAL ALARM	X1 / 40	5	
	X1 / 41	6	
		7	

83012-CEC
7C X 1.5 mm²

-XM

	XM / 41	1	BK
ALARM 49T	XM / 42	2	
	XM / 39	3	
ALARM 71OT_1	XM / 40	4	
	XM / 49	5	
REMOTE OPENING COMMAND	XM / 50	6	
		7	

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

REV.:	DATE:	SIGNATURE:
2_C	02/12/24	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
CP-200ED1A SOLAR TRANSFORMER ALARMS PROTECTION

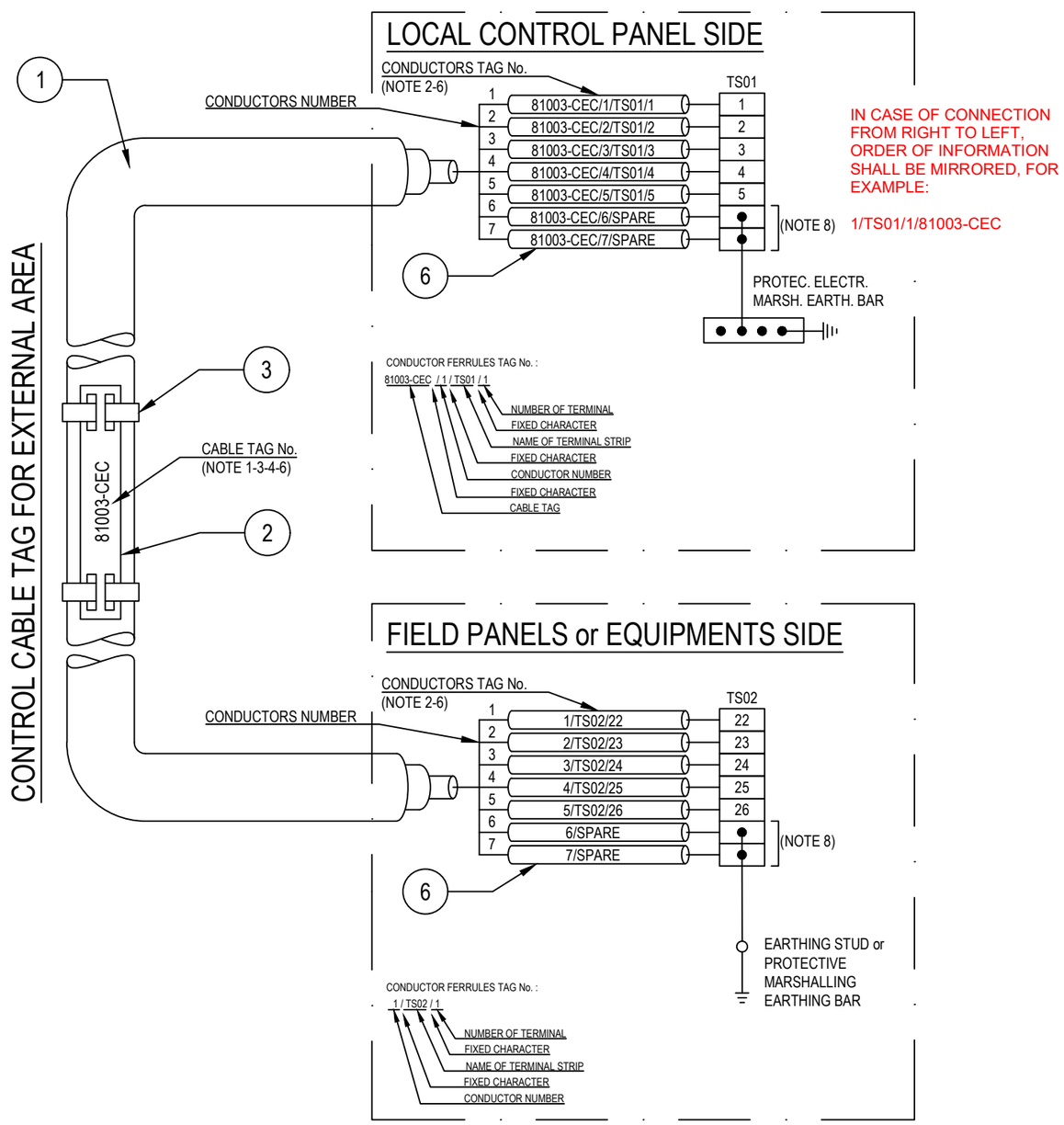
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : 1:X

A3	DRAWING NO.	SHEET	REV.
	123A90-DDL-EL-DG-20149	082	02

F.to UNI A3: 420mmx297mm

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

C04



IN CASE OF CONNECTION FROM RIGHT TO LEFT, ORDER OF INFORMATION SHALL BE MIRRORED, FOR EXAMPLE:

1/TS01/1/81003-CEC

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	UNARMOURED CABLE				
2	CABLE TAG FOR EXTERNAL AREA	HDG/SS			NOTE 1 NOTE 4
3	TIE FOR CABLE TAG IN EXTERNAL AREA	HDG/SS			
4	CABLE TAG FOR INTERNAL AREA	PVC			NOTE 1 NOTE 5
5	TIE FOR CABLE TAG IN INTERNAL AREA	NYLON 6.6			
6	CORE FERRULES	PVC			

NOTES:

1) ALL CABLES SHALL BE IDENTIFIED AT EACH TERMINATION AND EACH SIDE OF ANY OBSTACLE (E.G. CABLE TRANSIT ON WALLS INSIDE SHELTER AND FLOOR DECK CROSSING, BY THEIR RESPECTIVE TAGS/NUMBERS, AS INDICATED ON THE CABLE SCHEDULE.
CABLE IDENTIFICATION SHALL BE ALSO DONE BELOW AND IN THE SWITCHBOARD CABLE COMPARTMENT.

2) CABLE CORE FERRULES SHALL BE FITTED AT EVERY TERMINATION. THESE FERRULES SHALL BE OF ENGRAVED PLASTIC SLIP ON, INTERLOCKED AND SELF GRIP TYPE.

3) ON CABLE TRAYS OR LADDERS, CABLES SHALL BE IDENTIFIED AT EACH END, AND EVERY 50 METERS.

4) THE CABLE TAG FOR EXTERNAL AREA SHALL DONE BY 316L STAINLESS STEEL LABELS, TAG (H=5mm) SHALL BE LASER PRINTED PREFERABLY OR EMBOSSED, LABEL HELD BY TWO 316L STAINLESS STEEL TIES.

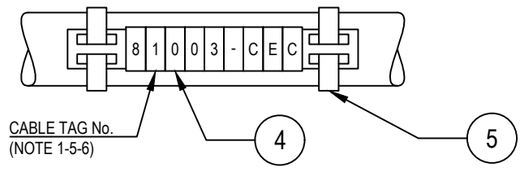
5) THE CABLE TAG FOR INTERNAL AREA SHAL BE DONE BY ENGRAVED PLASTIC SLIP ON CHARACTERS ONTO PLASTIC TIE, BLACK LETTER (H=5mm) ON WHITE.

6) CABLE AND CONDUCTOR TAG ARE INDICATIVE ONLY.

7) THE EARTHING CONNECTION OF THE ARMOUR CABLE IS NOT APPLICABILE IF THE ARMOUR IS CONNECTED TO EARTH WITH METALLIC CABLE GLAND.
WITHIN TECHNICAL BUILDING, PROTECTIVE CONDUCTOR SHALL BE TAGGED BETWEEN FOLLOWING ITEMS:
- PANEL (SWITCHBOARD, SWITCHGEAR, DISTRIBUTION BOARD, ETC) AND EARTH RING
- EARTHING BOSS AND EARTH RING
- EARTH BAR AND EARTH BAR (IF ANY).

8) ONLY IF NECESSARY, SHRINK TUBES OF THE APPROPRIATE COLOR WILL BE INSTALLED TO COVER THE WRONG CONDUCTOR COLOR, THIS WILL BE PERFORMED IN EACH SIDE OF THE CABLES WHERE NECESSARY.

CONTROL CABLE TAG FOR INTERNAL AREA



VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DD-20092

REV.:	DATE:	SIGNATURE:
2_B	28/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	28/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	04/07/24	NLK	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-POWER SYSTEM & CABLE INSTALLATION
CABLES INSTALLATION SYSTEM IDENTIFICATION FOR CONTROL CABLES

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

A3 | DRAWING NO. 123A90-DDL-EL-DD-20092 | SHEET 008 | REV. 02

F.to UNI A3: 420mmx297mm

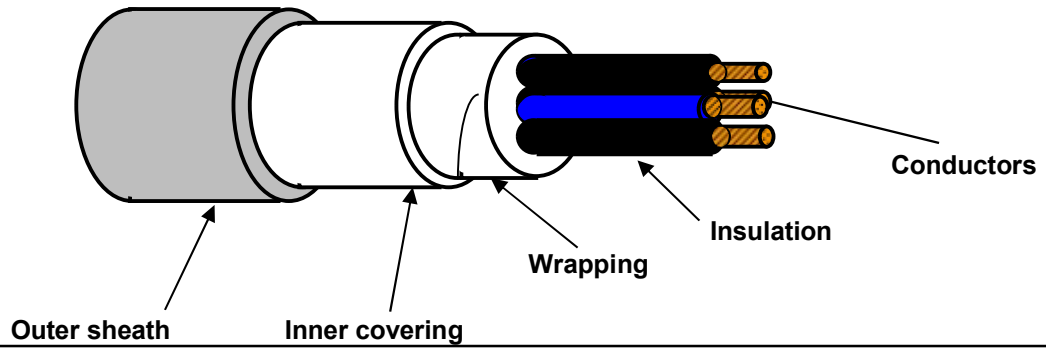
File Name : 123A90-DDL-EL-DD-20092 REV.02.DWG

Tag Number	Category	Discipline	Eng Status	NativeDoc	Layout	Parent Tag	Main Function	Secondary Function	Area	From Tag	From Main Function	From Area	To Tag	To Main Function	To Area	Material ID	Material Desc.	Gland Standard	From Gland	From Entry	From Fitting	To Gland	To Entry	To Fitting	Routing	Routing Manual
83012-CEC	Cable	EL	VFC	123A90-DDL-EL-LIS-20148						CP-200E2	Auxiliary Trafo SOLAR 0,5 MVA Marshalling Box	Lower Deck	SG-100D1	MV 6,6kV Switchgear	Lower Deck (B-100)	ELECV34-7X1,5	Cable Cu Cl.2/XLPE/LSZH 0,6/1kV 7Cx1,5mm² - Grey	M25	T1_M25_Single			n.a.				L-300-101-LVT-002 / L-600-101-LVT-094 / L-300-101-LVT-076 / L-600-101-LVT-012 / L-300-101-LVT-074 / E-MCT-105 / L-600-101-LVT-058 / L-300-101-LVT-059

FLEI s.r.l.

Cu Cl.2/XLPE/LSZH 0,6/1 KV

7CX1,5 - CONTROL CABLE - Flame Retardant



TECHNICAL FEATURES

Conductors :	**STRANDED** plain/bare annealed copper wires	IEC 60228 Class 2
Insulation :	**XLPE** compound, quality to IEC 60092.360, Nominal Thickness 0,7 mm	
Cores colour code :	**Black NUMBERED (from 1 to 7)**	
Pair Assembling :	Not required	
Pair Wrapping:	Not required	
Drain wire :	Not required	
Pair Shield :	Not required	
Shield Insulation :	Not Required	
Total Assembling :	Cores layed up with optimal lay length	
Overall Wrapping:	by plastic tape helically wound	
Drain wire :	Not required	
Overall Shield:	Not required	
Inner covering :	Extruded LSZH compound, Average Thickness 1,0 mm	
Inner covering color code:	**Black or Natural**	
Armour :	Not required	
Outer sheath :	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type **SHF1** to IEC 60093.360, Average Thickness 1,2 mm	
Outer sheath color code:	**Grey**	
Outer printing (INKJET) :	**FLEI - ELECTRIC CABLE - 1000V - 7CX1,5 SQMM - XLPE/LSZH - 0,6/1 KV - IEC 60332.1.2 - IEC 60332.3.22 -**	
	Year of Manufacture - CE + Meter Marking	
Outer diameter :	(13,5 ± 10%) mm	
Bending radius :	cable outer diameter x 10	(in fixed installation)
Voltage test :	3,5 kV a.c. for 5' (Between Cores)	
Conductors DC Resistance :		IEC 60228 Class 2
Insulation Resistance :	≥ 1000 MΩ x Km (@ 20°C)	
Applicable Standards		
Design Guidelines :	**IEC 60092.353**	
ON COMPLETE CABLE		
Flame Retardant test :	IEC 60332.1.2 - IEC 60332.3.22	
Acid Gas generation :	IEC 60754.1/2	
Smoke density/Light Transmittance :	IEC 61034.2 (LT ≥ 60%)	
Temperature Range :		
ON INSULATION	(max +90°C)	(max continuous operation temperature of conductors)
	(max +250°C)	(max conductors temperature during short-circuit for 5 seconds)
ON COMPLETE CABLE		
During Operation :	(-20°C up to +90°C)	(in fixed installation)
During installation :	(- 5°C up to +50°C)	
Note :	**To meet the requirements of installation and use in Zone 1 & Zone 2 (IEC 60079-14) and "Gas & Vapour Tight" the cable must be provided with Penetrating Inner covering together with correct ATEX approved equipment or accessories.**	

Office	Date	Sign	Rev.	Date	Sign
Drawn by :	29/03/2024	Messa			
Checked :	29/03/2024	Spaccasassi			
Approved :	29/03/2024	Cucinotta			

The data provided, lending assent for the treatment, will be used to the sense of the article 13 of of the Regulation (UE) 2016/679, also through outsiders, in order to allow the realization of the fulfilments informatives, administrative, commercial and accounting related to the contractual relationship. Integral copy of the informative could be requested at our offices.

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ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	83013-CEC	: Solar transformer / 6.6KV HV Switchgear		Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		Module	LD_B-200/LD_B-100	
TASK	code	C10002140	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity CCK	Discipline Electrical	Form	CPX10	Multicore Electrical Control Cable

CABLE DATA

Type: Cu Cl.2/XLPE/LSZH | Cores/Size mm²: 7X1,5 mm2 | Color: GREY

From: CP-200E2 | To: SG-100D1

1	Check cable physical integrity	OK
2	Check cable data against latest cable schedule.	OK
3	Check cable routing against latest drawings (segregation, distance…).	PL
4	Check cable is supported and fixed to rack according to latest project Specification.	PL
5	Check bending radius is within the specified limits.	OK
6	Check cable and core marking against latest drawings	PL
7	Check cable labelling is in accordance with latest specification.	PL
8	Check cable glands suit for cable type and are in accordance with latest specification.	OK
9	Check terminations are in accordance with latest termination diagram.	Note
10	Check cable earthing against lastest drawings.	NA
11	Check gland plate for single core cables is non magnetic.	NA
12	If required produce Red Line Mark Up for "AS BUILT"	

CONTINUITY	CORE 1 / All cores+screen+armour+earth	1.0
	CORE 2 / All cores+screen+armour+earth	1.0
	CORE 3 / All cores+screen+armour+earth	1.0
	CORE 4 / All cores+screen+armour+earth	1.0
	CORE 5 / All cores+screen+armour+earth	1.0
	CORE 6 / All cores+screen+armour+earth	1.0
	CORE 7 / All cores+screen+armour+earth	1.0
	CORE 8 / All cores+screen+armour+earth	NA
	CORE 9 / All cores+screen+armour+earth	NA
	CORE 10 / All cores+screen+armour+earth	NA
INSULATION	CORE 1	>999
	CORE 2	>999
	CORE 3	>999
	CORE 4	>999
	CORE 5	>999
	CORE 6	>999
	CORE 7	>999
	CORE 8	NA
	CORE 9	NA
	CORE 10	NA
	SCREEN	NA
	EARTH	NA
	ARMr	NA
	TEST VOLTS	1000

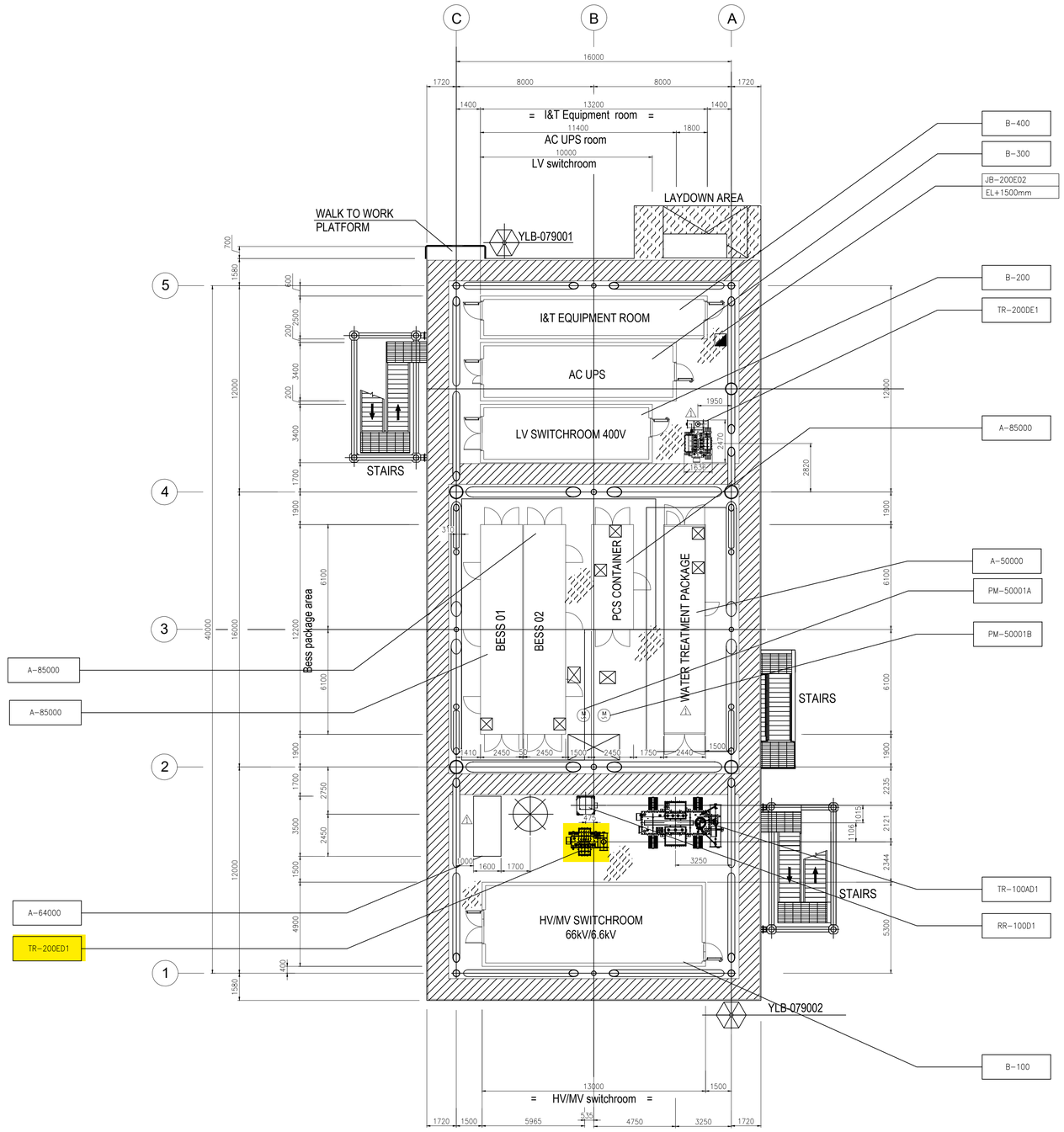
TESTING INSTRUMENTS USED

TYPE / SERIAL N° : KEW3125A S/N: W8330207 Calibration certificate N° and date: N°7722/24 _ 10/07/2024	TYPE / SERIAL N° : FLUKE 175 S/N:AW1/018(17140769) Calibration certificate N° and date: N°7715/24 _ 10/07/2024
TYPE / SERIAL N° : Calibration certificate N° and date:	TYPE / SERIAL N° : Calibration certificate N° and date:

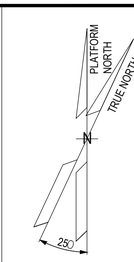
Comments: Note 4 : refer to PL C30000679
Note9_ cable terminations must be reconnected during the commissioning phase.

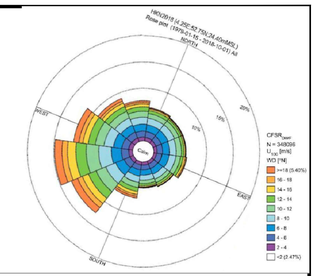
Page 1/1

	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Carmelo Bongiovanni	Giovanni Tangianu	
Date	2024-11-22	2024-12-09	
Signature	PROVERLIS Digitaly signed by Carmelo Bongiovanni 2024-11-22T17:34:36.451Z	PROVERLIS Digitaly signed by Giovanni Tangianu 2024-12-09T08:41:24.929Z	



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





NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

(M)	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
⚠ 123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND | ROSETTI MARINO

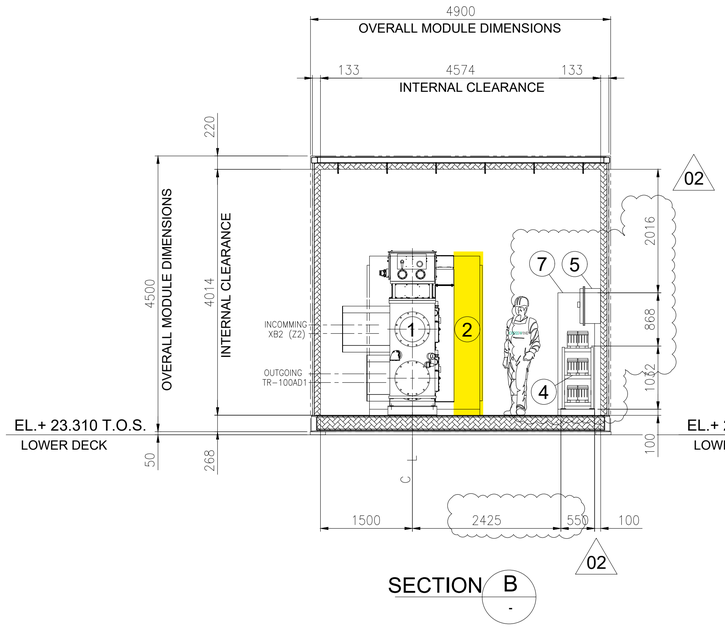
TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE 1:150
DRAWN SAM | CHECKED FMA/AMA | APPROVED FPA/DLO | DATE 04/03/24
A1 | DRAWING NO. 123A90-DDL-EL-DL-20101 | SHEET 001 | REV. 01

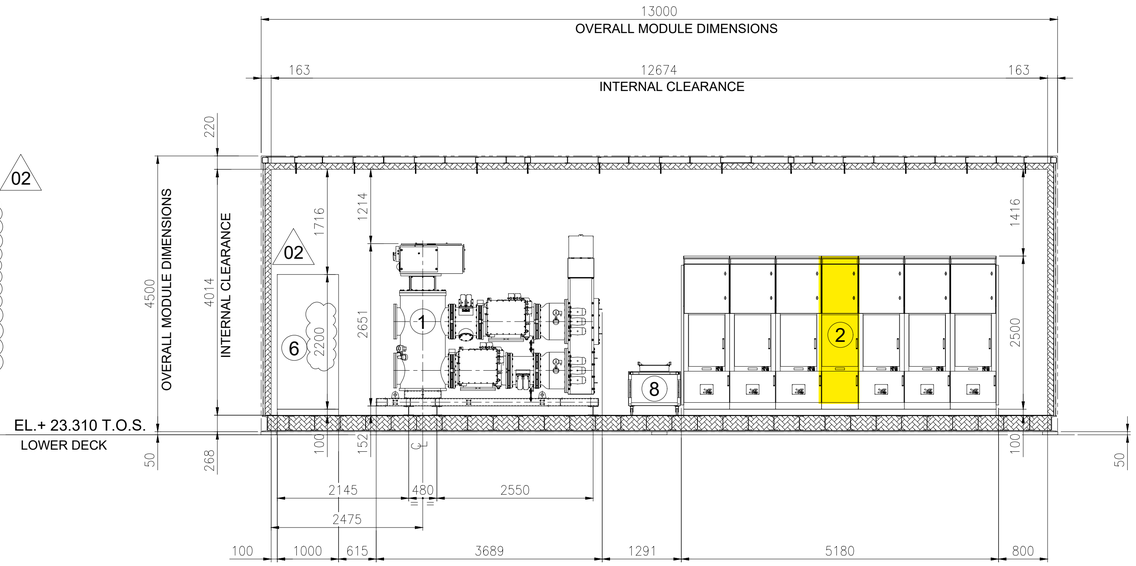
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File Name : 123A90-DDL-EL-DL-20101-Electrical Equipment Layout – Lower Deck

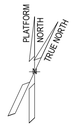
DRAWING NO. 123A90-DDL-EL-DL-20104 REV. 02

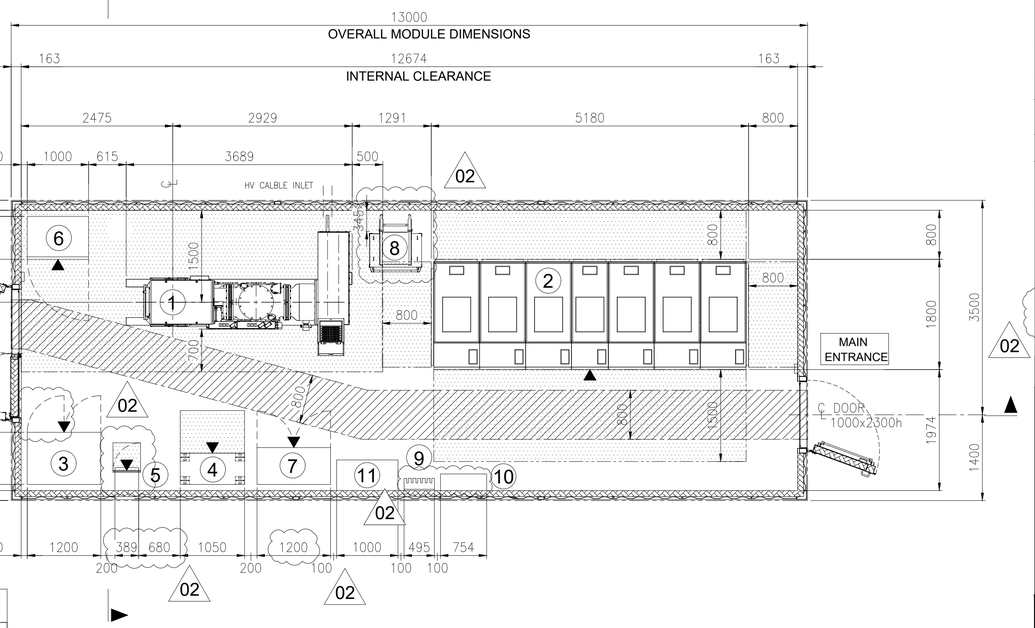


SECTION B -



SECTION A -

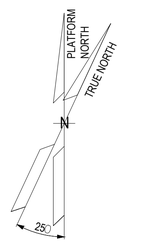


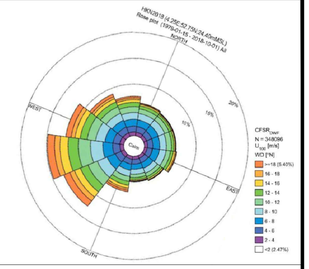


A -

EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	NOTE
1	HNA6-AFA70	66kV SWITCHGEAR (GIS)	3689	2025	2651	
2	SG-100D1	6.6kV SWITCHGEAR	5180	1800	2500	
3	UP-200F1	DC UPS PANEL	1200	850	2105	
4	BA-200F1	DC UPS BATTERY RACK	1050	510	1272	
5	CB-200F1 02	ISOLATOR FOR DC UPS	452	377	634	
6	CP-100E1	66 kV SWITCHGEAR LOCAL CONTROL PANEL	1000	700	2200	02
7	B100-HSB-001	DISTRIBUTION & HVAC PANEL - HV MV ROOM	1200	600	1900	
8	-	SERVICE TROLLEY FOR 6.6kV SWITCHGEAR	943	862	874	
9	-	TOOL BOX	495	200	200	
10	-	SUBSTATION LIFE SAVING & INTERVENTION KIT	754	270	840	
11	-	TABLE	1000	500	750	





NOTES

1. U.N.O. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DELETED
3. DOCUMENT VALID ONLY FOR ELECTRICAL COMPONENT.
4. FOR OTHER ITEMS, CORRECT LOCATION AND INFROMATION, PLEASE REFER TO VENDORS AND DEDICATED PROJECT DOCUMENTATION.
5. HEIGHT OF ALL PANELS IN THE EQUIPMENT LIST TABLE IS WITHOUT THE BASE FRAME (100mm)

02

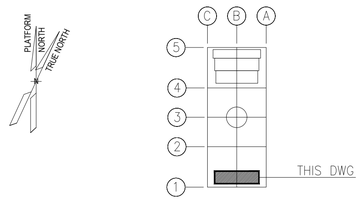
LEGEND

U.N.O. _____ UNLESS NOTED OTHERWISE
T.O.S. _____ TOP OF STEEL
_____ ESCAPE CORRIDOR - WIDTH 800mm.
_____ MAINTENANCE AREA - VENDOR REQUIREMENT
_____ SWITCHGEAR ROOM ENCLOUSURE
_____ FRONT OF EQUIPMENT

REFERENCES

DOCUMENT TITLE	DOCUMENT NUMBER
66kV SWITCHGEAR (GIS) GENERAL ARRANGEMENT DRAWING	1723001595-EL-DA-00006
CIRCUIT AND WIRING DIAGRAM	1723001595-EL-DG-00015
SG-100D1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00006
DC UPS – GENERAL ARRANGEMENT AND DIMENSIONAL DRAWINGS	1724000372-EL-DA-00003
DC UPS – BATTERY LAYOUT AND INTERCONNECTING DIAGRAM	1724000372-EL-DG-00010
B-100 - GENERAL ARRANGEMENT DRAWINGS - E&I SHELTER	1724000049-AR-DA-00014

KEY PLAN



VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20104**

REV.:	DATE:	SIGNATURE:
2_A	08/08/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/05/2024	FMO	LMA/AMA	LMA/MDO	ACCEPTED FOR CONSTRUCTION (AFC)
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	10/11/2023	DSF	CB/AMA	DYFO/MDO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
HV SWITCHROOM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:50
DRAWN GPA	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 27/05/2024

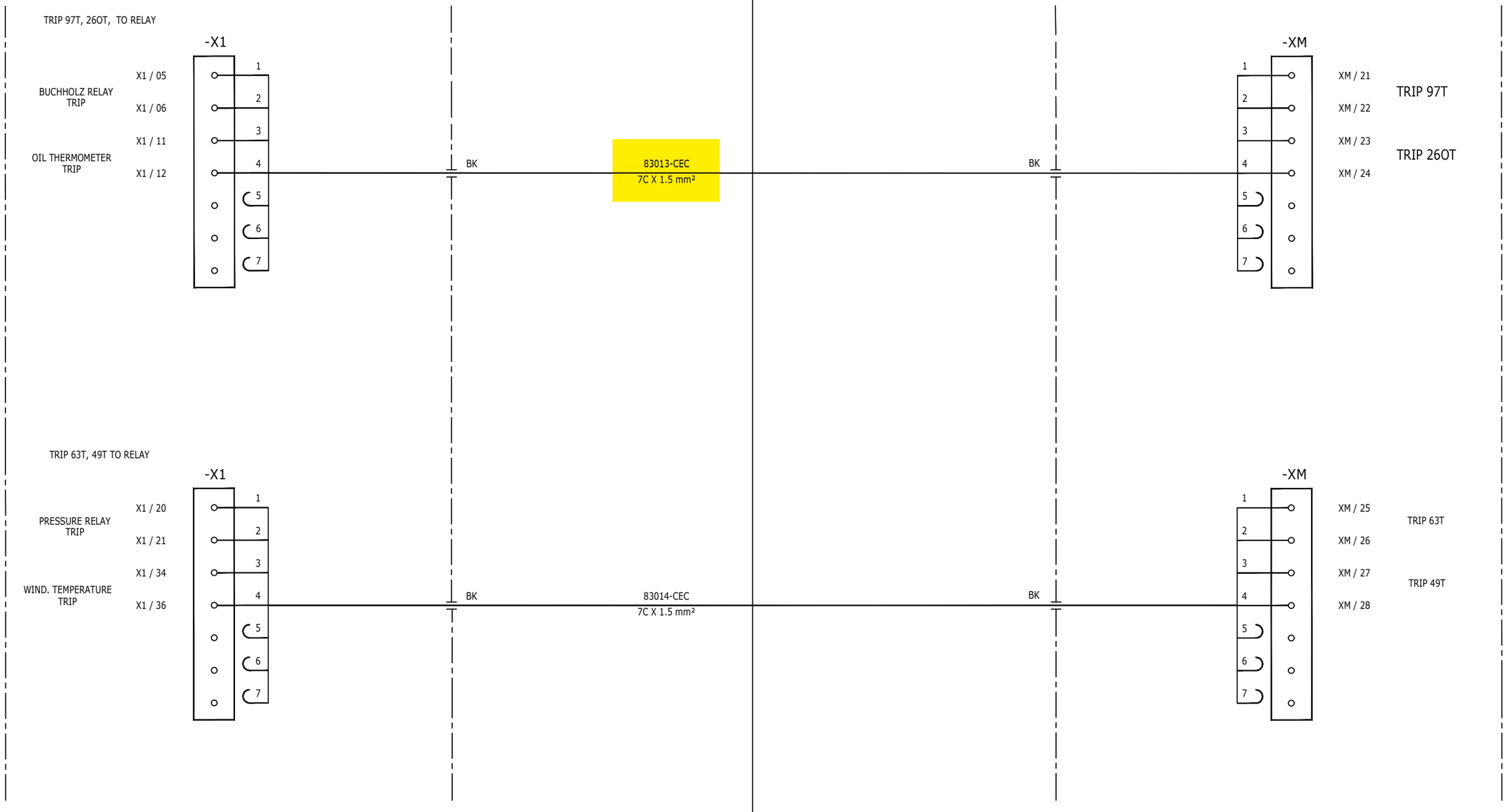
A1	DRAWING NO. 123A90-DDL-EL-DL-20104	SHEET 001	REV. 02

File Name : 123A90-DDL-EL-DL-20104_REV02.dwg

FROM	TO

DESCRIPTION: SOLAR TRANSFORMER
TAG NUMBER: CP-200E2

DESCRIPTION: 6.6KV HV SWITCHGEAR
TAG NUMBER: SG-100D1



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

REV.:	DATE:	SIGNATURE:
2_C	02/12/24	G.Randi

ROSETTI MARINO SpA

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)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
CP-200ED1A SOLAR TRANSFORMER TRIP PROTECTION

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

SCALE : 1:X

A3

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

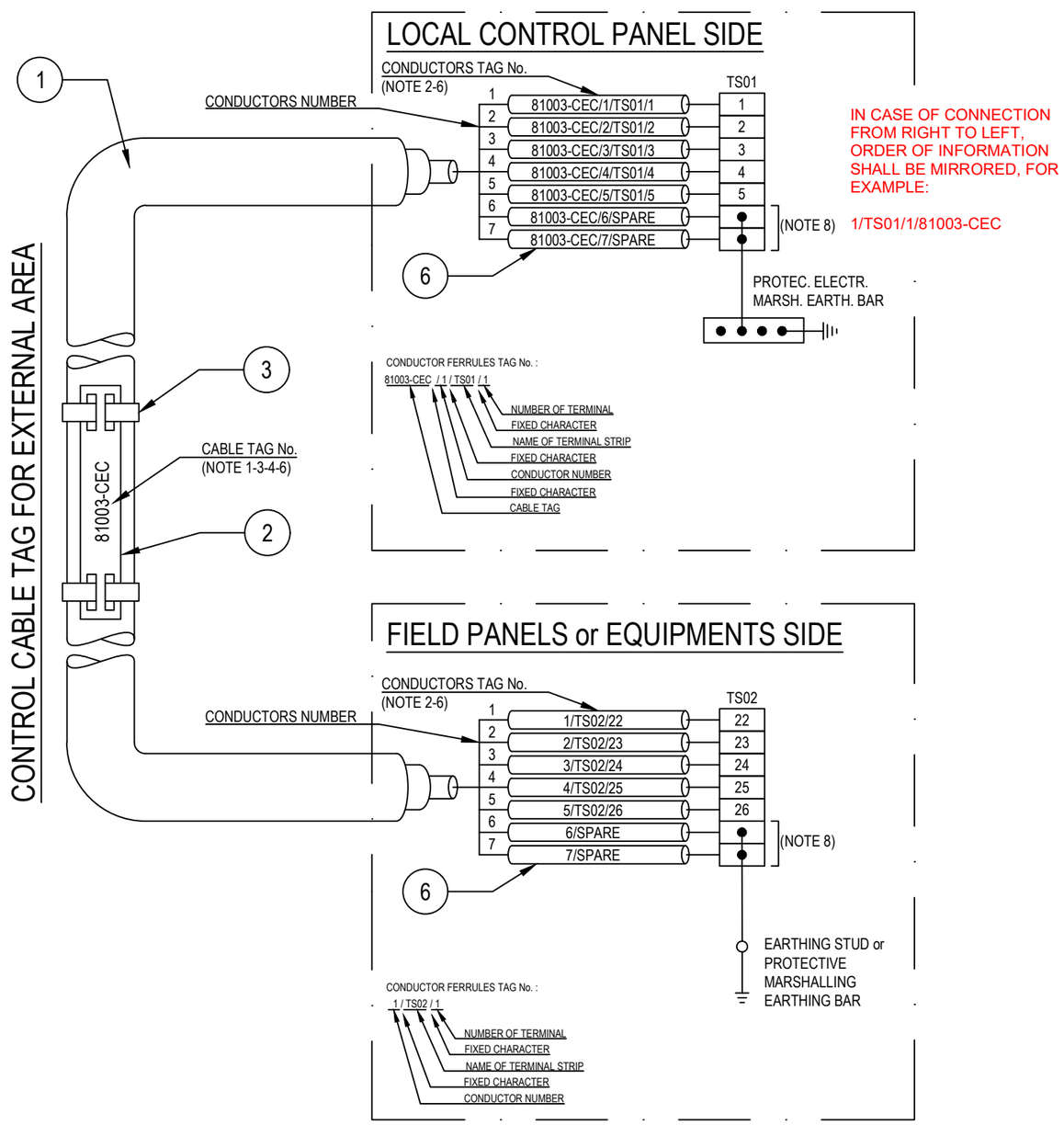
SHEET 083

REV. 02

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

F.to UNI A3: 420mmx297mm

C04



IN CASE OF CONNECTION FROM RIGHT TO LEFT, ORDER OF INFORMATION SHALL BE MIRRORED, FOR EXAMPLE:

1/TS01/1/81003-CEC

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	UNARMOURED CABLE				
2	CABLE TAG FOR EXTERNAL AREA	HDG/SS			NOTE 1 NOTE 4
3	TIE FOR CABLE TAG IN EXTERNAL AREA	HDG/SS			
4	CABLE TAG FOR INTERNAL AREA	PVC			NOTE 1 NOTE 5
5	TIE FOR CABLE TAG IN INTERNAL AREA	NYLON 6.6			
6	CORE FERRULES	PVC			

NOTES:

1) ALL CABLES SHALL BE IDENTIFIED AT EACH TERMINATION AND EACH SIDE OF ANY OBSTACLE (E.G. CABLE TRANSIT ON WALLS INSIDE SHELTER AND FLOOR DECK CROSSING, BY THEIR RESPECTIVE TAGS/NUMBERS, AS INDICATED ON THE CABLE SCHEDULE.
CABLE IDENTIFICATION SHALL BE ALSO DONE BELOW AND IN THE SWITCHBOARD CABLE COMPARTMENT.

2) CABLE CORE FERRULES SHALL BE FITTED AT EVERY TERMINATION. THESE FERRULES SHALL BE OF ENGRAVED PLASTIC SLIP ON, INTERLOCKED AND SELF GRIP TYPE.

3) ON CABLE TRAYS OR LADDERS, CABLES SHALL BE IDENTIFIED AT EACH END, AND EVERY 50 METERS.

4) THE CABLE TAG FOR EXTERNAL AREA SHALL DONE BY 316L STAINLESS STEEL LABELS, TAG (H=5mm) SHALL BE LASER PRINTED PREFERABLY OR EMBOSSED, LABEL HELD BY TWO 316L STAINLESS STEEL TIES.

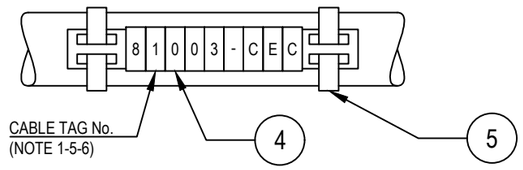
5) THE CABLE TAG FOR INTERNAL AREA SHAL BE DONE BY ENGRAVED PLASTIC SLIP ON CHARACTERS ONTO PLASTIC TIE, BLACK LETTER (H=5mm) ON WHITE.

6) CABLE AND CONDUCTOR TAG ARE INDICATIVE ONLY.

7) THE EARTHING CONNECTION OF THE ARMOUR CABLE IS NOT APPLICABILE IF THE ARMOUR IS CONNECTED TO EARTH WITH METALLIC CABLE GLAND.
WITHIN TECHNICAL BUILDING, PROTECTIVE CONDUCTOR SHALL BE TAGGED BETWEEN FOLLOWING ITEMS:
- PANEL (SWITCHBOARD, SWITCHGEAR, DISTRIBUTION BOARD, ETC) AND EARTH RING
- EARTHING BOSS AND EARTH RING
- EARTH BAR AND EARTH BAR (IF ANY).

8) ONLY IF NECESSARY, SHRINK TUBES OF THE APPROPRIATE COLOR WILL BE INSTALLED TO COVER THE WRONG CONDUCTOR COLOR, THIS WILL BE PERFORMED IN EACH SIDE OF THE CABLES WHERE NECESSARY.

CONTROL CABLE TAG FOR INTERNAL AREA



VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DD-20092

REV.:	DATE:	SIGNATURE:
2_B	28/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	28/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	04/07/24	NLK	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-POWER SYSTEM & CABLE INSTALLATION
CABLES INSTALLATION SYSTEM IDENTIFICATION FOR CONTROL CABLES

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

A3 | DRAWING NO. 123A90-DDL-EL-DD-20092 | SHEET 008 | REV. 02

F.to UNI A3: 420mmx297mm

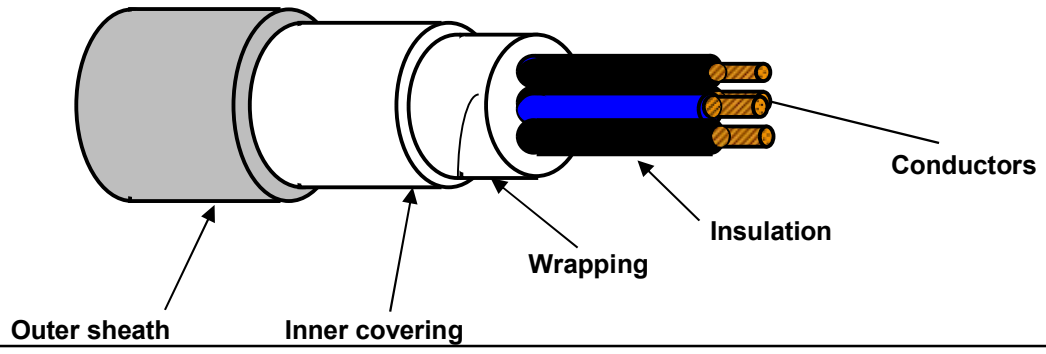
File Name : 123A90-DDL-EL-DD-20092 REV.02.DWG

Tag Number	Category	Discipline	Eng Status	NativeDoc	Layout	Parent Tag	Main Function	Secondary Function	Area	From Tag	From Main Function	From Area	To Tag	To Main Function	To Area	Material ID	Material Desc.	Gland Standard	From Gland	From Entry	From Fitting	To Gland	To Entry	To Fitting	Routing	Routing Manual
83013-CEC	Cable	EL	VFC	123A90-DDL-EL-LIS-20148						CP-200E2	Auxiliary Trafo SOLAR 0,5 MVA Marshalling Box	Lower Deck	SG-100D1	MV 6,6kV Switchgear	Lower Deck (B-100)	ELECV34-7X1,5	Cable Cu Cl.2/XLPE/LSZH 0,6/1kV 7Cx1,5mm² - Grey	M25	T1_M25_Single			n.a.				L-300-101-LVT-002 / L-600-101-LVT-094 / L-300-101-LVT-076 / L-600-101-LVT-012 / L-300-101-LVT-074 / E-MCT-105 / L-600-101-LVT-058 / L-300-101-LVT-059

FLEI s.r.l.

Cu Cl.2/XLPE/LSZH 0,6/1 KV

7CX1,5 - CONTROL CABLE - Flame Retardant



TECHNICAL FEATURES

Conductors :	**STRANDED** plain/bare annealed copper wires	IEC 60228 Class 2
Insulation :	**XLPE** compound, quality to IEC 60092.360, Nominal Thickness 0,7 mm	
Cores colour code :	**Black NUMBERED (from 1 to 7)**	
Pair Assembling :	Not required	
Pair Wrapping:	Not required	
Drain wire :	Not required	
Pair Shield :	Not required	
Shield Insulation :	Not Required	
Total Assembling :	Cores layed up with optimal lay length	
Overall Wrapping:	by plastic tape helically wound	
Drain wire :	Not required	
Overall Shield:	Not required	
Inner covering :	Extruded LSZH compound, Average Thickness 1,0 mm	
Inner covering color code:	**Black or Natural**	
Armour :	Not required	
Outer sheath :	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type **SHF1** to IEC 60093.360, Average Thickness 1,2 mm	
Outer sheath color code:	**Grey**	
Outer printing (INKJET) :	**FLEI - ELECTRIC CABLE - 1000V - 7CX1,5 SQMM - XLPE/LSZH - 0,6/1 KV - IEC 60332.1.2 - IEC 60332.3.22 -**	
	Year of Manufacture - CE + Meter Marking	
Outer diameter :	(13,5 ± 10%) mm	
Bending radius :	cable outer diameter x 10	(in fixed installation)
Voltage test :	3,5 kV a.c. for 5' (Between Cores)	
Conductors DC Resistance :		IEC 60228 Class 2
Insulation Resistance :	≥ 1000 MΩ x Km (@ 20°C)	
Applicable Standards		
Design Guidelines :	**IEC 60092.353**	
ON COMPLETE CABLE		
Flame Retardant test :	IEC 60332.1.2 - IEC 60332.3.22	
Acid Gas generation :	IEC 60754.1/2	
Smoke density/Light Transmittance :	IEC 61034.2 (LT ≥ 60%)	
Temperature Range :		
ON INSULATION	(max +90°C)	(max continuous operation temperature of conductors)
	(max +250°C)	(max conductors temperature during short-circuit for 5 seconds)
ON COMPLETE CABLE		
During Operation :	(-20°C up to +90°C)	(in fixed installation)
During installation :	(- 5°C up to +50°C)	
Note :	**To meet the requirements of installation and use in Zone 1 & Zone 2 (IEC 60079-14) and "Gas & Vapour Tight" the cable must be provided with Penetrating Inner covering together with correct ATEX approved equipment or accessories.**	

Office	Date	Sign	Rev.	Date	Sign
Drawn by :	29/03/2024	Messa			
Checked :	29/03/2024	Spaccasassi			
Approved :	29/03/2024	Cucinotta			

The data provided, lending assent for the treatment, will be used to the sense of the article 13 of of the Regulation (UE) 2016/679, also through outsiders, in order to allow the realization of the fulfilments informatives, administrative, commercial and accounting related to the contractual relationship. Integral copy of the informative could be requested at our offices.

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ROSETTI MARINO | PROVERLIS | CROSSWIND

ITEM	Tag	83014-CEC	: Solar transformer / 6.6KV HV Switchgear		Dwg	123A90-DDL-EL-LIS-20148	
	S/Sys	82-50	: Solar PV Package Power Transformer 0.5 MVA (TR-200ED1)		Module	LD_B-200/LD_B-100	
TASK	code	C10002141	Location	Onshore Activities	User	Rosetti Marino Quality Control	
FORM	Process	MC	Activity CCK	Discipline Electrical	Form	CPX10	Multicore Electrical Control Cable

CABLE DATA

Type: Cu Cl.2/XLPE/LSZH | Cores/Size mm²: 7X1,5 mm2 | Color: GREY

From: CP-200E2 | To: SG-100D1

1	Check cable physical integrity	OK
2	Check cable data against latest cable schedule.	OK
3	Check cable routing against latest drawings (segregation, distance…).	PL
4	Check cable is supported and fixed to rack according to latest project Specification.	PL
5	Check bending radius is within the specified limits.	OK
6	Check cable and core marking against latest drawings	PL
7	Check cable labelling is in accordance with latest specification.	PL
8	Check cable glands suit for cable type and are in accordance with latest specification.	OK
9	Check terminations are in accordance with latest termination diagram.	Note
10	Check cable earthing against lastest drawings.	NA
11	Check gland plate for single core cables is non magnetic.	NA
12	If required produce Red Line Mark Up for "AS BUILT"	

CONTINUITY	CORE 1 / All cores+screen+armour+earth	0.9
	CORE 2 / All cores+screen+armour+earth	0.9
	CORE 3 / All cores+screen+armour+earth	0.9
	CORE 4 / All cores+screen+armour+earth	0.9
	CORE 5 / All cores+screen+armour+earth	0.9
	CORE 6 / All cores+screen+armour+earth	0.9
	CORE 7 / All cores+screen+armour+earth	0.9
	CORE 8 / All cores+screen+armour+earth	NA
	CORE 9 / All cores+screen+armour+earth	NA
	CORE 10 / All cores+screen+armour+earth	NA
INSULATION	CORE 1	>999
	CORE 2	>999
	CORE 3	>999
	CORE 4	>999
	CORE 5	>999
	CORE 6	>999
	CORE 7	>999
	CORE 8	NA
	CORE 9	NA
	CORE 10	NA
	SCREEN	NA
	EARTH	NA
	ARMr	NA
	TEST VOLTS	1000

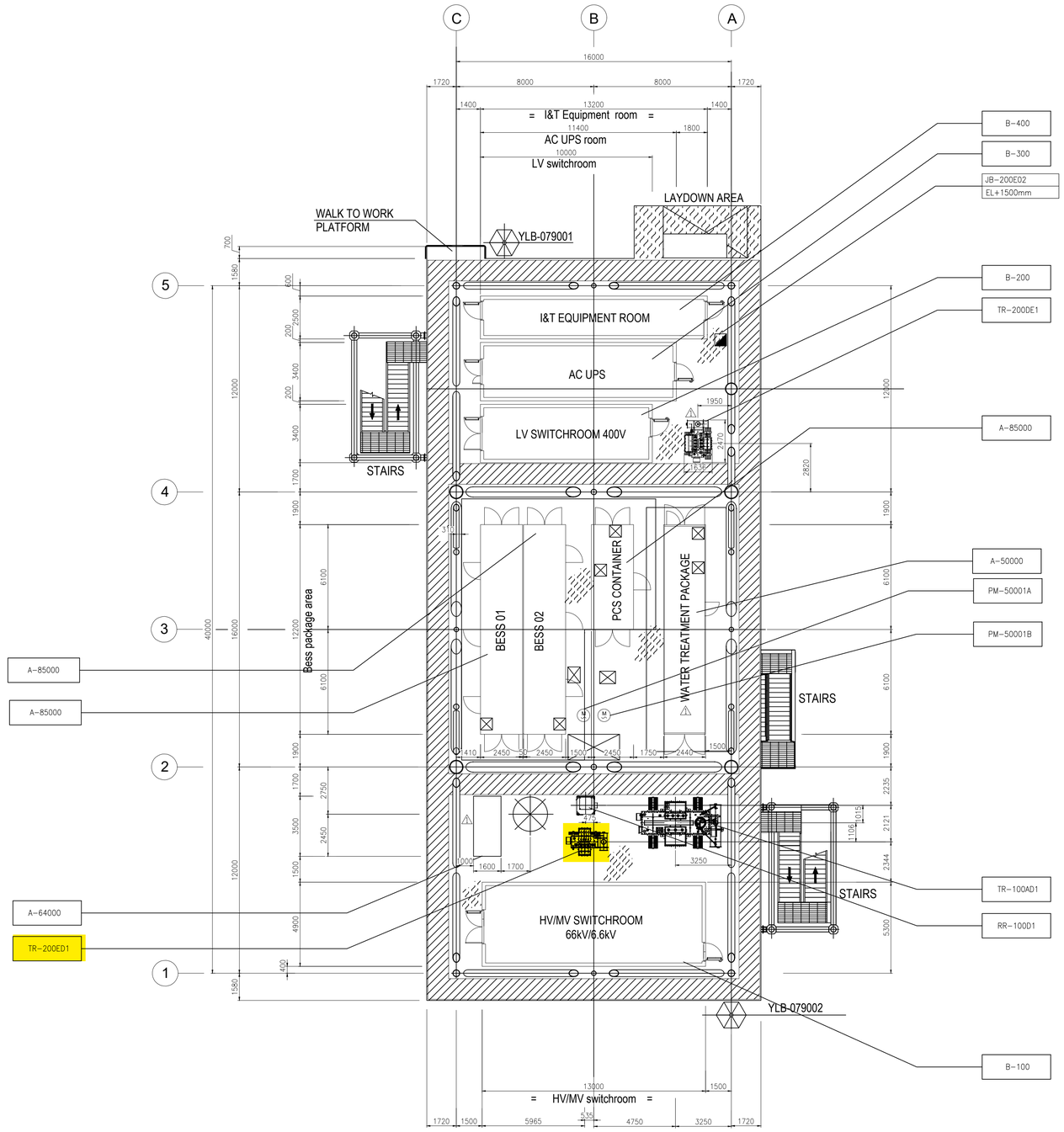
TESTING INSTRUMENTS USED

TYPE / SERIAL N° : KEW3125A S/N: W8330207 Calibration certificate N° and date: N°7722/24 _ 10/07/2024	TYPE / SERIAL N° : FLUKE 175 S/N:AW1/018(17140769) Calibration certificate N° and date: N°7715/24 _ 10/07/2024
TYPE / SERIAL N° : Calibration certificate N° and date:	TYPE / SERIAL N° : Calibration certificate N° and date:

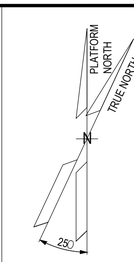
Comments: Note 4 : refer to PL C30000679
Note9_ cable terminations must be reconnected during the commissioning phase.

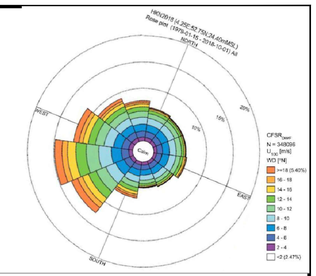
Page 1/1

	Performed by	☑ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Carmelo Bongiovanni	Giovanni Tangianu	
Date	2024-11-22	2024-12-09	
Signature	PROVERLIS Digitaly signed by Carmelo Bongiovanni 2024-11-22T17:34:48.779Z	PROVERLIS Digitaly signed by Giovanni Tangianu 2024-12-09T08:17:34.844Z	



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





NOTES

1. ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.
2. ALL ELEVATIONS IN METERS. UNLESS NOTED OTHERWISE.
3. ELEVATIONS REFER TO T.O.S.
4. FOR ELECTRICAL EQUIPMENT LAYOUT OF CONTAINERS B-100, B-200, B-300, B-400 REFER TO THE RESPECTIVE LAYOUTS.

LEGEND

(M)	ELECTRIC MOTOR – LOW VOLTAGE
⊠	INTERFACE PANEL
◪	JUNCTION BOX
JB-200E2 / EL+500mm	TAG ITEM / REFERED ELEVATION TO T.O.S. (TOP OF STEEL)

HOLDS

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20106	ELECTRICAL EQUIPMENT LAYOUT UPSs & BATTERIES SWITCHROOM
⚠ 123A90-DDL-IN-DL-40012	ITER EQUIPMENT LAYOUT
123A90-DDL-EL-DL-20104	ELECTRICAL EQUIPMENT LAYOUT HV & MV SWITCHROOM
123A90-DDL-EL-DL-20105	LV SWITCHGEAR ROOM EQUIPMENT LAYOUT

INSERT SUBCONTRACTOR / VENDOR LOGO HERE

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	06/05/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	04/03/24	SAM	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND | ROSETTI MARINO

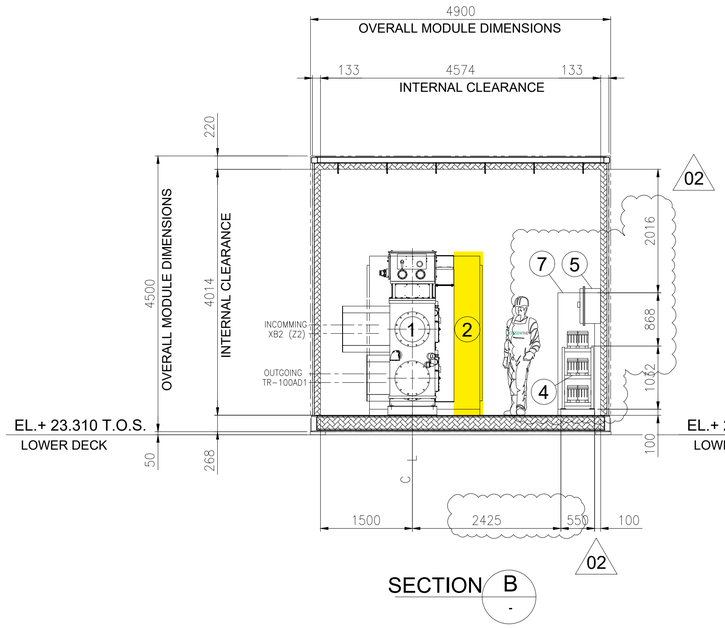
TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE 1:150
DRAWN SAM | CHECKED FMA/AMA | APPROVED FPA/DLO | DATE 04/03/24
A1 | DRAWING NO. 123A90-DDL-EL-DL-20101 | SHEET 001 | REV. 01

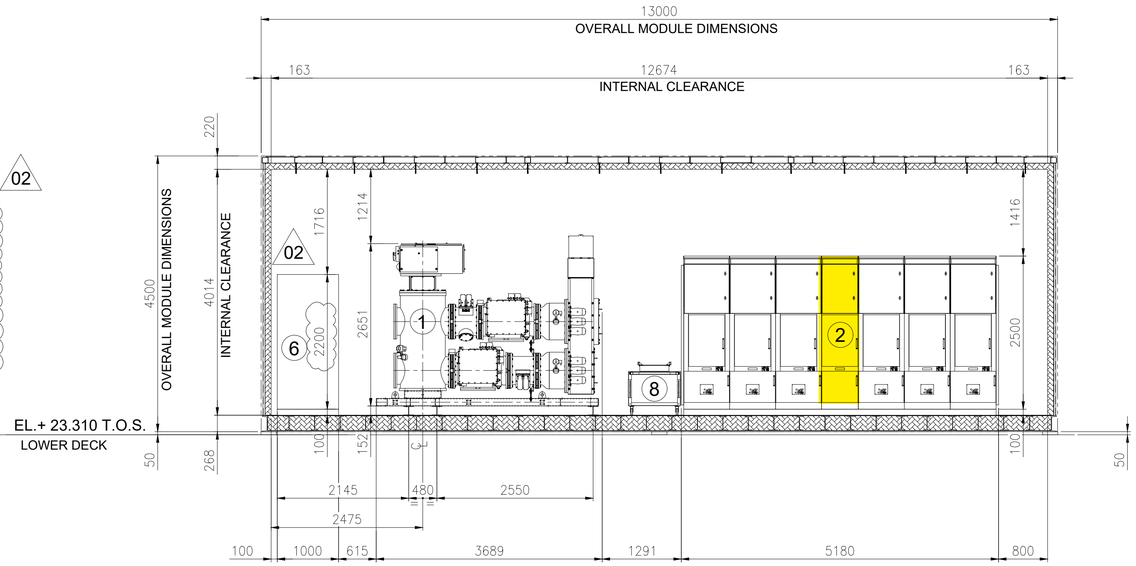
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File Name : 123A90-DDL-EL-DL-20101-Electrical Equipment Layout – Lower Deck

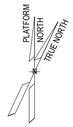
DRAWING NO. 123A90-DDL-EL-DL-20104 REV. 02

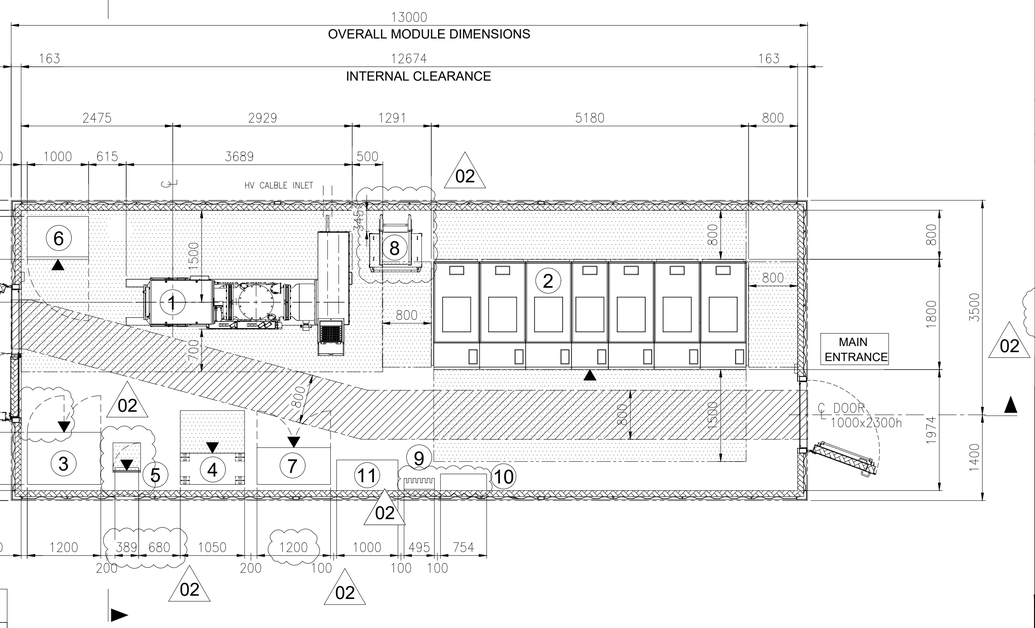


SECTION B -



SECTION A -

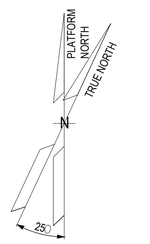


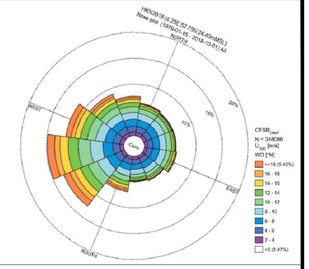


A -

EQUIPMENT LIST

REF.	TAG No.	DESCRIPTION	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	NOTE
1	HNA6-AFA70	66kV SWITCHGEAR (GIS)	3689	2025	2651	
2	SG-100D1	6.6kV SWITCHGEAR	5180	1800	2500	
3	UP-200F1	DC UPS PANEL	1200	850	2105	
4	BA-200F1	DC UPS BATTERY RACK	1050	510	1272	
5	CB-200F1 02	ISOLATOR FOR DC UPS	452	377	634	
6	CP-100E1	66 kV SWITCHGEAR LOCAL CONTROL PANEL	1000	700	2200	02
7	B100-HSB-001	DISTRIBUTION & HVAC PANEL - HV MV ROOM	1200	600	1900	
8	-	SERVICE TROLLEY FOR 6.6kV SWITCHGEAR	943	862	874	
9	-	TOOL BOX	495	200	200	
10	-	SUBSTATION LIFE SAVING & INTERVENTION KIT	754	270	840	
11	-	TABLE	1000	500	750	





NOTES

1. U.N.O. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DELETED
3. DOCUMENT VALID ONLY FOR ELECTRICAL COMPONENT.
4. FOR OTHER ITEMS, CORRECT LOCATION AND INFROMATION, PLEASE REFER TO VENDORS AND DEDICATED PROJECT DOCUMENTATION.
5. HEIGHT OF ALL PANELS IN THE EQUIPMENT LIST TABLE IS WITHOUT THE BASE FRAME (100mm)

02

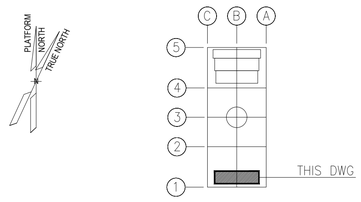
LEGEND

U.N.O. _____ UNLESS NOTED OTHERWISE
T.O.S. _____ TOP OF STEEL
_____ ESCAPE CORRIDOR - WIDTH 800mm.
_____ MAINTENANCE AREA - VENDOR REQUIREMENT
_____ SWITCHGEAR ROOM ENCLOUSURE
_____ FRONT OF EQUIPMENT

REFERENCES

DOCUMENT TITLE	DOCUMENT NUMBER
66kV SWITCHGEAR (GIS) GENERAL ARRANGEMENT DRAWING	1723001595-EL-DA-00006
CIRCUIT AND WIRING DIAGRAM	1723001595-EL-DG-00015
SG-100D1 GENERAL ARRANGEMENT DRAWING	1723002197-EL-DA-00006
DC UPS – GENERAL ARRANGEMENT AND DIMENSIONAL DRAWINGS	1724000372-EL-DA-00003
DC UPS – BATTERY LAYOUT AND INTERCONNECTING DIAGRAM	1724000372-EL-DG-00010
B-100 - GENERAL ARRANGEMENT DRAWINGS - E&I SHELTER	1724000049-AR-DA-00014

KEY PLAN



VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20104**

REV.:	DATE:	SIGNATURE:
2_A	08/08/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	27/05/2024	FMO	LMA/AMA	LMA/MDO	ACCEPTED FOR CONSTRUCTION (AFC)
01	26/03/2024	GPA	LMA/AMA	LMA/MDO	ISSUE FOR REVIEW (IFR)
00	10/11/2023	DSF	CB/AMA	DYFO/MDO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL EQUIPMENT LAYOUT
HV SWITCHROOM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:50
DRAWN GPA	CHECKED LMA/AMA	APPROVED LMA/MDO	DATE 27/05/2024

A1	DRAWING NO. 123A90-DDL-EL-DL-20104	SHEET 001	REV. 02

File Name : 123A90-DDL-EL-DL-20104_REV02.dwg

FROM	TO

DESCRIPTION: SOLAR TRANSFORMER
TAG NUMBER: CP-200E2

DESCRIPTION: 6.6KV HV SWITCHGEAR
TAG NUMBER: SG-100D1

TRIP 97T, 26OT, TO RELAY

-X1

BUCHHOLZ RELAY TRIP	X1 / 05	1
	X1 / 06	2
	X1 / 11	3
OIL THERMOMETER TRIP	X1 / 12	4
		5
		6
		7

BK — 83013-CEC — 7C X 1.5 mm² — BK

-XM

1	XM / 21	TRIP 97T
2	XM / 22	
3	XM / 23	TRIP 26OT
4	XM / 24	
5		
6		
7		

TRIP 63T, 49T TO RELAY

-X1

PRESSURE RELAY TRIP	X1 / 20	1
	X1 / 21	2
	X1 / 34	3
WIND. TEMPERATURE TRIP	X1 / 36	4
		5
		6
		7

BK — 83014-CEC — 7C X 1.5 mm² — BK

-XM

1	XM / 25	TRIP 63T
2	XM / 26	
3	XM / 27	TRIP 49T
4	XM / 28	
5		
6		
7		

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

REV.:	DATE:	SIGNATURE:
2_C	02/12/24	G.Randi

ROSETTI MARINO SpA

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)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL INTERCONNECTING WIRING DIAGRAM
CP-200ED1A SOLAR TRANSFORMER TRIP PROTECTION

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

SCALE : 1:X

A3

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

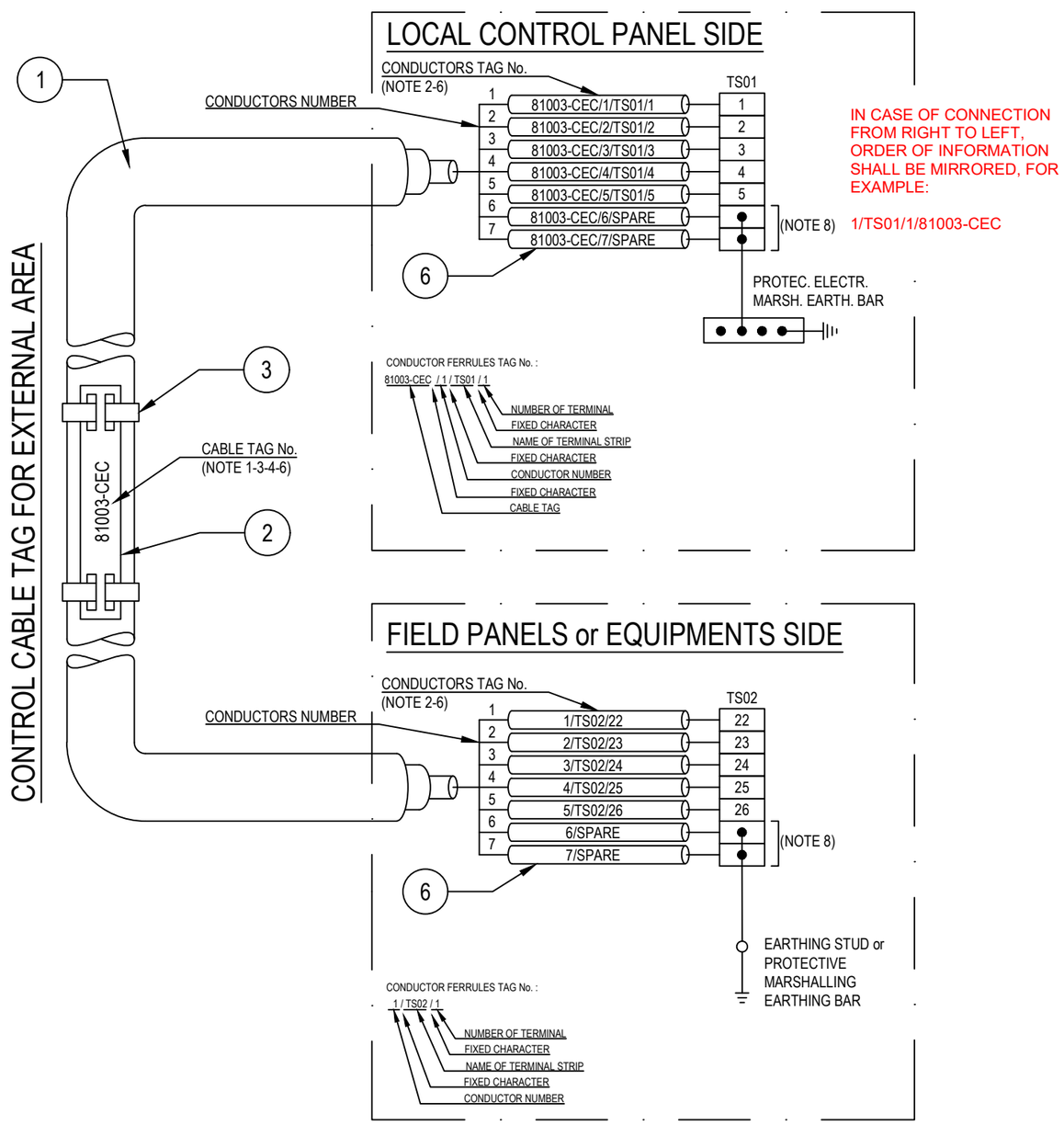
SHEET 083

REV. 02

F.to UNI A3: 420mmx297mm

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

C04



IN CASE OF CONNECTION FROM RIGHT TO LEFT, ORDER OF INFORMATION SHALL BE MIRRORED, FOR EXAMPLE:

1/TS01/1/81003-CEC

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	UNARMOURED CABLE				
2	CABLE TAG FOR EXTERNAL AREA	HDG/SS			NOTE 1 NOTE 4
3	TIE FOR CABLE TAG IN EXTERNAL AREA	HDG/SS			
4	CABLE TAG FOR INTERNAL AREA	PVC			NOTE 1 NOTE 5
5	TIE FOR CABLE TAG IN INTERNAL AREA	NYLON 6.6			
6	CORE FERRULES	PVC			

NOTES:

1) ALL CABLES SHALL BE IDENTIFIED AT EACH TERMINATION AND EACH SIDE OF ANY OBSTACLE (E.G. CABLE TRANSIT ON WALLS INSIDE SHELTER AND FLOOR DECK CROSSING, BY THEIR RESPECTIVE TAGS/NUMBERS, AS INDICATED ON THE CABLE SCHEDULE.
CABLE IDENTIFICATION SHALL BE ALSO DONE BELOW AND IN THE SWITCHBOARD CABLE COMPARTMENT.

2) CABLE CORE FERRULES SHALL BE FITTED AT EVERY TERMINATION. THESE FERRULES SHALL BE OF ENGRAVED PLASTIC SLIP ON, INTERLOCKED AND SELF GRIP TYPE.

3) ON CABLE TRAYS OR LADDERS, CABLES SHALL BE IDENTIFIED AT EACH END, AND EVERY 50 METERS.

4) THE CABLE TAG FOR EXTERNAL AREA SHALL DONE BY 316L STAINLESS STEEL LABELS, TAG (H=5mm) SHALL BE LASER PRINTED PREFERABLY OR EMBOSSED, LABEL HELD BY TWO 316L STAINLESS STEEL TIES.

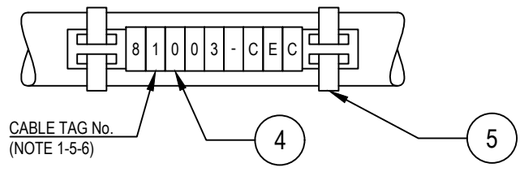
5) THE CABLE TAG FOR INTERNAL AREA SHAL BE DONE BY ENGRAVED PLASTIC SLIP ON CHARACTERS ONTO PLASTIC TIE, BLACK LETTER (H=5mm) ON WHITE.

6) CABLE AND CONDUCTOR TAG ARE INDICATIVE ONLY.

7) THE EARTHING CONNECTION OF THE ARMOUR CABLE IS NOT APPLICABILE IF THE ARMOUR IS CONNECTED TO EARTH WITH METALLIC CABLE GLAND.
WITHIN TECHNICAL BUILDING, PROTECTIVE CONDUCTOR SHALL BE TAGGED BETWEEN FOLLOWING ITEMS:
- PANEL (SWITCHBOARD, SWITCHGEAR, DISTRIBUTION BOARD, ETC) AND EARTH RING
- EARTHING BOSS AND EARTH RING
- EARTH BAR AND EARTH BAR (IF ANY).

8) ONLY IF NECESSARY, SHRINK TUBES OF THE APPROPRIATE COLOR WILL BE INSTALLED TO COVER THE WRONG CONDUCTOR COLOR, THIS WILL BE PERFORMED IN EACH SIDE OF THE CABLES WHERE NECESSARY.

CONTROL CABLE TAG FOR INTERNAL AREA



VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DD-20092

REV.:	DATE:	SIGNATURE:
2_B	28/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	28/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	04/07/24	NLK	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-POWER SYSTEM & CABLE INSTALLATION
CABLES INSTALLATION SYSTEM IDENTIFICATION FOR CONTROL CABLES

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

A3 | DRAWING NO. 123A90-DDL-EL-DD-20092 | SHEET 008 | REV. 02

F.to UNI A3: 420mmx297mm

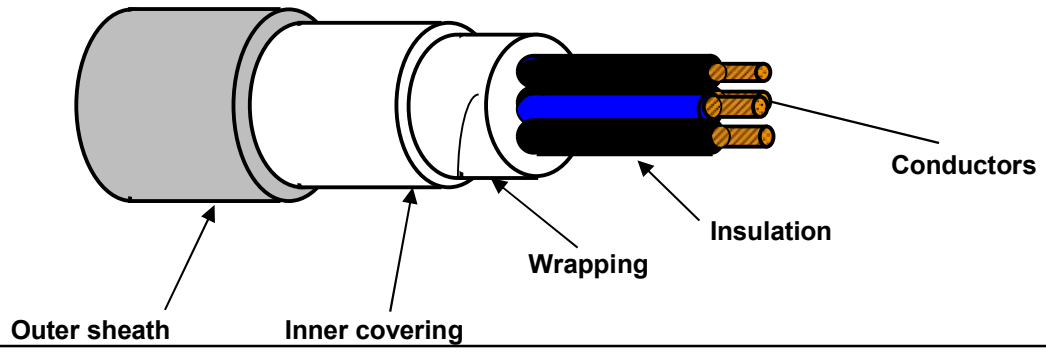
File Name : 123A90-DDL-EL-DD-20092 REV.02.DWG

Tag Number	Category	Discipline	Eng Status	NativeDoc	Layout	Parent Tag	Main Function	Secondary Function	Area	From Tag	From Main Function	From Area	To Tag	To Main Function	To Area	Material ID	Material Desc.	Gland Standard	From Gland	From Entry	From Fitting	To Gland	To Entry	To Fitting	Routing	Routing Manual
83014-CEC	Cable	EL	VFC	123A90-DDL-EL-LIS-20148						CP-200E2	Auxiliary Trafo SOLAR 0,5 MVA Marshalling Box	Lower Deck	SG-100D1	MV 6,6kV Switchgear	Lower Deck (B-100)	ELECV34-7X1,5	Cable Cu Cl.2/XLPE/LSZH 0,6/1kV 7Cx1,5mm² - Grey	M25	T1_M25_Single			n.a.				L-300-101-LVT-002 / L-600-101-LVT-094 / L-300-101-LVT-076 / L-600-101-LVT-012 / L-300-101-LVT-074 / E-MCT-105 / L-600-101-LVT-058 / L-300-101-LVT-059

FLEI s.r.l.

Cu Cl.2/XLPE/LSZH 0,6/1 KV

7CX1,5 - CONTROL CABLE - Flame Retardant



TECHNICAL FEATURES

Conductors :	**STRANDED** plain/bare annealed copper wires	IEC 60228 Class 2
Insulation :	**XLPE** compound, quality to IEC 60092.360, Nominal Thickness 0,7 mm	
Cores colour code :	**Black NUMBERED (from 1 to 7)**	
Pair Assembling :	Not required	
Pair Wrapping:	Not required	
Drain wire :	Not required	
Pair Shield :	Not required	
Shield Insulation :	Not Required	
Total Assembling :	Cores layed up with optimal lay length	
Overall Wrapping:	by plastic tape helically wound	
Drain wire :	Not required	
Overall Shield:	Not required	
Inner covering :	Extruded LSZH compound, Average Thickness 1,0 mm	
Inner covering color code:	**Black or Natural**	
Armour :	Not required	
Outer sheath :	Extruded LSZH Thermoplastic Compound (O.I. ≥ 30%), type **SHF1** to IEC 60093.360, Average Thickness 1,2 mm	
Outer sheath color code:	**Grey**	
Outer printing (INKJET) :	**FLEI - ELECTRIC CABLE - 1000V - 7CX1,5 SQMM - XLPE/LSZH - 0,6/1 KV - IEC 60332.1.2 - IEC 60332.3.22 -**	
	Year of Manufacture - CE + Meter Marking	
Outer diameter :	(13,5 ± 10%) mm	
Bending radius :	cable outer diameter x 10	(in fixed installation)
Voltage test :	3,5 kV a.c. for 5' (Between Cores)	
Conductors DC Resistance :		IEC 60228 Class 2
Insulation Resistance :	≥ 1000 MΩ x Km (@ 20°C)	
Applicable Standards		
Design Guidelines :	**IEC 60092.353**	
ON COMPLETE CABLE		
Flame Retardant test :	IEC 60332.1.2 - IEC 60332.3.22	
Acid Gas generation :	IEC 60754.1/2	
Smoke density/Light Transmittance :	IEC 61034.2 (LT ≥ 60%)	
Temperature Range :		
ON INSULATION	(max +90°C)	(max continuous operation temperature of conductors)
	(max +250°C)	(max conductors temperature during short-circuit for 5 seconds)
ON COMPLETE CABLE		
During Operation :	(-20°C up to +90°C)	(in fixed installation)
During installation :	(- 5°C up to +50°C)	
Note :	**To meet the requirements of installation and use in Zone 1 & Zone 2 (IEC 60079-14) and "Gas & Vapour Tight" the cable must be provided with Penetrating Inner covering together with correct ATEX approved equipment or accessories.**	

Office	Date	Sign	Rev.	Date	Sign
Drawn by :	29/03/2024	Messa			
Checked :	29/03/2024	Spaccasassi			
Approved :	29/03/2024	Cucinotta			

The data provided, lending assent for the treatment, will be used to the sense of the article 13 of of the Regulation (UE) 2016/679, also through outsiders, in order to allow the realization of the fulfilments informatives, administrative, commercial and accounting related to the contractual relationship. Integral copy of the informative could be requested at our offices.

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Section 6 MECHANICAL COMPLETION STATUS INDEX - INSTRUMENTAL DISCIPLINE

NOT APPLICABLE

Section 7 MECHANICAL COMPLETION STATUS INDEX - MECHANICAL DISCIPLINE

NOT APPLICABLE

Section 8 MECHANICAL COMPLETION STATUS INDEX - TELECOMMUNICATION DISCIPLINE

NOT APPLICABLE

Section 9 MECHANICAL COMPLETION STATUS INDEX - HVAC DISCIPLINE

NOT APPLICABLE

Section 10 MECHANICAL COMPLETION STATUS INDEX - PIPING DISCIPLINE

NOT APPLICABLE

Section 11 MECHANICAL COMPLETION INDEX - SAFETY DISCIPLINE

NOT APPLICABLE

Section 12 FAT / VENDOR REPORTS

NOT APPLICABLE

Section 13 MECHANICAL COMPLETION CHANGES / MARK-UPS

NOT APPLICABLE