Base Load Power Hub (BLPH)

Mechanical Completion ITR Template Collection

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1. PROJECT OUTLINE DESCRIPTION

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.
Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1 PROJECT LOCATION

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

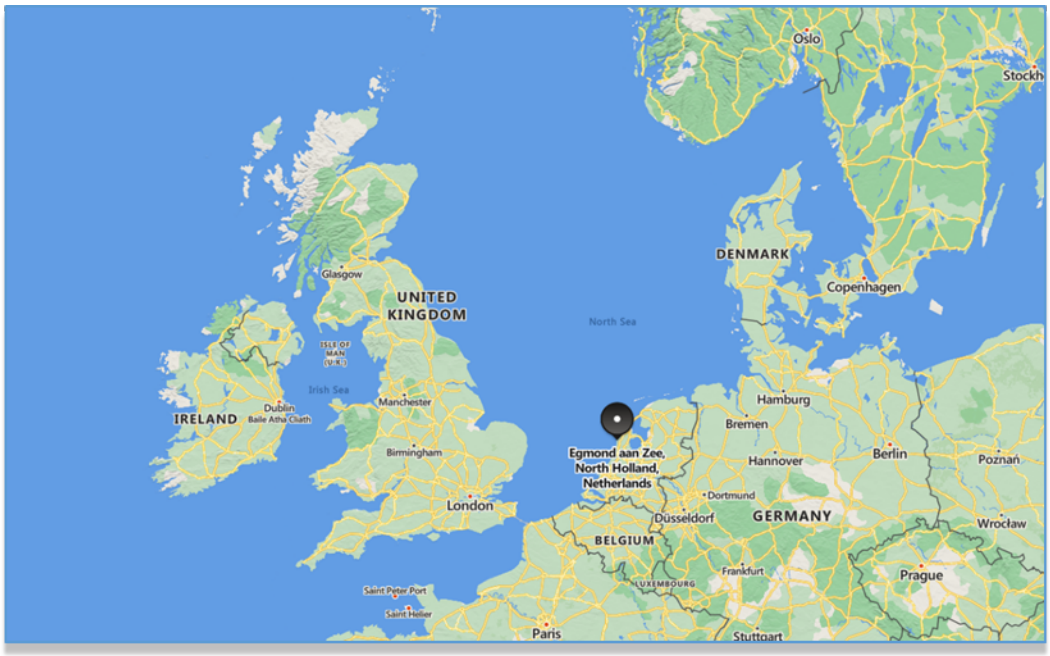


Figure 1 *- HOLLANDSE KUST NOORD WIND PARK Location Map*

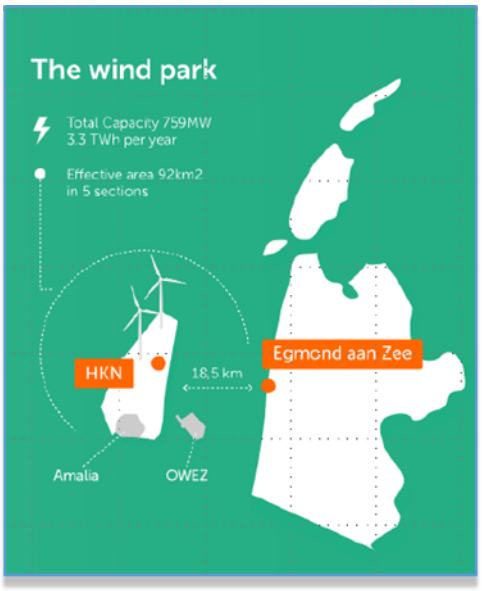


Figure 2 *- Wind Park Details*

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile is located on coordinates E 590719.1, N 5841602.3 and is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.2 PROJECT CONCEPT

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

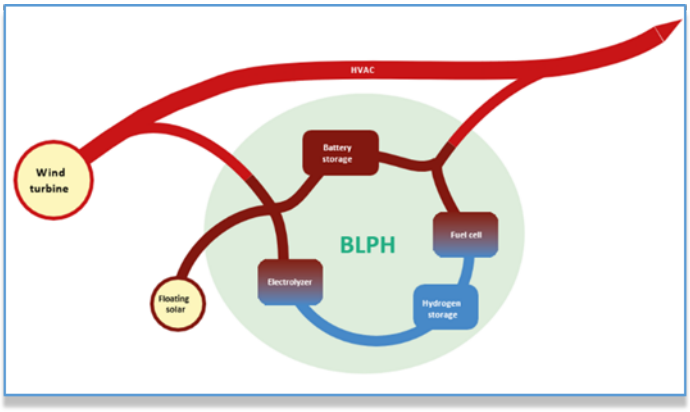


Figure 3 *– BLPH Concept*

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.
The purpose of the BLPH is to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

2. REFERENCE DOCUMENTS

123A90-PML-PM-LIS-01001	Master Document Register
123A90-PML-COM-PL-03002	Mechanical Completion & Commissioning Execution Plan
123A90-PML-COM-LIS-03011	System/Sub-Systems List
123A90-PML-COM-LIS-03012	System/Sub-System Boundary Limit Diagrams
123A90-PML-QHSE-PRO-00120	PROVERLIS Management Procedure
123A90-PML-QHSE-PRO-00117	Punch list Management procedure
123A90-PML-QHSE-RE-00115	Mechanical Completion Final Dossier (ITR A)
123A90-PML-QHSE-PL-00119	ATEX Implementation Plan
123A90-PML-QHSE-ITP-00074	Inspection And Test Plan for Surface Protection
123A90-PML-QHSE-ITP-00075	Inspection And Test Plan for Plan Structures
123A90-PML-QHSE-ITP-00076	Inspection And Test Plan for Piping
123A90-PML-QHSE-ITP-00077	Inspection And Test Plan for Mechanical
123A90-PML-QHSE-ITP-00078	Inspection And Test Plan for E&I
123A90-PML-QHSE-PRO-00092	Piping Testing Procedure
123A90-PML-QHSE-PRO-00116	Flushing and Cleaning Procedures
TBD	Instrument Calibration & Testing Procedure
TBD	Instrumentation Tubing Cleaning & Testing Procedure
123A90-PML-QHSE-PRO-00107	Final Dossier Procedure

3. TERMS & DEFINITIONS

Terms and definitions enlisted hereunder may be applied and used in this document:

Terms	Definitions
COMPANY (CPY)	Means CROSSWIND C.V., owner & developer of the offshore WIND FARM Hollandse Kust Noord Wind Park Project.
CONTRACTOR (CTR)	Means ROSETTI MARINO S.p.A., the named party with whom COMPANY will place a contract for engineering, procurement, construction, offshore installation & Commissioning of the facilities associated with the PROJECT.
Inspection and Test Plan (ITP)	Document that identifies the activities to be inspected as well as specifications, methods and acceptance criteria for monitoring and/or testing. It is a synonymous of “Quality Control Plan” (QCP).
PROJECT	Refers to the BASE LOAD POWER HUB (BLPH) project.
MDR	Master Document Register.

4. SCOPE

Scope of this Mechanical Completion Task Register is to provide the requirements in order to cover the execution and testing of the ITR (Inspection Test Report) activities foreseen for each discipline.

5. INSPECTION TEST REPORT (ITR) LIST OF CHECKS AND TESTS - ELECTRICAL

In this section are enlisted all the applicable electrical checks and tests, as follows:

Form code	Form description	Discipline code	Witnessing responsability	
			CTR	CPY
CPX00	Miscellaneous Electrical Equipment	E	HOLD*	HOLD*
CPX02	Power Transformer LV/HV	E	HOLD*	HOLD*
CPX04	HV Switchboard	E	HOLD*	HOLD*
CPX05	LV Switchboard	E	HOLD*	HOLD*
CPX08	HV Power Cable	E	HOLD*	HOLD*
CPX09	LV Power Cable	E	HOLD*	HOLD*
CPX10	Multicore Electrical Control Cable	E	HOLD*	HOLD*

Form code	Form description	Discipline code	Witnessing responsability	
			CTR	CPY
CPX13	LV Motor	E	HOLD*	HOLD*
CPX15	Distribution Board	E	HOLD*	HOLD*
CPX16	Charger/Inverter	E	HOLD*	HOLD*
CPX17	Battery	E	HOLD*	HOLD*
CPX20	Heater	E	HOLD*	HOLD*
CPX21	Neutral Earthing Resistor	E	HOLD*	HOLD*
CPX22A	Tape Trace Heating Before Insulation	E	HOLD*	HOLD*
CPX22B	Tape Trace Heating After Insulation	E	HOLD*	HOLD*
CPX23	Control Station	E	HOLD*	HOLD*
CPX25	Navigation Aids	E	HOLD*	HOLD*
CPX26	Earthing System	E	HOLD*	HOLD*
CPX29	MCT Penetration Electrical	E	HOLD*	HOLD*
CPX30A	Cable Tray/Ladder Before pulling	E	HOLD*	HOLD*
CPX30B	Cable Tray/Ladder After pulling	E	HOLD*	HOLD*
CPX31	Junction and Marshalling Box	E	HOLD*	HOLD*
CPX32	Console / Control Panel	E	HOLD*	HOLD*
CZX01E	Package - E	E	HOLD*	HOLD*
CJX01	Hazardous Area Equipment Detailed Inspection	E	HOLD*	HOLD*

**Note: Witnessing responsibility will be implemented after ITP approval.*

All forms with detailed activities for each type of the above checks and tests are included at the end of this document, in the section named *"ANNEX 1 – Electrical Forms"*.

IMPORTANT NOTICES:

a) *In order to avoid duplicates while raising PLs and for managing their clearance at the same time, all checks related to cable glands, terminations and connections will be checked during cable inspections (CPX08 "HV Power Cable", CPX09 "LV Power Cable", CPX10 "Multicore Electrical Control Cable"). They will not be considered as double inspections (ex. Tasks CPX31 "Junction & Marshalling Box" point 9).*

b) *All checks similar to "Review FAT punch list" will be considered as already included and checked within PROVERLIS database, therefore not during the physical inspection in the Yard.*

6. INSPECTION TEST REPORT (ITR) LIST OF CHECKS AND TESTS - INSTRUMENTAL

In this section are enlisted all the applicable instrumental checks and tests, as follows:

Form code	Form description	Discipline code	Witnessing responsability	
			CTR	CPY
CJX00	Miscellaneous	I	HOLD*	HOLD*
CJX03	Relief Valve	I	HOLD*	HOLD*
CJX06	Tubing Hydraulic	I	HOLD*	HOLD*
CJX08	Electrical Instrument	I	HOLD*	HOLD*
CJX09	Instrument Power Cable	I	HOLD*	HOLD*
CJX10	Multi/Single-Core Instrument Control Cable	I	HOLD*	HOLD*
CJX11	Orifice Plate	I	HOLD*	HOLD*
CJX13	Thermowell	I	HOLD*	HOLD*
CJX16	Local Gauge/Indicator	I	HOLD*	HOLD*
CJX23	Actuated on/off Valve-Pneumatic/Hydraulic Type	I	HOLD*	HOLD*
CJX27	Control Valve-Pneumatic/Hydraulic Type	I	HOLD*	HOLD*
CJX29	MCT Penetration Instrument	I	HOLD*	HOLD*
CJX30A	Cable Tray/Ladder Before pulling	I	HOLD*	HOLD*
CJX30B	Cable Tray/Ladder After pulling	I	HOLD*	HOLD*
CJX31	Junction and Marshalling Box	I	HOLD*	HOLD*
CJX42	Gas/Smoke Detector	I	HOLD*	HOLD*
CJX43	Fire Detector	I	HOLD*	HOLD*
CJX48	Indoor Cabinet/Panel	I	HOLD*	HOLD*
CZX01I	Package - I	I	HOLD*	HOLD*
TJX04	Analogue O/P	I	HOLD*	HOLD*
TJX11	Orifice Plate	I	HOLD*	HOLD*
TJX13	Thermowell	I	HOLD*	HOLD*

**Note*: Witnessing responsibility will be implemented after ITP approval.*

All forms with detailed activities for each type of check and test are included at the end of this document, in the section named *"ANNEX 2 – Instrumental Forms"*

IMPORTANT NOTICES:

a) *In order to avoid duplicates while raising PLs and for managing their clearance at the same time, all checks related to cable glands, terminations and connections will be checked during cable inspections (CJX09 "Instrument Power Cable", CJX10 "Multi/Single-Core Instrument Control Cable") (ex. Task CJX42 "Gas/Smoke Detector point 11)*
b) *During the inspection of all instruments, the activities foreseen for their calibration will not be taken into account, as they will be handled with separate tests (Tasks TJX04 "Analog O/P"). Instrument calibrations will be carried out prior to the installation.*
c) *All checks similar to "Review FAT punch list" will be considered as already included and checked within PROVERLIS database, therefore not during the physical inspection in the Yard*

7. INSPECTION TEST REPORT (ITR) LIST OF CHECKS AND TESTS - TELECOM

In this section are enlisted all the applicable Telecom checks and tests, as follows:

Form code	Form description	Discipline code	Witnessing responsability	
			CTR	CPY
CIX00	Miscellaneous Telecom Equipment	T	HOLD*	HOLD*
CIX09	Telecom Cable RJ45	T	HOLD*	HOLD*
CIX11	Fibre Optic/Patch Panel	T	HOLD*	HOLD*

**Note: Witnessing responsibility will be implemented after ITP approval.*

All forms with detailed activities for each type of check and test are included at the end of this document, in the section named *"ANNEX 3 – Telecom Forms"*

8. INSPECTION TEST REPORT (ITR) LIST OF CHECKS AND TESTS - MECHANICAL

In this section are enlisted all the applicable Mechanical checks and tests, as follows:

Form code	Form description	Discipline code	Witnessing responsability	
			CTR	CPY
CDX01	Storage Tank	M	HOLD*	HOLD*
CGX01	Pump	M	HOLD*	HOLD*
CZX01M	Package - M	M	HOLD*	HOLD*
TMX08	Machinery Alignment	M	HOLD*	HOLD*

**Note: Witnessing responsibility will be implemented after ITP approval.*

All forms with detailed activities for each type of check and test are included at the end of this document, in the section named *"ANNEX 4 – Mechanical Forms"*

9. INSPECTION TEST REPORT (ITR) LIST OF CHECKS AND TESTS - PIPING

In this section are enlisted all the applicable Piping checks and tests.

Form code	Form description	Discipline code	Witnessing responsability	
			CTR	CPY
CLX02A	Pipework Before Test	P	HOLD*	HOLD*
CLX02B	Pipework After Test	P	HOLD*	HOLD*
CXX01	Tharmal Insulation	P	HOLD*	HOLD*

Form code	Form description	Discipline code	Witnessing responsability	
			CTR	CPY
CXX02	Painting Line	P	HOLD*	HOLD*
TMX03	Cleaning	P	HOLD*	HOLD*
TMX05	Pressure Test	P	HOLD*	HOLD*
TMX25	Gross Air Leak Test	P	HOLD*	HOLD*
TMX27	Bolt tensioning / torquing	P	HOLD*	HOLD*
TPLX05	Drying	P	HOLD*	HOLD*

**Note: Witnessing responsibility will be implemented after ITP approval.*

All forms with detailed activities for each type of check and test are included at the end of this document, in the section named *"ANNEX 5 – Piping Forms"*

10. INSPECTION TEST REPORT (ITR) LIST OF CHECKS - SAFETY

In this section are enlisted all the applicable instrumental checks, as follows:

Form code	Form description	Discipline code	Witnessing responsability	
			CTR	CPY
CYX07	Hydrant/Cabinet/Equipment	S	HOLD*	HOLD*
CYX08	Portable Fire Extinguisher	S	HOLD*	HOLD*
CYX09	Survival Equipment	S	HOLD*	HOLD*
CYX10	First Aid Equipment	S	HOLD*	HOLD*
CYX15	Escape Route	S	HOLD*	HOLD*
CYX16	Safety Sign	S	HOLD*	HOLD*
CYX17	Descent Device	S	HOLD*	HOLD*

**Note: Witnessing responsibility will be implemented after ITP approval.*

All forms with detailed activities for each type of check are included at the end of this document, in the section named *"ANNEX 6 – Safety Forms"*

11. INSPECTION TEST REPORT (ITR) LIST OF CHECKS – BUILDING

In this section are enlisted all the applicable Building checks, as follows:

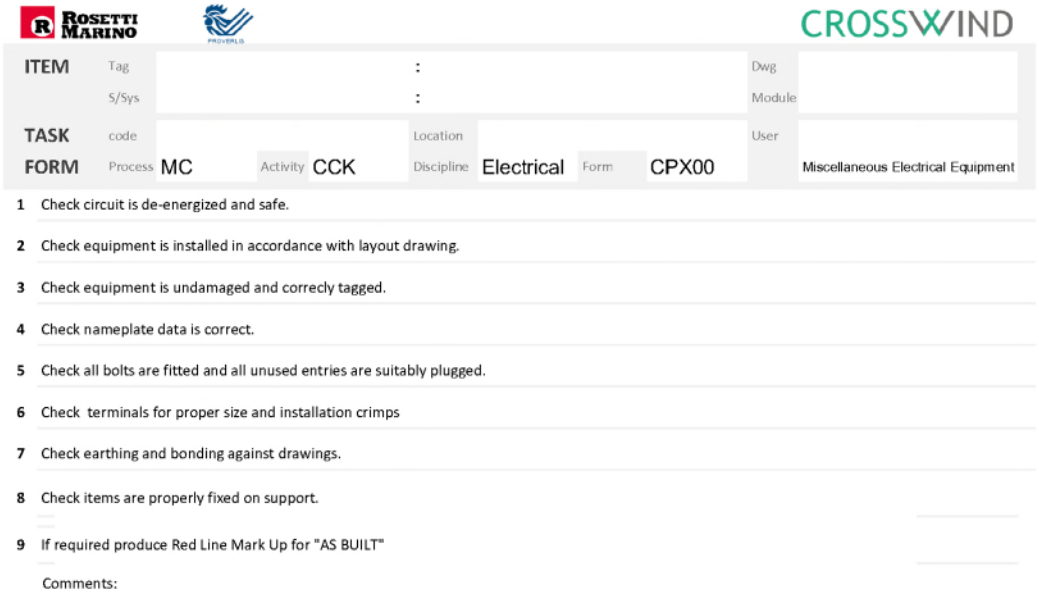
Form code	Form description	Discipline code	Witnessing responsability	
			CTR	CPY
CQX01	Steel Structure	B	HOLD*	HOLD*
CXX03	Painting Structure	B	HOLD*	HOLD*

**Note: Witnessing responsibility will be implemented after ITP approval.*

All forms with detailed activities for each type of check are included at the end of this document, in the section named *"ANNEX 7 – Building Forms"*

12. ANNEXES

➢ *ANNEX 1 – ELECTRICAL FORMS*



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ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form CPX00	Miscellaneous Electrical Equipment

1	Check circuit is de-energized and safe.
2	Check equipment is installed in accordance with layout drawing.
3	Check equipment is undamaged and correcly tagged.
4	Check nameplate data is correct.
5	Check all bolts are fitted and all unused entries are suitably plugged.
6	Check terminals for proper size and installation crimps
7	Check earthing and bonding against drawings.
8	Check items are properly fixed on support.
9	If required produce Red Line Mark Up for "AS BUILT"

Comments:

Page 1/1	Performed by	☐ WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company			
Name			
Date			
Signature			

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ITEM	Tag	:					Dwg		
	S/Sys	:					Module		
TASK	code				Location			User	
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX02	Power Transformer LV/HV

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

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process MC	Activity CCK	Discipline Electrical	Form CPX02		Power Transformer LV/HV	

TRANSFORMER DATA

Manufacturer :	Serial N° :	Rating : kWA
Primary Voltage V	Secondary Voltg. V	Vector group
UpStream Eqp.	DownStream Eqp.	Data Sheet :

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				

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:

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ITEM	Tag		:					Dwg	
	S/Sys		:					Module	
TASK	code				Location			User	
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX04	HV Switchboard

1	Check switchboard is de-energized and safe.
2	Check conformity against latest data sheet and project specification.
3	Check that anti-condensation heaters are ready to be energized.
4	Check equipment is correclty aligned, leveled, rigid and secured with correct bolting.
5	Check all panel mounted devices are undamaged and tagged in accordance with data.
6	Check if construction rating plate data is correct.
7	Check bus bars and supports are clean and clear of debris, torque all bolts to specification.
8	Check earthing and bonding of all equipment against latest drawings.
9	Check all switching devices are mechanically operational and undamaged.
10	Check switchgear mechanical interlocks against interlock diagram.
11	Check all shutters are identified, operational and lockable.
12	Check C.T's &VT's are properly installed and match drawing and protection diagram.
13	Check interconnection wiring against latest drawings.
14	Check suppliers document
15	If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX04		HV Switchboard

TRANSFORMER DATA

Manufacturer :	Serial N° :	Voltage
Current	IP Rating	Datasheet
RATED SC CURRENT (RMS):	**kA:1s**	Specification

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity

TEST RESULTS

CONTINUITY	Bus bars R	Bus bars S	Bus bars T	Polarity distribution Control	Polarity distribution Signalling	Space heater circuit	Motor rearming wiring
Continuity A							
Continuity B							

Utility Insulation Resistance	Test V	Min Req.	MΩ	Control Wiring	Signaling wiring	Space heater circuit	Motor rearming wiring
					R-STE	S-RTE	T-RSE
1st Insulation Resistance	Test Voltage	Min Required	MΩ				
HV test 1 min	Test Voltage	Min Required	MΩ				
2nd Insulation Resistance	Test Voltage	Min Required	MΩ				

VT IDENTITY	CONTINUITY Primary U1	U2	U3	Secondary V1a	V2a	V3a	V1b	V2b	V3b	INSULATION Prim/secondary-Earth U1/E	U2/E	U3/E	Secondary/primary- Earth V1a-E	V2a-E	V3a-E	V1b-E	V2b-E	V3b-E

Note: for VT tests neutral to be disconnected from Secondary

Comments:

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Date			
Signature			

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ITEM	Tag		:				Dwg		
	S/Sys		:				Module		
TASK	code			Location			User		
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form CPX05		LV Switchboard	

1	Check switchboard is de-energized and safe.
2	Check identification (tag number, tag plate)
3	Check conformity against latest data sheet and project specification.
4	Check equipment is correctly aligned, leveled, rigid and secured with correct bolting.
5	Check all panel mounted devices are undamaged.
6	Check all panel mounted devices are tagged in accordance with data.
7	Check if construction rating plate data is correct.
8	Check bus bars and supports are clean and clear of debris, torque all bolts to specifications.
9	Check earthing and bonding of all equipment against drawings.
10	Check all switching devices are mechanically operational and undamaged.
11	Check all circuit breakers and starter cubicles run freely in compartments.
12	Check swithgear mechanical interlocks against interlock diagram.
13	Check all C.T's &VT's are properly installed and match drawings and protection diagram.
14	Check all equipment are identified against latest drawings (cubicles, relays ...etc).
15	Check interconnection wiring against latest drawings.
16	If required produce Red Line Mark Up for "AS BUILT"

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REFER TO FINAL SHEET FOR ACCEPTANCE

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX05		LV Switchboard

TRANSFORMER DATA

Manufacturer:	Serial N°:	Voltage
Current	IP Rating	Datasheet
RATED SC CURRENT (RMS):	**kA:1s**	Specification

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity

INSULATION RESISTANCE AND CONTINUITY TEST

				R-STE	S-RTE	T-RSE
BUS-BAR Insulation Resistance	Test Voltage	Min Required	MΩ			
				Control Wiring	Signaling wiring	Space heater circuit
Utility Insulation Resistance	Test Voltage	Min Required	MΩ			

CONTINUITY	Bus bars			Polarity distribution		Space heater circuit	Motor rearming wiring
	R	S	T	Control	Signalling		
Contiuity A							
Contiuity B							

VT IDENTITY	CONTINUITY									INSULATION								
	Primary			Secondary						Prim/secondary-Earth			Secondary/primary- Earth					
	U1	U2	U3	V1a	V2a	V3a	V1b	V2b	V3b	U1/E	U2/E	U3/E	V1a-E	V2a-E	V3a-E	V1b-E	V2b-E	V3b-E

Note: for VT tests neutral to be disconnected from Secondary

Comments:

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Date			
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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX08		HV Power Cable

CABLE DATA

Type	Cores/Size mm²	Color
From	To	

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

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
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FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX08	HV Power Cable

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

TESTING INSTRUMENTS USED

TYPE / SERIAL N°	TYPE / SERIAL N°
Calibration certificate N° and date:	Calibration certificate N° and date:
TYPE / SERIAL N°	TYPE / SERIAL N°
Calibration certificate N° and date:	Calibration certificate N° and date:

Comments:

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ITEM	Tag		:			Dwg			
	S/Sys		:			Module			
TASK	code			Location		User			
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX09		LV Power Cable

CABLE DATA

Type	Cores/Size mm²	Color
From		To

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

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX09		LV Power Cable

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

TESTING INSTRUMENTS USED	
TYPE / SERIAL N° : Calibration certificate N° and date:	TYPE / SERIAL N° : Calibration certificate N° and date:

Comments:

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ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form CPX10	Multicore Electrical Control Cable

1 Check cable physical integrity.

2 Check cable data against latest cable schedule.

3 Check cable routing against latest drawings (segregation, distance...).

4 Check cable is supported and fixed to rack according to latest project Specification.

5 Check bending radius is within the specified limits.

6 Check cable and core marking against latest drawings

7 Check cable labelling is in accordance with latest specification.

8 Check cable glands suit for cable type and are in accordance with latest specification.

9 Check terminations are in accordance with latest termination diagram.

10 Check cable earthing against lastest drawings.

11 Check gland plate for single core cables is non magnetic.

12 If required produce Red Line Mark Up for "AS BUILT"

CONTINUITY	CORE 1 / All cores+screen+armour+earth		
	CORE 2 / All cores+screen+armour+earth		
	CORE 3 / All cores+screen+armour+earth		
	CORE 4 / All cores+screen+armour+earth		
	CORE 5 / All cores+screen+armour+earth		
	CORE 6 / All cores+screen+armour+earth		
	CORE 7 / All cores+screen+armour+earth		
	CORE 8 / All cores+screen+armour+earth		
	CORE 9 / All cores+screen+armour+earth		
	CORE 10 / All cores+screen+armour+earth		
INSULATION	CORE 1		
	CORE 2		
	CORE 3		
	CORE 4		
	CORE 5		
	CORE 6		
	CORE 7		
	CORE 8		
	CORE 9		
	CORE 10		
	SCREEN		
	EARTH		
	ARMr		
	TEST VOLTS		

TESTING INSTRUMENTS USED	
TYPE / SERIAL N° : Calibration certificate N° and date:	TYPE / SERIAL N° : Calibration certificate N° and date:
TYPE / SERIAL N° : Calibration certificate N° and date:	TYPE / SERIAL N° : Calibration certificate N° and date:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX13		LV Motor

1	Check motor is de-energized and safe.
2	Check that anti-condensation heater is ready to be energized.
3	Check motor is correclty tagged.
4	Check mechanical general arrangement.
5	Check shaft rotates free and quietly in both directions, motor uncoupled.
6	Check motor data conformity against latest data sheet/ project specification (rating plate).
7	Check motor earthing against latest drawings.
8	Visual check phase sequence connection.
9	Check motor terminal box is clean.
10	Check terminal boxes screws are tighted.
11	Check auxiliary devices (if any) for proper installation and connection.
12	Check painting integrity.
13	If required produce Red Line Mark Up for "AS BUILT"

MOTOR DATA

Manufacturer :		Serial N° :		Speed :	rpm
Voltage :	V	Frequency :	Hz	Rating :	kW
Full Load Current :	A	Type of protection :		IP Rating :	
SWBD & CUB ref :		Insulation class :		Data Sheet :	

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity

TEST RESULTS

Winding Resistance: U-V V-W W-U

	Test Voltage	Mini Req	Readings (MΩ)
Winding Insulation Resistance			
UVW-E			
Space heater insulation resistance phase / earth			
Bearing insulation resistance if applicable (motor with VSDS for instance)			

Star connection Delta connection

Comments:

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ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form CPX15	Distribution Board

1	Check equipment is de-energized and safe.
2	Check anti-condensation heaters are ready to be energized.
3	Check equipment earthing and bonding against latest drawings.
4	Check equipment is undammaged, correctly mounted, tagged and installed in accordance with latest layout drawings.
5	Check all doors, gland plates are correctly mounted.
6	Check panel-front components, indicators, lamps, meters are securely mounted and undamaged.
7	Check all switching devices rating and tagging against latest drawings.
8	Check all switching devices for proper mechanical operation.
9	Check (visual) of cables connections.
10	If required produce Red Line Mark Up for "AS BUILT"

NAME PLATE DATA

Manufacturer :	Serial N° :	Type:
Voltage : V	Frequency : Hz	Rating : kW
IP Rating	N° of outgoers:	Specification:
SWBD & CUB ref:		Data Sheet :

TESTING AND MEASUREMENT INSTRUMENT USED

Type	Serial n°	Calibration certificate	Validity

TEST RESULTS

INSULATION RESISTANCE	TEST VOLTAGE	V	R/ S-T-EARTH	Mohm
			S/ R-T-EARTH	Mohm
			T/S-R-EARTH	Mohm

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX16		Charger/Inverter

1	Check equipment is de-energized and safe.
2	Check equipment is undammaged, correctly mounted, tagged and installed in accordance with layout drawings.
3	Check conformity against data sheet and project specification
4	Check manufacturer's nameplate data.
5	Check all panel-front components, indicators, lamps, meters are securely mounted and undamaged.
6	Check equipment cleanliness.
7	Check all earthing and bonding against drawings.
8	Check battery cable termination against drawings.
9	If required produce Red Line Mark Up for "AS BUILT"

NAMEPLATE DATA

Manufacturer :		Serial N° :		Type	
Input	V	Output	V	Rating	kVA
Input	A	Output	A	Specification	
SUPPLY SWBD & CUB ref:				Data Sheet:	

TESTING AND MEASUREMENT INSTRUMENT USED

Type	Serial n°	Calibration certificate	Validity

TEST RESULTS

TEST VOLTAGE	
INSULATION RESISTANCE	
Comments:	

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ITEM	Tag	:			Dwg		
	S/Sys	:			Module		
TASK	code			Location		User	
FORM	Process MC	Activity CCK		Discipline Electrical	Form CPX17		Battery

1	Check battery is installed in accordance with manufacturer's instructions with sufficient clearance and accessibility for maintenance.
2	Check battery cells are identified and tagged correctly.
3	Check battery data against data sheet /project specification.
4	Check all nuts and links are fitted, tightened and greased.
5	Check caps for transportation have been removed.
6	Check terminals protecting caps are installed.
7	Check cells interconnections against drawings.
8	Check cable connections.
9	Check all electrolyte levels are correct (if applicable).
10	Check special tools and safety equipment are available (if any).
11	If required produce Red Line Mark Up for "AS BUILT"

Battery data

Manufacturer :	Serial N° :	Battery Type :
N° of cells :	Cell voltage :	Battery charger :
Battery capacity :	Battery voltage	Ambient temp.

TESTING AND MEASUREMENT INSTRUMENT USED

Type	Serial n°	Calibration certificate	Validity

Cell number	1	2	3	4	5	6	7	8	9	10	11	12
Connection tightening												
Electrolyte level												
Cell number	13	14	15	16	17	18	19	20	21	22	23	24
Connection tightening												
Electrolyte level												
Cell number	25	26	27	28	29	30	31	32	33	34	35	36
Connection tightening												
Electrolyte level												
Cell number	37	38	39	40	41	42	43	44	45	46	47	48
Connection tightening												
Electrolyte level												

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX20		Heater

1 Check equipment is de-energized and safe.

2 Check nameplate data is correct.

3 Check equipment tagging against drawings.

4 Check earthing and bonding against drawings.

5 Check item are properly fixed on support.

6 Check all bolts are fitted and all unused entries are suitably plugged.

7 Check Supplier's documentation and drawings.

8 If required produce Red Line Mark Up for "AS BUILT"

NAME PLATE DATA

Manufacturer :		Serial N° :		Type:	
Voltage :	V	FLC :		Rating :	kW
Frequency :	Hz	IP Rating		Data Sheet :	
Supplied from :		Type of protection :		Specification:	

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity

TEST RESULTS

INSULATION RESISTANCE	TEST VOLTAGE	V	R/ S-T-EARTH	Mohm
			S/ R-T-EARTH	Mohm
			T/S-R-EARTH	Mohm
RESISTANCE MEASUREMENT			R1 - R2	Ohm
			S1 - S2	Ohm
			T1 - T2	Ohm

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX21		Neutral Earthing Resistor

1 Check equipment is de-energized and safe.

2 Check equipment is installed according layout.

3 Check conformity to data sheet / project specification.

4 Check earthing and bonding against drawings.

5 Check coating integrity.

6 Check connection: N/m

7 Check equipment tagging against drawings (if tags are required).

8 Check Supplier's documentation and drawings.

9 If required produce Red Line Mark Up for "AS BUILT"

NAME PLATE DATA

Manufacturer :	Serial N° :	Type
Voltage V	Frequency Hz	Data Sheet :
Rating Ohm/Amp/sec :	Permanent :	Supplied from :

TESTING AND MEASUREMENT INSTRUMENT USED

Type	Serial n°	Calibration certificate	Validity

TEST RESULTS

NER RESISTANCE	Ohm(measured)	Ohm(design)
Insulation resistance test (MOhm)	Test voltage (V)	MOhm

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process MC	Activity CCK	Discipline Electrical	Form CPX22A		Tape Trace Heating Before Insulation	

1 Check that the circuit is de-energized and safe.

2 Check all tapes and junction boxes are undamaged.

3 Check all tapes and junction boxes are installed according to drawings.

4 Check all tapes characteristics against project data (type, rated power).

5 Check rating of circuit breaker against drawings.

6 Check tapes, junction boxes, cables and accessories tagging.

7 After test re-connecting cable as per typical installation.

8 If required produce Red Line Mark Up for "AS BUILT"

CIRCUIT DATA

List Associated Heat tracing Isometric

Tape Type

Circuit Installed Length

Wiring Diagram

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity

FIRST TEST

Continuity and insulation resistance tests to earth for each conductor core are carried out after the tape is installed on pipework **before any insulation and cladding is fitted.**

Test voltage (V):	Tape Lengh	Thermostats :
Continuity	Insulation Resistance	Result

AFTER THIS TEST IS DONE, LINE CAN BE RELEASED TO INSULATION TEAM

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX22B	Tape Trace Heating After Insulation

1 Check that the circuit is de-energized and safe.

2 Check all tapes and junction boxes are undamaged.

3 Check circuit earthing and bonding against drawings.

4 Check warning labels and safety instruction are installed.

5 After test re-connecting cable as per typical installation.

6 If required produce Red Line Mark Up for "AS BUILT"

CIRCUIT DATA

List Associated Heat tracing Isometric

Tape Type

Circuit Installed Length

Wiring Diagram

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity

FINAL TEST

Continuity and insulation resistance tests to earth for each conductor core are carried out after the tape is installed on pipework **after pipework has been fully insulated and cladded.**

Test voltage (V):	Tape Length	Thermostats:
Continuity	Insulation Resistance	Result

Check on CPX22A Inulsation Resistance value measured prior insulation and cladding was fitted and confirm difference is acceptable

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX23		Control Station

1	Check circuit is de-energized and safe.
2	Check equipment is installed in accordance with latest layout drawing.
3	Check equipment is undamaged and correcly tagged.
4	Check nameplate data is correct.
5	Check control station and emergency stop pushbutton accessibility.
6	Check pushbuttons for proper mechanical operation.
7	Check all bolts are fitted and all unused entries are suitably plugged.
8	Check earthing and bonding against latest drawings.
9	If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX25		Navigation Aids

1	Check equipment is de-energised and safe.
2	Check all equipments are undamaged.
3	Check all equipment installation against drawings.
4	Check all bolts are fitted and correcly tighted.
5	Check equipment is correctly tagged as per drawings.
6	Check nameplate data is in accordance with project data.
7	Check all unused entries are suitably plugged.
8	Check equipment earthing and bonding against drawings.
9	If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX26		Earthing System

1 Check all earth bars installation against drawings.

2 Check earthing cables installation against drawings.

3 Check earthing cables cross section against drawings.

4 Check all connections are tight, clean and coated with an approved anti-corrosive grease (if required).

5 Check earthing networks segregation (IS).

6 Check earth rods correct installation.

7 If required produce Red Line Mark Up for "AS BUILT"

Test Results

DRAWING N°	Equipment N° (FROM)	Earth dispatcher (TO)	Loop resistance	Associated cable N°

TEST CURRENT	A
GLOBAL EARTHING RESISTANCE	Ohms
EARTHING ROD RESISTANCE	Ohms

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX29		MCT Penetration Electrical

1 Check that MCT's conforms to revision and specification.

2 Check MCT's is installed correctly in accordance with latest layout drawings without clashes with pipe runs or other equipment.

3 Check MCT's is properly tagged, on both side of penetration

4 Check the cable arrangement in MCT's is conform with the latest drawing.

5 If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX30A	Cable Tray/Ladder Before pulling

BEFORE PULLING

1 Check cable tray / ladder is undamaged and installed against drawings without clashes with pipe runs or other equipment.

2 Check cable tray / ladder is adequately supported against drawings (no excessive deflection).

3 Check cable tray / ladder segregation between racks

4 Check Material for Bolt and splices

5 Check insulation pads are adapted to stainless steel or aluminium cable tray /ladder.

6 Check cable tray / ladder cleanness.

7 Check cable tray / ladder earthed and bonded against drawings.

8 Check Continuity and Resistance test on tray (spot check)

9 Check proper mitigations against sharp edges that could damage the cables

10 Check Transitions to ensure proper cables bending radius

11 Check Proper protection of racks and trays until cable pulling

12 Check Labelling with system and segment number

13 If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX30B	Cable Tray/Ladder After pulling

AFTER PULLING

1	Check cable segregation on rack and tray
2	Check Capacity of cable rack and tray (bunching, size of cables, spare capacity, etc.)
3	Check cable tray / ladder for Damages and cleanness
4	Check of proper cable bending radius
5	Check proper fastening of cables (distance and material)
6	Check lids intallation (if any) against drawings
7	If required produce Red Line Mark Up for "AS BUILT"

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TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX31		Junction and Marshalling Box

1	Check box is de-energized and safe.
2	Check box is correctly mounted and easily accessible.
3	Check box tagging against drawing.
4	Check nameplate data is correct.
5	Check flameproof joints are clean and greased with approved lubricants (if required).
6	Check for damaging gaskets.
7	Check all bolts are fitted and correcly tighted .
8	Check all unused entries are suitably plugged.
9	Check earthing and bonding against drawings.
10	Check terminal blocks segregation barriers are fitted where necessary.
11	If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CPX32		Console / Control Panel

1	Check panel is correctly installed in accordance with layout drawing.
2	Check if equipment design is in accordance with project specifications.
3	Check that panel is undamaged and that all components are in good condition.
4	Check panel earthing and bonding are in accordance with project specifications.
5	Check that internal wiring (visual check) is correctly loomed and clearly identified.
6	Check that the equipment is correcly tagged.
7	Check that all stop plugs are properly installed
8	Check that all mechanical selectors/lights are not damaged and properly work
9	If required produce Red Line Mark Up for "AS BUILT"

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	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Electrical	Form	CZX01E		Package - E

1	Check that electrical component is not damaged.
2	Check that the cables are adequately supported and protected.
3	Check that the equipment, including cables and glands, have been correctly installed (only visual inspection).
4	Check that all equipment has been earthed and bonded.
5	Check if accessibility and maintenance are possible and safe.
6	Verify that all vendor punch list created during FAT are uploaded in the Database.
7	Check identification tag plate.
8	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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ROSETTI MARINO PROVERLIS CROSSWIND

ITEM Tag : Dwg
S/Sys : Module
TASK code Location User
FORM Process MC Activity CCK Discipline Hazardous Area Equipment De Form CJX01 Hazardous Area Equipment Detailed Inspection

Schedule Ref. #				**Area Code**					
Area Class Drawing				**Serial No.**					
Manufacturer				**Model**					
Cert No.				**Equipment Ambient Temp.**					
Area Classification		**Zone**		**Gas group**		**Temp class**			
Equipment Protection Type		**EPL**		**Gas group**		**Temp class**		**IP Rating**	

Detailed Note:

1) Inspection shall only be performed by competent personnel with competency verified by Total
2) All fields are to be completed. Any non-applicable field shall state "NA". Comments are required for 'Failure' column ONLY.
3) An Inspection Sheet should be completed for EACH individual item of Equipment.

	General Equipment	Detailed	OK/NA/PL	Comments
1	Equipment is appropriate to the EPL / Zone requirements of the area	X		
2	Equipment group is correct	X		
3	Equipment temperature class is correct	X		
4	Degree of IP protection of equipment is appropriate for the level of protection	X		
5	Equipment circuit identification is correct	X		
6	Equipment circuit identification is available	X		
7	Enclosure glass parts and glass-to-metal sealing gaskets and / or compounds are satisfactory	X		
8	There is no damage or unauthorized modifications	X		
9	There is no evidence of unauthorized modifications	X		
10	Bolts, cable entry devices (direct and indirect) & blanking elements are of the correct type, are complete & tight			
	Physical check	X		
11	Threaded covers on enclosures are of the correct type, are tight and secured			
	Physical check	X		
12	Joint surfaces are clean and undamaged and gaskets, if any, are satisfactory and positioned correctly	X		
13	Condition of enclosure gaskets is satisfactory	X		
14	There is no evidence or ingress of water or dust in the enclosure in accordance with the IP rating	X		
15	Electrical connections are tight	X		
16	Bridging links do not reduce creepage / clearance and are allowed	X		
17	Unused terminals are tightened	X		
18	Encapsulated components are undamaged	X		
19	Flameproof components are undamaged	X		
20	Fluorescent lamps are not indicating EOL effects (only for Ex "e" – Ex "n" – Ex "t")	X		
21	HID lamps are not indicating EOL effects	X		
22	Lamp type, rating, pin configuration and position are correct	X		
23	Breathing and drainage devices are satisfactory	X		
24	Type of cable is appropriate	X		
25	There is no obvious damage to the cables	X		
26	Cable glands are the correct type and installed correctly	X		
27	Sealing of trunking, ducts, pipes and or conduits is satisfactory	X		
28	Stopping boxes and cable boxes are corrected filled	X		

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ITEM Tag : Dwg
S/Sys : Module
TASK code Location User
FORM Process MC Activity CCK Discipline Hazardous Area Equipment Detailed Inspection Form CJX01 Hazardous Area Equipment Detailed Inspection

29	Integrity of conduit system and interface with mixed system maintained	x		
30	Earthing connections, including any supplementary earthing bonding connections are satisfactory (for example connections are tight and conductors are of sufficient cross-section			
	Physical check	x		
31	Automated electric protective devices operate within permitted limits	x		
32	Special conditions (if applicable) have been complied with.	x		
33	All cable cores are uniquely labeled	x		
34	Cable cores not in use are correctly terminated	x		
35	Equipment is adequately protected against corrosion, weather, vibration and other adverse factors	x		
36	No undue accumulation of dust and dirt	x		
37	All equipment housings are clean and dry	x		
38	All moving parts are free and have no mechanical damage	x		
	Applicable for Installation of Heating Systems			
39	Temperature sensors function according to manufacturer's documents (only applicable for Ex-d e Ex-e)	x		
40	Safety cut off devices function according to manufacturer's documents (only applicable for Ex-d e Ex-e)	x		
41	The setting of the safety cut off is sealed (only applicable for Ex-d e Ex-e)	x		
42	Reset of a heating system safety cut off possible with tool only(only applicable for Ex-d e Ex-e)	x		
43	Auto-reset is not possible (only applicable for Ex-d e Ex-e)	x		
44	Reset of a safety cut off under fault conditions is prevented (only applicable for Ex-d e Ex-e)	x		
45	Safety cut off independent from control system (only applicable for Ex-d e Ex-e)	x		
46	Level switch is installed and correctly set, if required (only applicable for Ex-d e Ex-e)	x		
47	Flow switch is installed and correctly set, if required (only applicable for Ex-d e Ex-e)	x		
	Extra Ex d checks			
48	Obstructions adjacent to flame proof flanged joints are in accordance with IEC 60079-14	x		
49	Ex d conduits seals are fitted to all conduits and satisfactorily sealed	x		
50	Cable glands are of the correct type and installed correctly	x		
51	Adaptors, reducers, stop ends, etc. are all certified Ex d	x		
52	Flame path are clean and undamaged	x		
53	Flange gap dimensions are within tolerances	x		
54	Motor fans have sufficient clearance to the enclosure and/or covers, cooling systems are undamaged, motor foundations have no indentations or cracks	x		
55	The ventilation airflow is not impeded	x		
56	Insulation resistance (IR) of the motor windings is satisfactory	x		
57	Fault loop impedance (TN systems) or earthing resistance (IT systems) is satisfactory	x		
58	Variable voltage/frequency installation complies with documentation	x		
	Extra Ex e checks			
59	All Equipment is Ex e certified (including components within enclosure)	x		
60	Power conductors are not bunched together causing possible hot spots	x		
61	Motor fans have sufficient clearance to the enclosure and/or covers, cooling systems are undamaged, motor foundations have no indentations or cracks	x		
62	Insulation resistance (IR) of the motor windings is satisfactory	x		
63	Fault loop impedance (TN systems) or earthing resistance (IT systems) is satisfactory	x		
64	The ventilation airflow is not impeded	x		
65	Motor protection devices operate within the permitted tE or tA time limits.	x		
66	Variable voltage/frequency installation complies with documentation	x		

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ROSETTI MARINO CROSSWIND

ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity CCK	Discipline	Form	CJX01	Hazardous Area Equipment Detailed Inspection

	Extra Ex n (nR, nL) checks			
67	All Terminals are Ex n certified (if required on certificate)	x		
68	Hermetically sealed and enclosed break devices are undamaged	x		
69	Restricted breathing properties satisfactory (conduct vacuum test)	x		
70	Test port, if fitted, is functional (type "nR" only)	x		
71	Breathing operation is satisfactory (type "nR" only)	x		
72	Motor fans have sufficient clearance to the enclosure and/or covers, cooling systems are	x		
73	The ventilation airflow is not impeded	x		
74	Insulation resistance (IR) of the motor windings is satisfactory	x		
75	Motor protection devices operate within the permitted tE or tA time limits.	x		
76	Variable voltage/frequency installation complies with documentation	x		
	Extra Ex p checks			
77	Pressurization gas is correct type	x		
78	Actual pressure is within maximum and minimum settings for equipment	x		
79	Timers set as per certification documentation	x		
80	Alarms and trip functions operate correctly as per certification documentation	x		
81	Fault loop impedance (TN systems) or earthing resistance (IT systems) is satisfactory	x		
82	Automatic electrical protective devices operate within permitted limits	x		
83	Automatic electrical protective devices are set correctly	x		
84	Protective gas inlet temperature is below maximum specified	x		
85	Ducts, pipes and enclosures are in good condition	x		
86	Protective gas is substantially free from contaminants	x		
87	Protective gas pressure and/or flow is adequate	x		
88	Pressure and/or flow indicators, alarms and interlocks function correctly	x		
89	Conditions of spark and particle barriers of ducts for exhausting the gas in hazardous area are satisfactory	x		
90	Specific conditions of use (if applicable) are complied with			
	Extra Ex i (Intrinsically Safe – IS) checks			
91	Equipment has adequate circuit identification for 'IS' Installation	x		
92	Cables are installed in accordance with the documentation	x		
93	Segregation is maintained between IS and non-IS Circuits	x		
94	Cable screens are isolated at one end (field side)	x		
95	Cable screens are earthed in accordance with the documentation	x		
96	Safety barrier units, relays and other energy limiting devices are of the approved type, installed in	x		
97	Equipment installed is the one specified in the documentation	x		
98	Ambient temperature range of the apparatus is correct for the installation	x		
99	Service temperature range of the apparatus is correct for the installation	x		
100	Installation is clearly labelled	x		
101	Printed circuit boards are clean and undamaged	x		
102	The maximum voltage Um of the associated apparatus is not exceeded	x		
103	Point-to-point connections are all correct	x		
104	Earth continuity is satisfactory (e.g. connections are tight, conductors are of sufficient cross-section)	x		
105	Earth connections maintain the integrity of the type of protection	x		
106	Intrinsically safe circuit earthing is satisfactory	x		
107	Insulation resistance is satisfactory	x		
108	Short-circuit protection of the power supply is in accordance with the documentation	x		

	BARRIER:	Manufacturer:		Model:		
		Authority:		Cert No:	Type:	

Remarks: Initial inspection should be detailed and carried out before equipment is brought into service as per IEC 60079-17	Please mark only one box as appropriate
	☐ Passed - Complete
	☐ Failed

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➢ *ANNEX 2 – INSTRUMENTAL FORMS*

ROSETTI MARINO CROSSWIND

ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Instrumental Form CJX00		Miscellaneous

1	Check for mechanical damage.
2	Check installed equipment is suitable and conforms to specification.
3	Check installation conforms to P&ID and hook-up drawing.
4	Check tube fittings manufacturer is the one chosen for the plant.
5	Check that piping connections provide the block & bleed facility (if required).
6	Check that all stop plugs are properly installed
7	Check identification (tag number, tag plates).
8	Check supporting and protection against vibrations.
9	Check the conformity of earthing as per specification (I.P.E. or I.E.)
10	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX03		Relief Valve

1	Check for mechanical damage.
2	Check installed equipment is suitable and conforms to specification.
3	Check installation conforms to P&ID and hook-up drawing.
4	Check valve orientation is correclty installed
5	Check identification (tag number, tag plate with SN, setting value, setting date...etc).
6	Check calibration certificate and date against tag plate values.
7	Check supporting and protection against vibrations.
8	Check accessibility conforms to specifications, with platforming where necessary.
9	If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag		:			Dwg			
	S/Sys		:			Module			
TASK	code			Location		User			
FORM	Process	MC	Activity CCK	Discipline	Instrumental	Form	CJX06		Tubing Hydraulic

	General
1	Drawings (P&ID tube) attached.
2	Isometric drawings (P&ID pipe) attached.
3	Check drawings at last revision.
4	Material certificates for pipe/tube/fittings/flanges/hose and support clamps checked
5	Welders certificates checked
6	Certificate and mark-up drawings for welding WPS and WPQR and material certificates checked
7	Certificates and mark-up drawings for NDT report checked
	Check before Flushing and/or Testing
8	Installation complete and in compliance with drawings and specifications.
9	Tubing/Piping tray checked.
10	Hose according to specifications and tightened
11	Flanges - nuts and bolts tightened.
12	Fittings are mounted and tightened.
13	Pipe supports completed and installed as required.
14	Cable ladders, trays, sharp edges protected, cut ends sealed.
15	Maintenance evaluation.

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	S/Sys		:		Module		
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Instrumental Form CJX06		Tubing Hydraulic

Flushing / Pressure testing

16	Drawings of flushing loops (P&ID tube) attached	
17	Equipment & valves bypassed and blinded	
18	Calibration certificates attached	
19	Type of flushing medium correct	
20	Printout from recorder/particle counter	
21	Printout from pressure indicator	

Final Check

22	Final inspection of pipework.	
23	Preservation of tested pipework.	
24	System/equipment labelled with: "Hot Oil flushing performed".	
25	If required produce Red Line Mark Up for "AS BUILT"	

TEST SPECIFIED USED

TEST FLUID: TEST PRESSURE BAR G: TEST DURATION :

TEST EQUIPMENT: SERIAL N°:

HOOK UP DIAGRAM Number:

Line FROM	Line TO	Tubing cleaned			Tubing flushed			Diam ID/OD
		Yes	No	N/A	Yes	No	N/A	

TESTED LABEL AFFIXED DATA SHEET ATTACHED

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	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX08		Electrical Instrument

Installation Check

1	Check for mechanical damage.
2	Check installed equipment is suitable and conforms to specification.
3	Check installation conforms to P&ID and hook-up drawing.
4	Check identification (tag number, tag plates).
5	Check supporting and protection against vibrations.
6	Check calibration certificate (TJX04)
7	Visual Check electrical connections.
8	Check earthing connections.
9	Check the conformity of earthing as per specification (I.P.E. or I.E.)
10	Check tube fittings manufacturer is the one chosen for the plant (if applicable).
11	Check piping connections provide required block & bleed facility (if required).
12	If required produce Red Line Mark Up for "AS BUILT"

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	S/Sys		:			Module			
TASK	code			Location		User			
FORM	Process	MC	Activity CCK	Discipline	Instrumental	Form	CJX09		Instrument Power Cable

CABLE DATA

Type	Cores/Size mm²	Color
From		To

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

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX09	Instrument Power Cable

TEST PREPARATION

1	Confirm cables heads are ready and disconnected	upstream		Downstream	

CONTINUITY TEST (low voltage test)

2	Check Armour continuity	
3	Check screen continuity	
4	Check **each core** continuity	
5	Check individual screen continuity (where applicable)	

INSULATION TEST (megger test)

Note: 750/1000 V for LV power cables, 250/500 V for control cable. Minimum acceptable value is 10 Megohms

6	Test voltage applied between each core and all others cores	min value recorded (MΩ)	
7	Test voltage applied between each core and screen	min value recorded (MΩ)	
8	Test voltage applied between each core and earth/armour	min value recorded (MΩ)	
9	Test voltage applied between each screen and others screens	min value recorded (MΩ)	

TERMINATION

10	Confirm cable is connected as per termination diagram	Upstream		Downstream	
11	Check against drawing earthing termination for Armour Shield, Overall screen, Individual screen				
12	If required produce Red Line Mark Up for "AS BUILT"				

TYPE / SERIAL N°: Calibration date:

Comments

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ITEM	Tag		:		Dwg		
	S/Sys		:		Module		
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Instrumental	Form CJX10	Multi/Single-Core Instrument Control Cable

CABLE DATA

Type	Cores/Size mm²	Color
From		To

1	Check cable is as specified in project cable schedule.
2	Check relevant documents are at the latest revision.
3	Check cable is routed in accordance with cable layout drawings.
4	Check cable for any physical damage.
5	Check cable is adequately supported and correctly fixed to rack according to Project specification.
6	Check bending radius is within the specified limits.
7	Check cable is correctly loomed and segregated in accordance with specification.
8	Check cable and core marking are in accordance with specification.
9	Check cable labelling is in accordance with specification.
10	Check that glands, shrouds and earthing are in accordance with specification.
11	Check terminations are in accordance with termination diagram
12	Check gland plate for single core cables is non-ferrous.
13	If required produce Red Line Mark Up for "AS BUILT"

INSULATION	CORE to EARTH		MΩ
	CORE to CORE		MΩ
	CORE to SCREEN		MΩ
	CORE to ARMr		MΩ
	SCREEN to EARTH		MΩ
	SCREEN to ARMr		MΩ
CONTINUITY	CORES		Ω
	SCREEN		Ω
	EARTH		Ω
	ARMr		Ω
	TEST VOLTS		V

TEST ALL CORES AND RECORD LOWEST VALUE

Notes: The lowest value is recorded and must be within project specifications

TESTING INSTRUMENTS USED

TYPE / SERIAL N°: Calibration date:

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	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX11		Orifice Plate

1	Check for mechanical damage.
2	Check installed equipment is suitable and conforms to specification.
3	Check installation conforms to P&ID and hook-up drawing.
4	Check flow direction is clearly identified on the tab.
5	Check tag number is stamped or engraved on tab.
6	Check accessibility conforms to specifications, with platforming where necessary.
7	Check calibration certificate/conformity.
8	Check plate flatnee and surface finish.
9	If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag		:			Dwg		
	S/Sys		:			Module		
TASK	code			Location		User		
FORM	Process	MC	Activity CCK	Discipline	Instrumental	Form	CJX13	Thermowell

1 Check for mechanical damage.

2 Check installed equipment is suitable and conforms to specification (Insersion and stem length, internal diameter...).

3 Check installation conforms to P&ID and hook-up drawing.

4 Check identification (tag number, tag plates).

5 Check accessibility conforms to specifications with platforming where necessary.

6 If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX16		Local Gauge/Indicator

1	Check for mechanical damage.
2	Check installed equipment is suitable and conforms to specification.
3	Check installation conforms to P&ID and hook-up drawing.
4	Check tube fittings manufacturer is the one chosen for the plant.
5	Check piping connections provide required block & bleed facility.
6	Check identification (tag number, tag plates).
7	Check supporting and protection against vibrations.
8	Check the continuity of the I.E earth (since interconnection is achieved through junction boxes and instruments)
9	Check calibration certificate (TJX04).
10	Check instrument positioning and visibility.
11	If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process MC	Activity CCK	Discipline Instrumental	Form CJX23		Actuated on/off Valve-Pneumatic/Hydraulic Type	

1	Check for mechanical damage.
2	Check installed equipment is suitable and conforms to specification.
3	Check installation conforms to P&ID, typical and hook-up drawing.
4	Check valve is installed in accordance with flow direction.
5	Check all stop plugs are properly installed.
6	Check identification (tag number, tag plates).
7	Check accessibility conforms to specifications, with platforming where necessary.
8	If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX27		Control Valve-Pneumatic/Hydraulic Type

1	Check for mechanical damage.
2	Check installed equipment is suitable and conforms to specification.
3	Check installation conforms to P&ID, typical and hook-up drawing.
4	Check valve is installed in accordance with flow direction.
5	Check identification (tag number, tag plates).
6	Check supporting and protection against vibrations.
7	Check accessibility conforms to specifications, with platforming where necessary.
8	Check connections between actuator and electro-positioner.
9	If required produce Red Line Mark Up for "AS BUILT"

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	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX29		MCT Penetration Instrument

1 Check that MCT's conforms to latest project standards and specification.

2 Check MCT's is installed correctly in accordance with latest layout drawings without clashes with pipe runs or other equipment.

3 Check MCT's is properly tagged, on both side of penetration

4 Check the cable arrangement in MCT's is conform with the latest drawing.

5 Check that product marking is matching with hazardous area certification document data

6 If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX30A		Cable Tray/Ladder Before pulling

BEFORE PULLING

1	Check cable tray / ladder is undamaged and installed against drawings without clashes with pipe runs or other equipment.
2	Check cable tray / ladder is adequately supported against drawings (no excessive deflection).
3	Check cable tray / ladder segregation between racks
4	Check Material for Bolt and splices
5	Check insulation pads are adapted to stainless steel or aluminium cable tray /ladder.
6	Check cable tray / ladder cleanness.
7	Check cable tray / ladder earthed and bonded against drawings.
8	Check Continuity and Resistance test on tray
9	Check proper mitigations against sharp edges that could damage the cables
10	Check Transitions to ensure proper cables bending radius
11	Check Proper protection of racks and trays until cable pulling
12	Painting touch-up as necessary, if applicable
13	Check Labelling with system and segment number
14	If required produce Red Line Mark Up for "AS BUILT"

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX30B	Cable Tray/Ladder After pulling

AFTER PULLING

1	Check cable segregation on rack and tray
2	Check cable segregation on rack and tray
3	Check cable tray / ladder for Damages and cleanness
4	Check cable tray / ladder for Damages and cleanness
5	Check proper fastening of cables (distance and material)
6	Check lids intallation (if any) against drawings OR Proper protection until additional cable pulling or all work completed in the vicinity
7	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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Name			
Date			
Signature			

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX31		Junction and Marshalling Box

1	Check equipment is de-energized and safe.
2	Check available documents are at the latest revision.
3	Check nameplate data/certification is in accordance with project data.
4	Check all flange faces are clean and greased with approved lubicants, and that all bolts are fitted and correctly tight (Exd only).
5	Check all gaskets and bolts are fitted in covers and gland plates (where applicable).
6	Check enclosure is correctly tagged as per drawing.
7	Check enclosure is correctly earthed in accordance with project data.
8	Check that all unused entries are plugged with approved blanks.
9	Check that terminals are approved and that the correct numbers are fitted.
10	Check segregation barriers are fitted where necessary.
11	Check enclosure is correctly mounted and easily accessible.
12	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX42		Gas/Smoke Detector

1	Check for mechanical damage.
2	Check installed equipment is suitable and conforms to specification.
3	Check installation conforms to F&G detection layout drawings.
4	Check test facility is installed.
5	Check end of line resistors correctly fitted (where applicable).
6	Check protective cap is installed.
7	Check identification (tag number, tag plates).
8	Check supporting and protection against vibrations.
9	Check accessibility conforms to specifications, with platforming where necessary.
10	Check calibration certificate (where applicable).
11	Check electrical connections.
12	Check earthing connections.
13	Dismantle and store sensor until installation just before Commissioning.
14	If required produce Red Line Mark Up for "AS BUILT"

Comments

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX43		Fire Detector

1	Check for mechanical damage.
2	Check installed equipment is suitable and conforms to specification.
3	Check installation conforms to F&G detection layout drawings.
4	Check test facility is installed.
5	Check sensor activation lamp is visible.
6	Check remote annunciator is installed (where required).
7	Check identification (tag number, tag plates).
8	Check supporting and protection against vibrations.
9	Check accessibility conforms to specifications, with platforming where necessary.
10	Check calibration certificate (where applicable).
11	Check electrical connections.
12	Check earthing connections.
13	If required produce Red Line Mark Up for "AS BUILT"

Comments

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CJX48		Indoor Cabinet/Panel

1	Check for mechanical damage (Panel and internal items).
2	Check that the Panel is de-energized and safe.
3	Check identification (tag number, tag plates).
4	Check supporting and protection against vibrations.
5	Check door handles (type, locking, ...).
6	Check data sheet and general arrangement are conforms to drawings.
7	Check internal layout conforms to drawings.
8	Check signals segregation conforms to specifications.
9	Check that anti-condensation heaters are ready to be energized.
10	Check earthing connections are properly fixed and tightened.
11	Check incoming cables identification .
12	Check if accessibility and maintenance are possible and safe.
13	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Instrumental	Form	CZX01I		Package - I

1	Check that electrical component is not damaged.
2	Check that the cables are adequately supported and protected.
3	Check that the equipment, including cables and glands, have been correctly installed (only visual inspection).
4	Check that all equipment has been earthed and bonded.
5	Check if accessibility and maintenance are possible and safe.
6	Verify that all vendor punch list created during FAT are uploaded in the Database.
7	Check if accessibility and maintenance are possible and safe.
8	Check identification tag plate
9	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	STS	Discipline	Instrumental	Form	TJX04		Analogue O/P

DATA

VENDOR CALIBRATION MANUAL N°

CALIBRATION/TEST PROCEDURE N° :

MODEL N° :

SERIAL N° :

DATA SHEET N° :

Rev :

TEST EQUIPMENT :

SERIAL N° :

Instruments calibration is not required prior to the installation, as long as Manufacturer's calibration certificate is provided and transportation or storage conditions have not corrupted the instrument.

Manufacturer's calibration certificate is valid, not expired and attached to this check sheet

Following section must be filled only if certificate is not valid or missing

TEST DETAILS
CALIBRATION FIGURES

CALIBRATION POINTS	RISING						FALLING						UNITS
INPUT A													
INPUT B *													
INPUT C *													
OUTPUT													

* NOTE : COMPLETE IF APPLICABLE

TESTED LABEL AFFIXED

DATA SHEET ATTACHED

If required produce Red Line Mark Up for "AS BUILT"

Comments:

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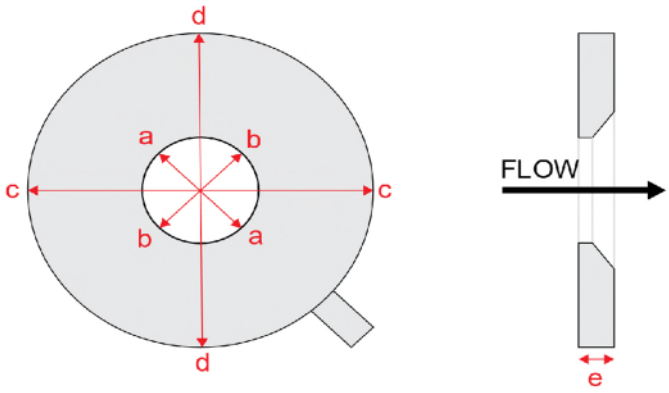
ROSETTI MARINO CROSSWIND

ITEM	Tag	:		Dwg	
	S/Sys	:		Module	
TASK	code		Location		User
FORM	Process MC	Activity STS	Discipline Instrumental	Form TJX11	Orifice Plate

EQUIPMENT DATA

CALCULATION SHEET REF:	
DATA SHEET N°:	
MATERIAL	SPECIFIED THICKNESS:
SPECIFIED OD:	MODEL N°:
TEST EQUIPMENT:	SPECIFIED ID:

TEST DETAILS



Measured Diameter : **a**	Measured Diameter : **b**
Measured Diameter : **c**	Measured Diameter : **d**
Actual plate thickness : **e**	Flow element correctly stamped:
Presence of degasing holes	Presence of degasing holes
TESTED LABEL AFFIXED	DATA SHEET ATTACHED

If required produce Red Line Mark Up for "AS BUILT"

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	STS	Discipline	Instrumental	Form	TJX13		Thermowell

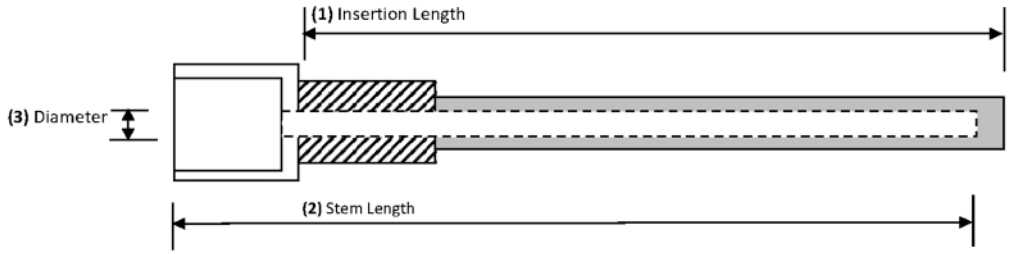
1 Insertion length (1) mm

2 Stem Length (2) mm

3 Internal diameter (3) mm

4 Thermowell filled-up by:

5 If required produce Red Line Mark Up for "AS BUILT"



Comments:

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➢ *ANNEX 3 – TELECOM FORMS*

ROSETTI MARINO CROSSWIND

ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process MC	Activity CCK		Discipline Telecom	Form CIX00		Miscellaneous Telecom equipment

1	Check for mechanical damage.
2	Check installed equipment is suitable and conforms to specification.
3	Check identification (tag number, tag plates).
4	Check supporting and protection against vibrations.
5	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Telecom	Form CIX09	Telecom Cable RJ45

CABLE DATA

Type	Cores/Size mm²	Color
From		To

1	Confirm cable is as specified in project cable schedule
2	Check cable physical integrity.
3	Check is installed in accordance with layout drawing (segregation, distance...).
4	Check cable is supported and fixed to rack according to project specification.
5	Check bending radius is within the specified limits.
6	Confirm cable glands suit for cable type, correctly mounted and tightened.
7	Confirm cable labelling is in accordance with specifications.
8	Check cable is correctly loomed and segregated in accordance with specification.
9	Check proper fitting of heat shrink sleeves and cable glands (if applicable).
10	Check cores marking are in accordance with termination diagram.
11	Check terminations are in accordance with latest termination diagram.
12	To roll up that measured lenght complies with pulled lenght.
13	To roll up the cable complies with Cat. 5E performance requirements (250 Mhz).
14	Attach LAN tester print out to this test sheet.
15	if required produce Red Line Mark Up for "AS BUILT"

Comments

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Telecom	Form	CIX11	Fibre Optic/Patch Panel

CABLE DATA

Type	Cores/Size mm²	Color
From	To	

1	Check Fiber optical cable features is adapted and according to the project (type, cores number, structure, Fire resistance, etc..)
2	Check cable physical integrity
3	Check cable routing against drawings (segregation, distance, ...)
4	Check cable gland suit for cable type
5	Check that Fibre Optic cable and core are correctly tagged against drawings
6	Check correct interconnection as per wiring
7	Check fibres are terminated correctly and secured.
8	Check splicing box and protection adapted to environmental conditions
9	Check End to End link is terminated in Optical Distribution Frame according to type of connectors (SC, ST, etc...).
10	Check that minimum bending radius of fibre optic cables is met in cabinet/patch panel.
11	Check visual installation complete.
12	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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➢ *ANNEX 4 – MECHANICAL FORMS*

ROSETTI MARINO PROVERLIS CROSSWIND

ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Mechanical	Form CDX01	Storage Tank

1	Check that the nameplate details are correct.
2	Check the location, elevation, orientation and that the vessel is level.
3	Check that the holding down arrangements are correct.
4	Check for any installation damage.
5	Check the vessel internals are as per approved drawings.
6	Check the vessel internally for cleanliness.
7	Check all platforms and ladders are installed as per approved drawings. Also man ways are accessible and suitable for operation.
8	Check out the painting, insulation and the lining for damage.
9	Check the earthing and bonding are as per Project Specifications.
10	Check that the pipe supports are in accordance with the approved design.
11	Check the disconnected pipework flanges against the nozzle flanges for correct alignment.
12	Atmospheric Transportable Drain Vessel to be equipped with Breathing / Vacuum breaker valve.
13	Check Flame Arrestor (if any).
14	If required produce Red Line Mark Up for "AS BUILT".

Comments:

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ITEM	Tag		:			Dwg	
	S/Sys		:			Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Mechanical Form CGX01		Pump

1	Nameplates are in specified language(s) and details correct, in accordance with drawings.
2	Check that the holding down arrangements are correct.
3	Check for mechanical damages.
4	Check lubrication system. - Ensure correct quantity & grade of lubricant is installed.
5	Pump case vent / drain installed in accordance with drawings.
6	Suction / Discharge nozzles installed in accordance with drawings. No misalignment of pipe / pump case flanges.
7	Mechanical seal system installed in accordance with drawings and flushed.
8	Instruments / Valves / Strainers as per vendor P&ID.
9	Electrical grounding boss installed per drawings.
10	Check direction / rotation mark manually & labeled arrow card
11	Confirm operating and / or safety instruction tags / labels are correct.
12	Check base frame drains / pumps drains are correctly connected (if applicable).
13	Check any damages of coupling, engine, motor.
14	If required produce Red Line Mark Up for "AS BUILT".

Comments

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ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Mechanical Form CZX01M		Package - M

1	Check that the nameplate details and tag number are complete and correct.
2	Check that the holding down arrangements are correct.
3	Check for all interface piping/mechanical reinstated on site by contractor.
4	Check that the package Mechanical equipment is complete and not damaged.
5	Check all the equipment for correct lubrication, for oil leaks and cleanliness.
6	Check for the free rotation of rotating equipment.
7	Check the insulation, painting and for correct tagging and identification.
8	Check that the earthing system of the equipment is as per specification.
9	Check that the Package is fixed and tightened to the structures.
10	Check the release note, FAT report and outstanding Punch list for the Package
11	If required produce Red Line Mark Up for "AS BUILT".
	Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	STS	Discipline	Mechanical	Form	TMX08		Machinery Alignment

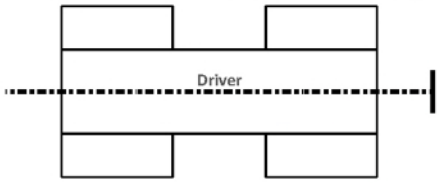
Data

Datasheet N° | Coupling Type

Driver Name | Driven Name

ALIGNMENT

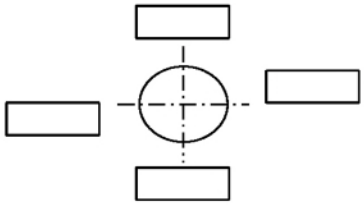
Soft Feet Result



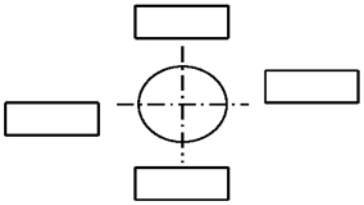
Comments

Below measure are taken viewed from driver to driven equipment

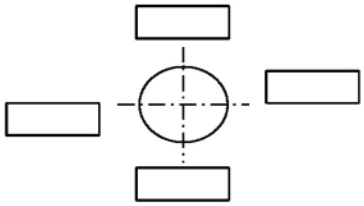
Paralellism **before** pipe connection



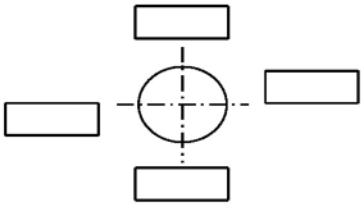
Concentricity **before** pipe connection



Paralellism **after** pipe connection



Concentricity **after** pipe connection



Distance Between Shaft Ends (DBSE)

If required produce Red Line Mark Up for "AS BUILT".

Comments:

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➢ *ANNEX 5 – PIPING FORMS*

ROSETTI MARINO CROSSWIND

ITEM	Tag	:					Dwg	
	S/Sys	:					Module	
TASK	code			Location			User	
FORM	Process	MC	Activity CCK	Discipline	Piping	Form CLX02A		Pipework Before Test

1	Check for each line of the Test Pack the NDT clearance.
2	Confirm that materials conforms to the line specifications (ref. to the last issued revision of the isometric material table)
3	Check the installation of all pipe – supports are in accordance with the specifications and drawings.
4	Check that pipework at pump and vessel nozzles are free from spring.
5	Check that the pipe flanges have been mounted square to each other. Also that the bolting and gaskets are correct (all TMX27 are complete, if necessary).
6	Check bolt tightening and flange management (excluded battery limit joints).
7	Check that the flow direction of the valves and check – valve is in the correct sense / direction (ball valves to be set at half open).
8	Check that the removed equipment is in accordance with the agreed list of fragile devices. Check valve should be removed or flappers locked.
9	Check that spool pieces or other substitution means have been put in place instead of the removed fragile device.
10	Check the Blind list.
11	Check that all the temporary material to perform the task are conforms to the procedure & suitable pressure rating.
12	If required produce Red Line Mark Up for "AS BUILT".

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Piping	Form	CLX02B		Pipework After Test

1	Check that the pipework and equipment are drained as per procedure.
2	Check if all temporary equipment (test spades, filters ,spool pieces..etc) have been removed.
3	All plugs installed on vents and drains for test have been removed.
4	Check that all removed devices and valves have been re-installed.
5	Check that the new gaskets have been installed after pipework and equipment reinstallation.
6	All specific blinds and / or spectacle blinds have been correctly installed as per P&ID.
7	Check that the pipework, valves , check valves are undamaged. Also check the ancillaries and any other components.
8	After the (re) installation of a valve check that it operates freely.
9	Check that the flow direction of the valves and check – valve is in correct sense /direction in correct open/closed position as per P&ID.
10	Check all locking device.
11	Check that the valves have been correctly lubricated and that they have the correct spindle packing.
12	Check that all the bolts and fasteners are suitably lubricated inline with the flange management procedure.
13	Check that the bolts have been tightned at opened joints.
14	Check that all golden welds (final tie-ins without hydrotest) have been performed as per procedure.
15	Check for the correct tagging, labeling and colour coding of pipework and equipment.
16	Check that the pipework and equipment (re) installation conforms to the specifications, drawings and to the P&ID's.
17	If required produce Red Line Mark Up for "AS BUILT".

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	PIP	Discipline	Piping	Form	CXX01		Thermal Insulation

1	Ensure CLX02B Pipework After Test (reinstatement) check completed.
2	Ensure CXX02 "Painting Line" check (for the concerned insulated lines) completed.
3	Ensure CPX22A "Heat tracing Before Insulation" check completed.
4	Check that the insulation and cladding materials conform to the specifications.
5	Check that the insulation is compatible with the Heat tracing system.
6	Check that the surface condition prior to the application of the insulation
7	Check the installation of wire mesh
8	Check the overlap of the metal cladding.
9	Check that each joint is sealed with a suitable sealant specified for water proofing.
10	Check the staggering of the metal cladding joints and verify that they have been applied as per the specifications.
11	Control that the locking devices boxes opretated satisfactorily.
12	Check the blinds, the spectacles and the instruments are visible.
13	Check the flange accessibility without damaging the insulation.
14	Check the flange accessibility without damaging the insulation.

Comments:

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ITEM	Tag	:				Dwg			
	S/Sys	:				Module			
TASK	code			Location		User			
FORM	Process	MC	Activity CCK	Discipline	Piping	Form	CXX02		Painting Line

1 Check that the completed painting is in accordance with the specifications covering quality and thickness.

2 Check that the color coding conforms to the specifications.

3 Check that the fluid direction is correct.

4 Check that line marking is correct.

5 Check that the painting of piping systems and of the equipment is "touched-up" and conforms to the specifications.

6 If required produce Red Line Mark Up for "AS BUILT".

Comments:

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ITEM	Tag					Dwg	
	S/Sys					Module	
TASK	code			Location		User	
FORM	Process	MC	Activity STS	Discipline	Piping	Form TMX03	Cleaning

PREPARATION

Weight Control for gas line support ☐

CLEANING MEDIUM

Air ☐ Water ☐ Steam ☐ Oil ☐ Other ☐ Mechanical ☐

Component

Chemical treatment ☐ Filtration ☐ Screen size

EQUIPMENTS

Equipment **removed** ☐ Agreed list of removed fragile devices to be attached to this Test Sheet ☐

Excepted removed equipments, pipework installation is conform to the specifications & PID's ☐

Equipment **added** ☐ Exhaustive list to be attached (temporary filters, spools...etc) ☐

TEST RESULTS

Test date		Start time		End time	
Flow rate		Duration		Medium T°	

Operation Description

Safety Precautions

Result and comments

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	STS	Discipline	Piping	Form	TMX05		Pressure Test

TEST DATA

Reference procedure					
Design pressure		Max test pressure		Min hold period	

TEST PREPARATION

Check all equipments used for the test are safe for use under pressure (valide certificate)	
Pressure relief devices are installed and in line and set to correct pressure (calibration certificate)	

Medium

Test medium	

TEST RESULTS

Test date		Start time		End time	
Ambient temperature is recorded				Test medium temperature is recorded	
Pressure recorded during test hold period	Min		Max		Variation
Line has been depressurised to				At maximum of bar/min	
Pressure test completed sucessfully and approved				Temperature and pressure disc chart attached	
Instrument calibration certificates attached				Dead-weight tester log attached	
Record of failures and corrective action attached				Battery limits of the test attached	
If required produce Red Line Mark Up for "AS BUILT".					

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	PIP	Discipline	Piping	Form	TMX25		Gross Air Leak Test

TEST PREPARATION					
1	EQUIPMENT REINSTATED		2	TEMPORARY EQUIPMENT REMOVED	
3	CONFORMITY TO P&ID'S		4	FLANGE MANAGEMENT COMPLETED	

DATA		
Design pressure:	Test pressure*:	Test medium:

TEST RESULTS		
Test date:	Test duration:	Witnessed by:
Test pressure-start:	Test pressure - finish:	
Note*: Pressure to be 7 bars or below if maximum operating pressure is lower		

Comments:

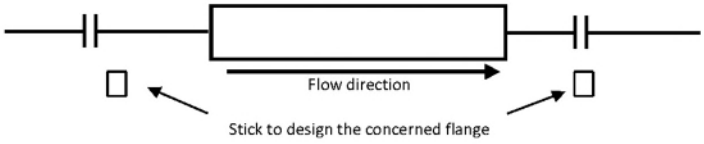
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ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity STS	Discipline	Piping	Form TMX27	Bolt tensioning / torquing

Test Pack N.:

EQUIPMENT TAG



Stick to design the concerned flange

Flange Type

Flange Size

Gasket Type

Used tools

Bolt tensioning/Torquing value

Sequence	Pre tension/torque	Final tension/torque	Torque (Design Value) 30%	60%	100%
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

1 **Clear Bore Inspection:** Pipe and Valve clear of debris/contamination.

2 **Flange Face Check:** Both flanges clean and free from damage.

3 **Gaskets and Bolts:** Gaskets and Bolts checked for correctness to specification, any damage and for correct length technique.

4 **Alignment:** Check alignment according to code.

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Piping	Form	TPLX05		Drying

1	Drying out method :	
2	Operation description :	
3	Temporary means :	
4	Dew point (obtain after soaking and nitrogen purging):	
5	Valve body cavity, branches, etc.. Have been drained form residual water	
	Attachments	
6	Procedures	
7	Sketches and drawings	
8	Pressure records	
9	Records of failures	
10	SAFETY PRECAUTIONS:	
11	REMARKS:	

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➢ *ANNEX 6 – SAFETY FORMS*

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ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Safety	Form CYX07	Hydrant/Cabinet/Equipment

1	Check that the tag details are complete and correct.
2	Check the location, elevation, orientation are correct. Also that the hydrant and fireman's equipment cabinets are level.
3	Check the holding down arrangements and the accessibility for the hydrant and the fireman's equipment cabinets.
4	Check for any installation damage.
5	Check that the following equipment is installed in accordance with the approved drawings and P&ID's: hydrant & cabinet, hoses and nozzles, fireman's cabinet and miscellaneous items.
6	Check that the items in the fireman's cabinet are in accordance with the Vendors equipment check list.
7	Check the operation of the cabinet doors.
8	Check the cabinet internally for cleanliness.
9	Check the painting visually for damage.
10	Check that the hoses connect into the hydrant correctly.
11	Check that the nozzles connect into the hose correctly.
12	Check that the earthing and bonding are in accordance with the drawings and specifications.
13	If required produce Red Line Mark Up for "AS BUILT"
	Comments:

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ROSETTI MARINO CROSSWIND

ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Safety	Form CYX08	Portable Fire Extinguisher

1	Check that the nameplate data is complete and correct.
2	Check that the equipment "Tag Number" is correct.
3	Check that the location is correct.
4	Access is not obstructed.
5	Check that the mounting is correct.
6	Extinguisher certification charge and date.
7	Check that the various types of extinguishers are correctly colour coded.
	THE FOLLOWING EQUIPMENT SHALL BE CHECKED IN ACCORDANCE WITH A MARKED UP LAYOUT DRAWING OF THE AREA
8	Portable water extinguisher.
9	Portable dry powder extinguisher.
10	Portable BCF extinguisher.
11	Portable foam extinguisher.
12	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Safety	Form CYX09	Survival Equipment

1	Check that the equipment certification is complete and that the nameplate data is correct.
2	Check that the equipment "Tag Number" is correct.
3	Check that the location is correct.
4	Check that the mounting arrangements are correct.
	THE FOLLOWING EQUIPMENT SHALL BE CHECKED IN ACCORDANCE WITH MARKED UP LAYOUT DRAWING
5	Lifebuoys.
6	Smoke and Light units (for man overboard).
7	Lifejackets.
8	Survival suits.
9	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Safety	Form	CYX10	First Aid Equipment

1	Check that certification is complete and that the nameplate details are complete and correct.
2	Check that the equipment "Tag Number" is correct.
3	Check that both the location and the orientation are correct.
4	Check that the mounting arrangements are correct.
5	Check that the pipework supply and drains to the eyewash/ shower unit are installed correctly (where applicable).
	Following equipment to be checked together with including a marked up layout drawing indicating the area checked.
6	Eye wash container.
7	Eye wash with potable water connected.
8	Eye wash and shower unit.
9	Stretcher.
10	A fixed first-aid cabinet and its contents.
11	Portable first-aid boxes
12	If required produce Red Line Mark Up for "AS BUILT"

Comments

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Safety	Form	CYX15		Escape Route

1	Check relevant documents are at the latest revision.
2	Check the primary escape routes is in accordance with the drawing requirement in each module.
3	Check that the secondary escape routes are in accordance with the drawing requirement in each module.
4	Check that the direction indication of the escape routes is in accordance with the drawing requirement in each module.
5	Check the safety lights are in accordance with the drawing requirement.
6	Check the safety labels/signs are in accordance with the drawing requirement.
7	Check if non-slip surface finish matches with specifications.
8	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Safety	Form CYX16	Safety Sign

1	Sign location is correct and visible
2	Sign type is correct
3	Support securely fixed
4	Sign securely fixed
	THE ABOVE-LISTED CHECKS SHALL BE CARRIED OUT FOR EACH TYPE OF THE FOLLOWING SIGNS
5	Exit signs
6	Warning signs
7	Alarm signs
8	Instruction signs
9	Information
10	Life Boat/Raft signs
11	Muster Station signs
12	Fire Station
13	Fire & Escape layouts locations.
14	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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ITEM	Tag	:		Dwg			
	S/Sys	:		Module			
TASK	code		Location		User		
FORM	Process	MC	Activity	CCK	Discipline	Safety	Form	CYX17		Descent Device

1	Check that certification is complete. Check also that the nameplate details are correct and complete (Validity up to 6 months after sailaway, if required).
2	Check markings.
3	Check the location and elevation supports and they are levelled.
4	Check that the descendent device is correctly orientated.
5	Check that the descendent device holding arrangement is correct.
6	Check for any installation damage.
7	Check that the installation is as per approved drawings.
8	Check the painted surfaces finish for damage.
9	Check that the wire ropes are serviceable.
10	Check that the reflective strips are attached.
11	Check that the equipment is correctly preserved/lubricated.
12	If required produce Red Line Mark Up for "AS BUILT"

Comments:

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➢ *ANNEX 7 – BUILDING FORMS*

ROSETTI MARINO PROVERLIS CROSSWIND

ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Building	Form CQX01	Steel Structure

1	Check that the grating, floor plating, the stair-tread installation and fixing conform to the approved drawings and specifications.
2	Check that the handrailing conforms to the approved drawings and specifications.
3	Check that ladders, safety hoops and the safety bars conform to the approved drawings and specifications.
4	Check that the runway beams are levelled and that they have the end stops fitted.
5	Carry out a dimensional survey to verify that they are within the accepted tolerances called-up on the specifications.
6	Check that the installation of the padeyes are in accordance with the contract drawing and specifications.
7	Check that the painting conforms to the one identified on the structure specification.
8	Check that the earthing system of the equipment is as per specification.
9	Check any bolted connections for installation.
10	Check Mechanical handling (structural element) are in accordance with contract drawings & specifications. Check that correct S.W.L. markings have been applied & load testing completed (if applicable)
11	Check pedestal crane & adaptor installation meets vendor installation tolerances (if applicable).
12	Check that handrail installation are in accordance with drawings & specification.
13	Dropped object protections of critical items, if any, shall be designed to withstand dropped object.
14	Swinging object protections of critical items, if any, shall be designed to withstand dropped object.
15	If required produce Red Line Mark Up for "AS BUILT".

Comments:

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ITEM	Tag	:				Dwg	
	S/Sys	:				Module	
TASK	code			Location		User	
FORM	Process	MC	Activity CCK	Discipline	Building	Form CXX03	Painting Structure

ITR related to: Main structures frame, all supports, deck floor, stairs, bulkheads, etc...

1 Check that the completed painting is in accordance with the specifications covering quality, thickness and adhesion.

2 Check that the finish colour conforms to the specifications.

3 Check that the tagging/labelling/marking are correct.

4 If required produce Red Line Mark Up for "AS BUILT".

Comments:

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