



नव मंगलूरु पत्तन प्राधिकरण **NEW MANGALORE PORT AUTHORITY**
इलेक्ट्रिकल इंजिनियरिंग डिविजन / Electrical Engineering Division
पणंबूर मंगलूर / Panambur, Mangalore – 575 010.

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No. 2/HT-Panel/EE(E)II/2024

Date:28.05.2024

To
Website

Sir,

Sub: NMPA - EE(E)II – Replacement of 33 KV HT Switchgear Panels at 33 KV MUSS Wharf - Budgetary offer requested – Reg.

Budgetary offer for “Replacement of 33 KV HT Switchgear Panels at 33 KV MUSS Wharf” are invited as per specification attached and in accordance with the Terms and Conditions of Contract as detailed below, to be sent by **E-mail on or before 04.06.2024**.

SNo	Item Description	Qty	Rate/Per Card (Rs.)	Total amount (Rs.)
1	Supply of OEM 33 KV 1250 Amps, 5 Panels (2 Nos. Incomers and 3 Nos. Outgoing) SCC rating 26.2 KA/3 sec TP Switchgear Panel vacuum type with auxiliary supply of 24 Volts DC for Closing and Tripping; 230 Volts AC for spring charging mechanism - with Potential Transformer for Incomers I & II and Current Transformers, Relays, Panel Meters and Tri-vector Meters for all the Panels etc. complete as per technical specifications.	01 Set		
2	Erection, Alignment and fixing to the foundation including movement from the point of unloading to the point of erection. Testing & Commissioning of 5 panel 33 KV HT Switchgear Panels.	01 Set		
3	Providing Base Channel to 5 Nos. breaker (33 KV HT) panel. Work including supply, fabrications and providing U-Channels base frames,	01 Set		

	necessary civil works, bolts, nuts and washers etc. complete.			
4	Supply and making of Heat Shrinkable Termination Kit suitable for 33 KV (E) HT XLPE cable. Indoor Type: 3c x 95 Sq.mm	2 Nos		
5	Supply and making of Heat Shrinkable Termination Kit suitable for 33 KV (E) HT XLPE cable. Indoor Type: 3c x 185 Sq.mm	1 No		
6	Supply and making of Heat Shrinkable Termination Kit suitable for 33 KV (E) HT XLPE cable. Indoor Type: 3c x 240 Sq.mm	1 No		
7	Supplying and drawing, termination of LT UG cable 4C x 2.5 sq.mm having Copper conductor PVC/XLPE insulated, sheathed, galvanized, steel wire/steel tape armoured cable 1.1 KV class, including cable glands.	300 Mtrs		
8	Supplying and drawing, termination of LT UG cable 10C x 2.5 sq.mm having Copper conductor PVC/XLPE insulated, sheathed, galvanized, steel wire/steel tape armoured cable 1.1 KV class, including cable glands.	200 Mtrs		
9	Supplying, Installation, Testing and Commissioning of Station Battery Bank set with Battery charger Float/Boost/Trickle charging with 24 Volts (2V x 12 No's) 200AH sealed maintenance free Batteries. Charger power supply 230V 1-Ph AC supply along with integral DCDB consisting of 8 Nos. O/G feeders as per technical specifications.	1 Set		
10	Dismantling existing 4 Nos. 33 KV HT Panels, disconnection of HT & LT cables & shifting of panels, cables etc., complete.	1 Set		
	Total (Rs.)			
	GST (%)			

Yours faithfully,

Encl: Technical Specification

Sd/-

Executive Engineer (E)II
NMPA Panambur

Technical Specifications.

A) Metal Enclosed Switchgear Standards:

IEC 62271-1	Common Specifications for Switchgear & Control gear
IEC 62271-100	Circuit Breakers
IEC 62271-200	A.C. metal-enclosed switchgear and control gear for rated voltages above 1kV and up to and including 72kV and the IEC Code herein referred
IEC 60129	Alternating current disconnectors (isolators)
IS 2705	Current transformers
IS 3156	Voltage transformers
IEC 60255	Electrical relays
IEC 60529	Classification of degrees of protection provided by enclosures

B) Service Conditions:

Ambient temperature	-5 to +45 °C
Relative humidity	up to 95%
Altitude of installation	up to 1000m above MSL

C)

- 1) **Switchgear panel, Vacuum Circuit breaker & Vacuum Interrupter should be of same manufacturer (OEM).**
- 2) **System House Switchgear panel not accepted.**
- 3) Switchgear panel internal arc classification: IAC-AFLR 26.2 KA for 1 sec
Ventilation of internal arc & hazardous components through Gas duct to out of the Sub-station room.
- 4) Panel Enclosure material: 2 mm Aluzinc / Zinc coated sheet steel.
- 5) Switchgear should be type tested according to Seismic standards & reports shall be furnished by manufacturers
- 6) Vacuum Interrupter arcing contacts to be made up of **Solid copper chromium** only.
Plating of copper chromium is not accepted.

33 KV SWITCHGEAR PANEL

Incomer: 2 Nos.

Specifications. 33 KV 1250 Amps Metal Clad Indoor Switchgear panel

1. Internal Arc tested up to 26.2 KA for AFLR 1 sec.
2. Loss of Service continuity - LSC 2B PM
3. Degree of Protection - IP 4x
4. Designed Classes - S1, E2, M2, C2

Vacuum Circuit Breaker I/c:

Floor rolling Vacuum circuit Breaker 1250 amps, 3 pole, 33KV, 1500 MVA, **26.2 KA**, for 3 sec. Horizontal Draw out type, Electrically operated with sheet steel enclosure. The provision for incoming cable arrangement, 240 volts AC motor for Spring charging, Closing coil 24 volts DC, Shunt trip 24 Volts DC with mechanical ON and OFF Push Button.

CT: Current Transformer, No. of Cores - 2.

Application Indoor

Type Wound Primary

CTR: **100 / 1 -1** Amps.

Core: 1, 15VA, Class: 0.2 core: 2, 15VA Class 5P10,
short time rating 26.2 KA for 3 sec.

PT: Potential transformer – with HT & LT Fuses,

Type : Single phase

Ratio: 33KV/Route3, 110/Route3 Volts,

Burden: 100VA Class: 0.2

OVF 1.2 continues & 1.5 for 30 Sec.

Indication Lamps

R, Y, B, breaker “ON”, “OFF”, Auto trip, spring charge, trip supervision.
LED lamps with suitable voltage range.

PB: Push Button with elements for ON and OFF.

Bus Bar : Copper, withstand 1500 MVA fault level 3 sec.

Protection: Numerical Over current and Earth Fault Relay for Incomer Protection,
Trip Circuit supervision Relay and Master Trip Auxiliary relay, under
voltage Relay.

Metering:

- 1) Analog Ammeter 0 to 100 amps, size 96 Sq.mm with selector switch.
- 2) Analog Voltmeter 0 to 45 KV size 96 Sq.mm Flush mounting with selector switch.
- 3) Tri-vector Meter accuracy class 0.2
- 4) MW Meter 0-6MW

Space Heater:

200 watts 240 Volts AC strip type heater - 2 Nos. per panel.

Temperature range: 30 to 90 deg.C (Thermostat)

Panel Illumination lamp and socket:

- 1) 60W pin type lamp 240 Volts AC - 01 No.
- 2) 3 pin 5 amps socket with toggle s/w - 01 No.

Outgoing: 3 Nos.

Specifications. 33 KV 1250 Amps Metal Clad Indoor Switchgear panel

- 1. Internal Arc tested up to 26.2 KA for AFLR 1 sec
- 2. Loss of Service continuity - LSC 2B PM
- 3. Degree of Protection - IP 4X
- 4. Designed Classes - S1, E2, M2, C2

Vacuum Circuit Breaker O/G:

Floor rolling Vacuum circuit Breaker 1250 amps, 3 pole, 33KV, 1500MVA, **26.2 KA**, for 3 sec. Horizontal Draw out type, electrically operated with sheet steel enclosure. The provision for outgoing cable arrangement, 240 volts AC motor for spring charging, closing coil 24 volts DC & Shunt trip 24 Volts DC with mechanical ON and OFF Push Button.

CT : Current Transformer, No. of Cores- 3.

Application Indoor

Type Wound Primary

CTR: **60/1 - 1 - 1**Amps.

Core: 1, 15VA, Class:1.0 core:2, 15VA Class 5P10, Core: 3 Class PS

(Knee point voltage should be match with existing CT)

Short time rating 26.2 KA for 3 sec.

Indication Lamps.

R, Y, B, breaker "ON", "OFF", Auto trip, spring charge, trip supervision.

LED lamps with suitable Voltage range.

PB: Push Button with elements for ON and OFF.

Bus Bar: Copper, withstand 1500 MVA fault level 3 sec.

Protection: Numerical Over current, Earth Fault and High set Relay, Differential relay for Transformer Protection, Trip Circuit supervision Relay, Master Trip relay & Auxiliary relays for Transformer protection Oil & Winding temp.

Metering:

- 1. Analog Ammeter 0 to 60 amps, size 96 Sq.mm with Selector Switch.
- 2. Tri-vector Meter class of accuracy 0.5
- 3. MW Meter 0-4MW

Space Heater:

200 watts 240 Volts AC strip type heater - 2 Nos. per panel

Temperature range: 30 to 90 deg.C (Thermostat)

Panel Illumination lamp and socket:

- 1) 60W pin type lamp 240 Volts AC - 01 No.
- 2) 3 pin 5 amps socket with toggle s/w - 01 No.

BATTERY CHARGER:

Operating voltage : AC 230V +/- 10% 50Hz., 1 ph., 2 Wire.

Output : Suitable for 24 Volts SMF Battery

Ripple : < 0.5 % of max. rated voltage.

Regulation : Better than +/- 0.5 % max. rated voltage.

Protection: Two pole MCB in A.C Input. Two pole MCB in D.C output and Battery path.
Against overload and short circuit. Blocking diode in D.C output

Metering: Analog meters for load/Battery voltage, output current and Battery charging/discharging current.

Indications: Mains ON, Float mode & Boost mode. Alarms : Load under voltage, Load over voltage, Battery earth leakage and mains fail.

Operating Amb. Temp.: 0 – 50 Deg. Cabinet : Free standing panel in IP 32 construction, 1.6/2.0 mm sheet steel, Powder/Epoxy painted, bottom cable entry. Batteries are mounted at the bottom compartment of the charger.

Auto changeover from Float mode to Boost mode & vice versa.

Manual selector switch.

OPTIONS:

Operating voltage : AC 220/230/240 V, 1 ph., 50Hz.

Alarms : Fuse fail/Load on battery/AC under & over voltage/any other.

LT UG Cable: The cable shall conform to the latest applicable IS/IEC standards.

Sl. No	Description	Remarks
1	Voltage Rating	1.1KV grade
2	Working Voltage	415V TPN system
3	Frequency	50Hz
4	Type of Earthing	Solidly Grounded
5	No. of Cores / Size Required	4C x 2.5sq.mm & 10C x 2.5sq.mm
6	Core Colours	Red-Yellow-Blue for Phase and Black for Neutral
7	Conductor Material	Stranded Copper, IS 8130
8	Type of Insulation	XLPE
9	Laying of core	Right hand lay for outer most layer cables, successive layers in opposite layers
10	Inner sheath thickness	As per IS : 7098 Part-I
11	Armouring	Galvanised steel wire / Taped
12	Outer sheath type	As per IS: 5831
13	Embossing of cable make, Size of cables, Running length in meters	Required as per relevant IS
14	Type Test Certificate	Required as per IS
15	Routine Test Certificate	Required as per IS
16	Acceptance Test	Required

-Sd/-

EE(E)II

Contractor's Seal & Signature

