

TENDER SPECIFICATION

BHEL: PSSR: SCT: 1418

FOR

Handling at site stores / storage yard,
Transportation to site of work, Erection,
Testing and Commissioning of Electrical
and Controls & Instrumentation Package
for Units **1 & 2 of 2 x 500 MW set**

at

NTECL Vallur TPP, Kuruvimedu, Ponneri TK,

Tiruvallur Dist, Tamilnadu

PART – II PRICE BID

BOOK NO:



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)

Power Sector – Southern Region

690, Anna Salai, Nandanam, Chennai – 600 035.

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(A Government of India Undertaking)
Power Sector, Southern Region
690, Anna Salai, Nandanam, Chennai – 35

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NAME OF WORK

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Instrumentation / Electrical works Package for
units-1 & 2 of 2 x 500 MW units at NTECL Vallur
TPP, Kuruvimedu, Ponneri TK, Tiruvallur Dist,
Tamilnadu

(PRICE BID)

PART II

Issued to
M/s.

For and on behalf of
BHARAT HEAVY ELECTRICALS LIMITED

Additional General Manager/Contracts

(This tender document is not transferable)

Place: Chennai-600 035.
Date:

NOTE TO RATE SCHEDULE:

1. The quantities indicated in Qty column are approximate and are liable for variation and alteration at the discretion of BHEL. The work executed shall be measured and priced at unit rate quoted by the contractor and accepted by BHEL.
2. The Tenderer is expected to fill up the rate column after satisfying all terms and conditions of Tender Specification.
3. Tenderers are requested to quoted their rates, only in the price bid (part II) provided by BHEL. Quoting of rates in any other form / formats will not be entertained.
4. Tenderers are requested to affix their company seal and authorised signature in all pages .

SIGNATURE OF THE TENDERER

RATE SCHEDULE (PER UNIT)**VALLUR TPP (2 X 500 MW)****ERECTION, TESTING AND COMMISSIONING OF ELECTRICAL/ C&I PACKAGE**

Before filling the Rates, the bidder shall go through the detailed specification of all the items given in the detailed Bill of Materials (BOM) as well as Scope of Work specified in Section VI

Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
	ERECTION/ COMMISSIONING OF ELECTRICAL PANELS/ STARTER BOXES For Scope of Work, refer Clause 6.3.1				
1.	A.5.1	SB MCC	1 No.		
2.	A.5.2	SB Local Control Boxes	4 Nos.		
3.	A.5.3	Starter Box for Furnace Temperature Probe	2 Nos.		
4.	A.5.4, A.5.5	DC Scanner Air fan starter Panel, UPS Local PDB	5 Nos.		
5.	B.1.1.1	Auxiliary Control Panel for ESP	4 Nos.		
6.	B.1.1.2	Electronic Control Panel with BAPCON controller	80 Nos.		
7.	B.1.1.3	IOS panel with PC and other accessories	1 set*		
8.	B.1.1.4	Rapper Control Panel- with Rapcon controllers	8 Nos.		
9.	B.1.1.5	Statcon Panel- with Statcon controllers	4 Nos.		
10.	D.3.1	Digital AVR consisting of Regulation cubicles, Thyristor cubicle and Field suppression cubicle along with loose supplied items	1 set*		
11.	G.1.1.1, G.2.1.1, G.2.1.2	Starter Cabinet for DC seal oil motor, along with Resistance box/ Starter Panels for DC Jacking oil motor, DC Emergency Lub oil motor for Main Turbine	3 sets*		
12.	E.2.4.1	D.C. Starter Panels with Resistance Box for EOP of BFP Drive Turbine	2 sets*		

* Lump sum rate to be quoted per set

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
ERECTION/ COMMISSIONING OF VFD SYSTEM FOR ID FANS					
For scope of work, refer Clause 6.3.2					
13.	D.1.1.1	VFD Transformers	4 Nos.		
14.	D.1.1.2	DC Air Core Reactor	4 Nos.		
15.	D.1.1.3	LCI Drive Panel	4 Nos.		
16.	D.1.1.4	Adaptor Panel	4 Nos.		
17.	D.1.1.5	Common Control Panel	2 Nos.		
18.	D.1.1.6	CLC Panel	4 Nos.		
19.	D.1.1.7	O&M Panel	1 No.		
20.	D.1.1.8	6.6kV, Indoor, Vacuum Circuit Breaker	4 Nos.		
21.	D.1.1.9	MMI for VFD	1 set*		
ERECTION/ COMMISSIONING OF C&I CONTROL PANELS					
For scope of work, refer clause 6.3.3					
22.	A.3.6	Gravimetric Feeder Panel	10 Nos.		
23.	C.1.2.1	Control Panel for HP Dosing System	1 No.		
24.	G.1.1.2	Generator Instrumentation Cabinet	1 No.		
25.	G.1.1.3	Gas Analyser Cabinets including sensor, analyser etc.	2 sets*		
26.	G.1.1.4	Generator End Winding Vibration Monitoring System comprising of Panel, pre-amplifier units, interconnecting cables, vibration monitor, etc.	1 No.		
27.	G.1.1.5	Moisture Measurement System for Generator, including panel.	1 set*		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
28.	F.2.1	PLC panel for Condenser On Load Tube Cleaning system, along with loose supplied items	1 No.		
29.	A.5.6, B.1.2.3	Boiler Maintenance System Notebook PC, PC for Offline/ Online Remaining Life Assessment of SH/RH Components, ESP Data Logger PC	3 sets*		
ERECTION/ COMMISSIONING OF DCS SYSTEM / PADO SYSTEM					
For scope of work, refer clause 6.3.4					
30.	D.4.1.1	Single Cubicles	3 Nos.		
31.	D.2.1.1, D.4.1.2, D.4.1.3	Panels: Suite of Two Cubicles	13 Nos.		
32.	D.2.1.2, D.4.1.4	Panels: Suite of Three Cubicles	16 Nos.		
33.	D.2.1.3, D.4.1.5	Panels: Suite of Four cubicles	3 Nos.		
34.	D.2.1.4	Panels: Suite of Five cubicles	1 No.		
35.	D.7.1	PADO Servers along with accessories	2 sets*		
36.	D.6.1.1, D.6.2.1, D.7.2	Computer Stations Engineer Workstation / 'maxStorian' Station / Operator Work Stations, maxLINK Stations/ Operator Workstations for PADO System etc.	30 sets*		
37.	D.6.1.2	Network Panels / Power Distribution Panel	4 Nos.		
38.	D.6.2.2	Wall-Mounted Network Panel with small UPS	1 No.		
39.	D.7.8	Wall mounted Rack / 6U Wall mounted rack for PADO System	1 No.		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
40.	D.6.3.1, D.7.4	Ethernet Cable	13,200 Mtrs		
41.	D.7.5	Conduit for laying Ethernet cable	700 Mtrs		
42.	D.6.3.3	Fibre Optic Cable (laying only)	1000 Mtrs		
43.	D.6.4.1, D.7.6	Testing of network cable	195 Nos.		
44.	D.7.3	Power Distribution Boards 15A/ 5A	20 Nos.		
ERECTION/ COMMISSIONING OF 24V DC BATTERY & BATTERY CHARGER					
For scope of work, refer Clause 6.3.5					
45.	D.5.2.1, D.5.2.3	24V DC Battery Charger with DCDB for SG / TG Packages	4 sets*		
46.	D.5.2.2	24V, 1030 AH Battery for SG Package	2 sets*		
47.	D.5.2.4	24V, 670 AH Battery for SG Package	2 sets*		
48.	D.5.2.5	24V Battery Charger along with integral DCDB, Battery Isolation Box etc. for FOPH	2 sets*		
49.	D.5.2.6	24V, 60 AH Battery for FOPH	1 set*		
ERECTION/ COMMISSIONING OF LOCAL/ FIELD INSTRUMENTS					
For scope of work, refer clause 6.3.6					
50.	A.1.1	PD Type Flow meter	2 sets*		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
51.	A.1.2, A.2.1, A.3.1, A.4.2, A.4.6.3, B.2.1, C.1.1.1, C.2.1.1, E.2.1.1, E.3.1, F.1.1, F.2.2, G.1.2.1, G.1.5.2, G.1.6.1, G.2.2.3, G.2.3.3, A.4.4, E.2.1.2, F.1.2, F.2.3	Pressure Gauges/ DP Gauges	538 Nos.		
52.	A.1.3, A.4.3, A.4.6.2, B.2.2, B.3.2, C.1.1.2, C.2.1.2, E.2.1.3, E.3.3, F.1.3, G.1.2.2, G.1.5.5, G.1.6.4, G.2.2.4, G.2.3.2	Temperature Gauges with Thermowell (capillary/ stem type)	367 Nos.		
53.	B.2.5, B.2.6	Thermocouple Assembly for PAPH/ SAPH	8 sets*		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
54.	A.1.4, A.4.1, B.2.4, C.1.1.3, D.2.2.3, E.2.1.6, F.2.6, G.1.5.1, G.1.5.3, G.1.6.2, G.2.2.5, G.1.2.8, A.4.5, E.2.1.7, F.1.5, F.2.5	Pressure Switches/ DP Switches	78 Nos.		
55.	E.3.2, F.1.7, G.2.2.7, G.2.3.1	Level Switches (float type)	14 Nos.		
56.	A.2.2, C.2.1.3, F.1.8, G.1.2.6, G.2.2.8	Level Switches (Capacitance Type/ Conductivity type)	29 sets*		
57.	A.4.6.1, B.2.3, B.3.1, C.2.1.4, D.5.1.1, D.5.1.2, E.1.1.1, E.2.1.8, E.2.1.9, E.4.1.1, F.1.6, G.1.2.7, G.1.2.9, G.1.5.4, G.1.6.3, G.2.2.10, G.2.2.11	RTDs/ Thermocouples along with thermowell	411 Nos.		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
58.	A.4.7.1	MTM T/Cs of route length 14 to 16 Mtrs (8 mm OD/ 9.5 mm OD)	68 Nos.		
59.	A.4.7.2	MTM T/Cs of route length 18 to 22 Mtrs (8 mm OD/ 9.5 mm OD)	248 Nos.		
60.	A.4.7.3	MTM T/Cs of route length 24 to 28 Mtrs (8 mm OD)	123 Nos.		
61.	A.4.7.4	MTM T/Cs of route length 30 to 32 Mtrs (8 mm OD)	24 Nos.		
62.	A.4.8.1	ACROMAT T/Cs of route length 24 to 28 Mtrs (3 mm OD)	16 Nos.		
63.	A.4.8.2	ACROMAT T/Cs of route length 30 to 32 Mtrs (3 mm OD)	14 Nos.		
64.	D.5.1.3, E.2.1.4, G.1.2.3, G.2.2.1, D.5.1.4, F.2.4, G.1.2.4, G.2.2.2	Pressure Transmitters/ DP Transmitters	228 Nos.		
65.	D.5.1.5, E.4.1.2, F.1.4	Temperature Transmitters	206 Nos.		
66.	D.5.1.6	Temperature Transmitters to be mounted inside JB (din rail mounted)	205 Nos.		
67.	G.1.2.5	Level Transmitter (displacement type)	1 No.		
68.	E.2.1.5, G.2.2.9	Level Transmitters with amplifier, probes, electronic unit etc.	6 sets*		
69.	D.5.1.7	Level Transmitter (Ultrasonic type)	4 Nos.		
70.	G.1.6.5	Moisture Sensor Probes	2 Nos.		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
71.	A.1.8, A.2.3, A.3.2, D.2.2.2	Air Filter Regulators	65 Nos.		
72.	D.2.2.1, E.2.1.11	I/P Converters	28 Nos.		
73.	A.1.6	Speed Regulator/ Air Lock Valves/ Air Sets	20 sets*		
74.	A.2.10	Burner Tilt Shear Pin Failure Indication Box	4 Nos.		
75.	A.2.11	Heavy Duty Limit Switch (for Burner Tilt Shear Pin Failure Indication Purpose)	20 Nos.		
76.	G.2.2.12	Position Transmitter for Extraction NRV	10 Nos.		
77.	A.3.4	Pneumatic Pressure Controllers with Pneumatic Transmitter	2 sets*		
78.	A.3.3	Purge Meter cum DP regulator	20 Nos.		
79.	A.1.5	Flame Scanner Head Assembly	44 sets*		
80.	A.1.9	FSSS Local Oil Gun Maintenance Switch Box	20 Nos.		
81.	A.1.10	H.E.A. Excitor box assembly with accessories	20 sets*		
82.	A.4.9	ERV Controller with Pressure Switch	9 sets*		
83.	E.1.1.3	Reverse Rotation Monitoring System for BFP along with probes and other accessories	1 set*		
84.	A.3.5	Ultrasonic Coal Flow Monitors, along with accessories	10 sets*		
85.	A.4.10	Electronic Water Level Indicator along with Display Units, Ascetor Cabinet and other accessories	2 sets*		
86.	B.2.7	Rotor Stoppage Alarm Box- including sensors, interconnecting cables etc.	4 sets*		
87.	B.2.8	ON/OFF Switch Box including light assembly and interconnecting cable	4 sets*		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
88.	A.2.12	Acoustic Pyrometer System along with Remote Cabinet, PC Station, 16 Nos. probes and other accessories.	1 set*		
89.	A.4.11	Steam leak detection system along with Panel and other accessories	1 set*		
90.	E.2.1.12	Vibration Monitoring System for BFP Drive Turbine, with 13 Nos. of probes, 1 No. Monitor rack and other accessories	2 sets*		
91.	E.2.1.10	Speed measuring loop for BFPDT Governing System	6 Sets*		
92.	B.1.2.1	Ash level indicator	320 Sets*		
93.	B.1.2.2	Opacity Monitoring System	4 sets*		
		<i>Furnace Flame Viewing System</i>			
94.	A.4.12.1	Furnace Flame Viewing System along with 4 Nos. Local Control Unit, 1 No. Panel and other accessories	1 set*		
95.	A.4.12.2	Video cables between camera and monitor for Furnace Flame Viewing System	500 Mtrs		
	REMOVAL, CALIBRATION AND RE-FIXING OF INSTRUMENTS				
	For scope of work, refer clause 6.3.6				
96.	G.1.3.1, G.1.3.2	Pressure Gauges/ DP Gauges	15 Nos.		
97.	B.3.3, E.1.1.2, E.4.1.3, G.1.3.3	Temperature Gauges	51 Nos.		
98.	G.1.3.5, G.1.3.6	Pressure Transmitters/ DP Transmitters	15 Nos.		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
99.	G.1.3.7, G.2.2.6	Pressure Switches/ DP Switches	9 Nos.		
100.	G.1.3.8	Level Switches	7 Nos.		
101.	G.1.3.10	Conductivity Cells	3 Nos.		
102.	G.2.2.13	Position Transmitters	20 Nos.		
CALIBRATION (AS REQUIRED), ERECTION, REMOVAL AND NORMALIZATION AFTER COMPLETION OF EDTA CLEANING					
103.	H.1	MTM thermocouple length 10 Mtrs	12 Nos.		
104.	H.2	Junction boxes - 6 way/ 12 way/ 24 way	10 Nos.		
105.	H.3	Compensating cables 2 P x 0.5 sq. mm	200 Mtrs		
106.	H.4	Compensating cables 6 P x 0.5 sq. mm	300 Mtrs		
107.	H.5	Pressure gauges	5 Nos.		
108.	H.6	Drum MTM thermocouple adaptor fabrication - 1/4 inch NPT(M) x 1/4 inch OD SS	2 sets*		
109.	H.7	16 P x 0.5 sqmm cable	500 Mtrs		
110.	H.8	3C x 2.5 sqmm power cable	100 Mtrs		
111.	H.9	9 port lamp indication at control room and 9 port switching at Drum floor	1 set*		
112.	H.10	Switchboards with switches	3Nos.		
ERECTION/ COMMISSIONING OF PNEUMATIC POWER CYLINDERS (REGULATING TYPE) For scope of work, refer Clause 6.3.11					
113.	A.2.13.1	Power Cylinders for SADC	88 Nos.		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
114.	A.2.13.2, A.2.13.5, A.2.13.6	Burner Tilt Power Cylinders / PAH Outlet Regulating Dampers/ SAH Outlet Regulating Dampers	10 Nos.		
115.	A.2.13.4	Cold Air Regulating Dampers	10 Nos.		
116.	A.2.13.3	Hot Air Regulating Dampers	10 Nos.		
117.	A.2.13.7	Dynavane Filter Pressure Control Dampers	2 Nos.		
<p>ERECTION/ COMMISSIONING OF PNEUMATIC POWER CYLINDERS (ON/OFF TYPE) For scope of work, refer Clause 6.3.11</p>					
118.	A.2.14.1	Scanner Emergency Air Inlet Valve	1 No.		
<p>ERECTION/ TESTING OF LOCAL INSTRUMENT ENCLOSURES/ RACKS (LIE/LIR) For scope of work, refer Clause 6.3.8</p>					
119.	A.6.9.1, D.5.4.1	LIE of approximate size 1000 x 900 x 2400 mm/ 1250 x 850 x 2300 mm	27 Nos.		
120.	D.5.4.2	LIE of approximate size: 700 x 900 x 2400 mm; 300 kg	8 Nos.		
121.	D.5.4.3	LIE of approximate size: 1000 x 900 x 1600 mm;	1No.		
122.	D.5.4.4	LIR of approximate size: 1000 x 1050 x 2200 mm; 300 kg	1No.		
123.	A.6.9.2, C.1.4.1, C.1.4.2, C.2.3.1	LIR of width 1800 mm/ 2150 mm and height 2150 mm	38 Nos.		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
124.	E.1.5.1, E.1.5.2, E.1.5.3, E.1.5.4, E.1.5.5, E.1.5.6	LGB Assembly for BFPs/ CEPs (along with instruments) Approximate size 1400 x 550 x 1900 mm; 200 kg	11 Nos.		
125.	E.1.5.7, E.1.5.9, E.1.5.10	LIR assembly for BFPs/ CEPs (along with transmitters) Approximate Size 2000 x 650 x 2200 mm; 300 kg	3 Nos.		
126.	E.1.5.8	LIR assembly for BFP (along with transmitters) Approximate Size 1200 x 600 x 2200 mm; 200 kg	1 No.		
ASSEMBLY AND ERECTION OF JB MOUNTING FRAMES For scope of work, refer Clause 6.3.8					
127.	D.4.5.1 to D.4.5.9	Assembly and installation of Mounting Frames with loose supplied prefabricated materials of suitable size, like slotted angles, channels etc.	21 Nos.		
ASSEMBLY/ WELDING/ ERECTION OF PRESSURE INSTRUMENT RACKS For scope of work, refer Clause 6.3.8					
128.	G.2.4.1, G.2.4.2	Assembly/welding and installation of Instrument Racks with loose supplied prefabricated materials of suitable size, like angles, stands etc. Total wt. of loose supplied items (for 12 racks): Approx. 3 Tonnes	12 Nos.		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
LAYING, TERMINATION & TESTING OF CABLES					
For scope of work, refer Clause 6.3.12					
<i>Laying of Power Cables</i>					
129.	D.5.7.1	1 C x 120 sq. mm Al cable	14,000 Mtrs		
130.	B.1.4.1	2 C x 120 sq. mm, Al cable	46,500 Mtr		
131.	A.6.1.1, B.1.4.2	3 C x 16 sq. mm, Al cable	4,900 Mtrs		
132.	B.1.4.3, D.1.2.2	3 C x 25 sq. mm, Al cable	36,200 Mtr		
133.	D.5.7.4	3 C x 35 sq. mm Al cable	900 Mtrs		
134.	B.1.4.4	3 C x 70 sq. mm, Al cable	3,000 Mtr		
135.	D.1.2.1	3 C x 120 sq. mm, Al cable	1,000 Mtrs		
136.	D.3.2.2	1 C x 70 sq. mm Cu cable	100 Mtrs		
137.	D.5.2.7	1 C x 630 sq. mm Cu cable	600 Mtrs		
138.	D.3.2.1	3 C x 50 sq. mm, Cu cable	400 Mtrs		
<i>Termination of Power Cables</i>					
139.	D.5.7.2	1 C x 120 sq. mm, Al	240 Nos.		
140.	B.1.4.5	2 C x 120 sq. mm, Al	320 Nos.		
141.	A.6.1.2, B.1.4.8	3 C x 16 sq. mm, Al	56 Nos.		
142.	B.1.4.6, D.1.2.3	3C x 25 sq. mm, Al	492 Nos.		
143.	D.5.7.5	3 C x 35 sq. mm Al	60 Nos.		
144.	B.1.4.7	3C x 70 sq. mm, Al	80 Nos.		
145.	D.1.2.4	3 C x120 sq. mm, Al	8 Nos.		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
146.	D.3.2.4	1 C x 70 sq mm Cu	4 Nos.		
147.	D.5.2.8	1 C x 630 sq. mm Cu	48 Nos.		
148.	D.3.2.3	3 C x 50 sq mm. Cu	4 Nos.		
		<i>Laying and Termination of Power/ Control Cables</i>			
149.	D.5.7.3	1 C x 35 sq. mm Al cable	13,500 Mtrs		
150.	A.6.2.1, B.1.4.10, B.1.5.1, D.1.3.1, D.1.3.2, G.1.8.1	2 C x 1.5 sq. mm/ 2.5 sq. mm, Copper	38,420 Mtr		
151.	A.6.1.3, A.6.2.2, B.1.4.9, B.1.5.2, D.3.2.5, D.6.3.2, D.7.7	3 C x 1.5 sq. mm/ 2.5 sq. mm, Copper	158,600 Mtr		
152.	A.6.2.3, B.1.5.5, D.1.3.3, D.4.2.9	4 C/ 5 C x 1.5 sq mm/ 2.5 sq. mm, Cu	58,250 Mtrs		
153.	A.6.2.4	7 C x 1.5 sq mm/ 2.5 sq. mm, Cu	3,200 Mtrs		
154.	A.6.2.5, B.1.5.3	10 C/ 12 C x 1.5 sq.mm/ 2.5 sq. mm, Cu	40,000 Mtrs		
155.	A.6.2.6, B.1.5.4, D.1.3.4	14 C/16 C X 1.5 sq. mm/ 2.5 sq. mm, Cu	26,900 Mtr		
156.	A.6.2.7	19 C x 1.5 sq. mm, Cu	5,300 Mtrs		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
157.	D.5.7.6	3 C x 6 Sq mm cable / 2 C x 6 sq. mm/ 2 C x 10 sq. mm cables	100 Mtrs		
		<i>Laying and Termination of Instrumentation cables</i>			
158.	A.6.3.1, A.6.3.2, A.6.3.3, A.6.3.10, D.1.4.1, D.4.2.7	Flame Scanner Cable / 2P X 0.5 sq. mm/ 2 P x 1.5 sq. mm cable	40,150 Mtrs		
159.	A.6.3.4, A.6.3.5, C.1.5.1, D.1.4.2, D.1.4.4, D.2.3.1, D.2.3.2, D.4.2.1, D.4.2.4, D.4.2.8, E.1.3.1, E.1.3.2, F.3.1	4P X 0.5 sq. mm cable/ 4 T X 0.5 sq. mm cable	1,53,670 Mtrs		
160.	A.6.3.6,A.6.3.7 , D.1.4.5, D.2.3.3, D.4.2.2,D.4.2.5 , A.6.3.8, D.1.4.3,D.2.3.4 , D.4.2.3, D.4.2.6	8 P X 0.5 sq. mm cable / 12 P X 0.5 sq. mm cable	1,14,050 Mtrs		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
161.	A.6.3.9	16 P X 0.5 sq. mm cable	600 Mtrs		
162.	A.6.3.11, D.4.2.10, D.4.2.11	1 Pair/ 2 Pair Compensating Cables	8,500 Mtrs		
ERECTION OF CABLE TRAYS AND DUCTS For scope of work, refer Clause 6.3.13					
163.	A.6.4.1, E.1.3.3	Perforated Tray, 50 mm wide	1,425 Mtrs		
164.	A.6.4.2	Perforated Tray, 100 mm wide	5,670 Mtrs		
165.	A.6.4.3, B.1.7.6, E.1.3.4	Perforated Tray, 150 mm wide	3,700 Mtrs		
166.	A.6.4.4	Perforated Tray, 300 mm wide	100 Mtrs		
167.	A.6.4.5	Perforated Tray, 450 mm wide	100 Mtrs		
168.	B.1.7.5	Perforated Tray, 600 mm wide	900 Mtrs		
169.	B.1.7.4	Ladder type Tray, 150 mm wide	4,050 Mtrs		
170.	B.1.7.3	Ladder type Tray, 300 mm wide	565 Mtrs		
171.	B.1.7.2	Ladder type Tray, 450 mm wide	1,000 Mtrs		
172.	B.1.7.1	Ladder type Tray, 600 mm wide	3,315 Mtrs		
		<i>Cable Ducts with Covers (GI Solid Bottom)</i>			
173.	D.4.4.1	60 x 60 x 1000 mm	200 Nos.		
174.	D.4.4.2	180 x 100 x 1000 mm	100 Nos.		
175.	D.4.4.3	250 x 100 x 1000 mm	100 Nos.		
		<i>Flexible Cable Tray Support System</i>			

* Lump sum rate to be quoted per set

\$ Rate to be quoted ONLY for commissioning

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
176.	A.6.5.1	Single Channel, 41 mm W x 41 mm H	1940 Mtrs		
177.	A.6.5.2	Cantilever Arm for 150 mm tray	1110 Nos.		
178.	A.6.5.3	Cantilever Arm for 100 mm tray	830 Nos.		
179.	A.6.5.4	Base Plate For Single Channel	1940 Nos.		
180.	B.1.6.1	Base plate for double support channel	660 Nos.		
181.	B.1.6.2	Base plate for single support channel	2150 Nos		
182.	B.1.6.3	Double channel support	2200 Mtrs		
183.	B.1.6.4	Single channel support	1650 Mtrs		
184.	B.1.6.5	Cantilever arm of length 650 mm	700 Nos.		
185.	B.1.6.6	Cantilever arm of length 500 mm.	400 Nos.		
186.	B.1.6.7	Cantilever arm of length 350 mm.	370 Nos.		
187.	B.1.6.8	Cantilever arm of length 200 mm.	1000 Nos.		
ERECTION OF JUNCTION BOXES/ PUSH BUTTON BOXES					
For scope of work, refer Clause 6.3.14					
188.	B.1.3.2, B.1.3.3	Junction Boxes for hopper heaters/ support insulator heaters & shaft insulator heaters	200 Nos.		
189.	B.1.3.4, B.1.3.5	Junction Boxes for start stop PB, hopper heater feedback, ALI, Opacity Monitor	100 Nos.		

* Lump sum rate to be quoted per set

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
190.	A.6.6.1, A.6.6.2, C.1.3.1, C.1.3.2, C.1.3.3, C.2.2.1, D.5.5.1, D.5.5.3, D.5.5.2, E.1.4.1, F.4.1, F.4.2, G.2.6.1, G.2.6.2	Junction Boxes: 12 way to 36 way (including CJCB)	252 Nos.		
191.	A.6.6.3, A.6.6.4, D.4.3.1, G.2.6.3, G.2.6.4	Junction Boxes: 48 way to 96 way	215 Nos.		
192.	A.2.9, B.1.3.1	Push Button Boxes	172 Nos.		
	ERECTION/ TESTING OF IMPULSE PIPES For scope of work, refer Clause 6.3.7				
193.	E.1.2.1, G.1.7.3, G.2.5.1	CS Pipe, 13.5 x 2.6/ 16 x 2.6	2306 Mtrs		
194.	G.1.7.4	CS pipe, 17.2 x 1.8	50 Mtrs		
195.	G.2.5.2	CS Tube DN-80	20 Mtrs		
196.	A.6.8.3, C.1.7.1, D.5.3.3, E.2.3.1, F.5.2, G.2.5.3	CS pipe, ½" Sch 80 (21.3 x 3.73)/ 21.3 x 2.3	4140 Mtrs		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
197.	D.5.3.5, F.5.3	CS pipe , ½" Sch 160	80 Mtrs		
198.	A.6.8.2, D.5.3.4	CS Pipe, ¾" SCH 80	245 Mtrs		
199.	A.6.8.4	CS pipe, 1" SCH 80	1750 Mtrs		
200.	F.5.5	CS Pipe, 1" SCH 160, (33.4 x 6.35)	45 Mtrs		
201.	E.2.3.2	CS Pipe, 60.3 x 3.91	120 Mtrs		
202.	E.2.3.5	SS tube, 6 x 1.5 mm	60 Mtrs		
203.	E.2.3.4, G.1.7.5, G.2.5.5	SS tube, 12.7 x 2.1 mm / 13.5 x 2.6	700 Mtrs		
204.	G.1.7.2, G.2.5.4	SS tube, 21.3 x 2.6/ 21.3 x 2.3	470 Mtrs		
205.	G.2.5.7	AS tube, 13.5 x 2.6	15 Mtrs		
206.	G.1.7.1, G.2.5.6	AS pipe, 21.3 x 2.3/ 21.3 x 2.77	675 Mtrs		
207.	F.5.1	AS Pipe Gr. P22, ½" SCH 80 (21.3 x 3.73)	10 Mtrs		
208.	A.6.8.5	AS Pipe, ½" 160, P22	375 Mtrs		
209.	D.5.3.1	AS Pipe, ½" NB XXS, P22	375 Mtrs		
210.	A.6.8.1, D.5.3.2	AS Pipe, ¾" SCH 80	210 Mtrs		
211.	F.5.4	AS Pipe, Gr. P22, 1" SCH 80 (33.4 x 4.55)	20 Mtrs		
212.	E.2.3.3	Cr-Al Pipe, ½" SCH 80 (21.3 x 3.73)	400 Mtrs		
<p>ERECTION OF EARTHING MATERIALS For scope of work, refer clause 6.3.16</p>					

* Lump sum rate to be quoted per set

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Signature of Bidder

Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
213.	A.6.7.1, B.1.8.3, D.5.6.6	GI Wire- 8 SWG	2,500 Mtrs		
214.	B.1.8.1	GI Flat 50 x 6 mm	4,000 Mtrs		
215.	B.1.8.2	GI Flat 30 x 5 mm	3,800 Mtrs		
<p>ERECTION OF HOSES/ COPPER TUBES For scope of work, refer clause 6.3.9</p>					
216.	A.1.7, A.2.4, A.2.5, D.5.6.4	Copper Tube, OD 8 mm / ¼" / 3/8"	4,975 Mtrs		
217.	D.5.6.5	¾"/ 1" Copper tube	500 Mtrs		
218.	A.2.6	¼" size Teflon Hose of 2M length	80 Nos.		
219.	A.2.7	1" size Teflon Hose of 3M length	8 Nos.		
220.	A.2.8	½" size SS Braided Teflon Hose	15 Nos.		
<p>FABRICATION/ ERECTION OF STRUCTURAL STEEL For Scope of work, refer clause 6.3.15</p>					
221.	A.6.7.2, B.1.9.1, D.5.6.1, E.1.6.1, E.2.2.1, F.6.1	Structural Steel for fabrication of supports/ LIRs/ canopy	42 MT		

* Lump sum rate to be quoted per set

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
ERECTION/ TESTING OF GI PIPE (HEAVY DUTY) For Scope of work, refer clause 6.3.10					
222.	A.6.7.3, C.1.6.1, D.5.6.2	½" GI pipes / NB 15 x 3.25	4100 Mtrs		
223.	C.1.6.2, D.5.6.3	1" GI pipes / NB 25 x 4.05	680 Mtrs		
224.	C.1.6.3	NB 40 x 4.05	120 Mtrs		
225.	C.1.6.4	NB 50 x 4.50	350 Mtrs		
TESTING HEATING ELEMENTS OF ESP For Scope of work, refer clause 6.3.20.6					
226.	B.1.10.4	Testing and Termination and dressing of Heating Elements for Hopper (Panel Type)	160 sets*		
227.	B.1.10.5	Testing Heating elements for support insulator heater	320 Nos.		
228.	B.1.10.6	Testing Heating elements for shaft insulator heater	80 Nos.		
229.	B.1.10.7	Testing Thermostats for hopper heaters.	160 Nos.		
230.	B.1.10.8	Testing Thermostat for support insulators	8 Nos.		
CHECKING & COMMISSIONING OF THE FOLLOWING ERECTED BY OTHER AGENCY For Scope of work, refer clause 6.3.20					
231.	G.1.9.1	500 MW Generator	1 No. \$		
232.	A.6.10.1, E.1.7.1	HT Motors	23 Nos. \$		
233.	A.6.10.3	Soot Blowers	130 Nos. \$		

* Lump sum rate to be quoted per set

\$ Rate to be quoted ONLY for commissioning

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
234.	A.6.10.2, B.1.10.2, C.1.8.1, E.1.7.2, G.1.9.8, G.2.7.12	LT Motors	250 Nos. \$		
235.	A.2.15.16, A.2.15.17, A.6.10.5, C.1.8.2, C.2.4.1, E.2.5.1, G.2.7.13	Electrical Actuators for Valves/ Dampers	230 Nos. \$		
236.	A.6.10.4, B.1.10.3	Hoists/ Cranes	35 Nos. \$		
237.	B.1.10.1	ESP transformers	80 Nos. \$		
238.	G.1.9.2	Generator Air Dryer	1 No. \$		
239.	G.1.9.3	Exciter Air Dryer/ Heater	1 No. \$		
240.	G.1.9.4	Exciter Lighting	1 No. \$		
241.	G.1.9.5	Stroboscope	1 No. \$		
242.	G.1.9.6	CO2 Vaporiser	1 No. \$		
243.	G.1.9.7	Gas Drier	2 Nos. \$		
244.	B.2.9.2, B.3.4.2, E.4.2.2	Lub Oil Skids for Pulveriser/ FD-A&B, ID-A&B, PA-A&B Fans / APH	24 sets* \$		
245.	E.1.7.5	Hydraulic Coupling of MDBFP	1 set* \$		
246.	E.1.7.6	TD BFP Pump Coupling Engage Oil Supply Unit	2 sets* \$		
247.	C.1.8.6, F.7.3, F.7.4, F.7.5	HP/ LP dosing skids	5 sets* \$		
248.	G.2.7.1	Condenser Vacuum Pump, including CVP PLC and related field instruments	2 sets* \$		
249.	G.2.7.5	Seal Oil Skid	1 set* \$		

* Lump sum rate to be quoted per set

\$ Rate to be quoted ONLY for commissioning

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
250.	G.2.7.9	Gland Steam and Seal Steam Oil Supply Units	2 sets* ^{\$}		
251.	E.2.5.5	Governing Console Board Instruments for BFP Drive Turbine	2 sets* ^{\$}		
252.	G.2.7.2	Hydraulic Speed Control Equipment Rack (LR1)	1 set* ^{\$}		
253.	G.2.7.3	LP Bypass Control Rack (HPSU)	1 set* ^{\$}		
254.	G.2.7.4	Supply Unit Racks for HP Valve-1, HP Valve-2, IP Valves (SU1, SU2 & SU3)	3 sets* ^{\$}		
255.	G.2.7.6	Stator Water Rack	1 set* ^{\$}		
256.	G.2.7.7	Seal Oil Level / Pressure Transmitter Instrument Rack	1 set* ^{\$}		
257.	G.2.7.8	Stator Water DP Instrument Rack	1 set* ^{\$}		
258.	E.2.5.4, G.2.7.10	Oil Centrifuge Unit	3 Nos. ^{\$}		
259.	A.3.7.1	Gravimetric Feeders	10 sets* ^{\$}		
260.	A.4.13.1	Direct Water Level Gauges	2 Nos. ^{\$}		
261.	A.2.15.2 to A.2.15.15, E.4.2.3	Pneumatic Actuators (On/Off Type) for Dampers	154 Nos. ^{\$}		
262.	A.1.11.2	Pneumatic Valves: Trip Valves	73 Nos. ^{\$}		
263.	A.1.11.3, A.4.13.2, C.1.8.5, E.2.5.2, F.7.1	Pneumatic Valves: Control Valves	103 Nos. ^{\$}		
264.	G.2.7.11	NRV Valves, Stop Valves, Control Valves, HP/LP Bypass Valves	40 Nos. ^{\$}		
265.	B.2.9.1	Solenoid Valves	4 Nos. ^{\$}		

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Sl. No.	BOM Reference	Description	Quantity per unit	Unit Rate	Total
266.	A.2.15.1	Furnace Temperature Probe (Cr-Al Thermocouples)	2 Nos. \$		
267.	B.3.4.1, E.1.7.3, E.4.2.1, G.1.4.1, G.1.4.2	Checking the healthiness of Temperature Elements (RTDs/ Thermocouples)	462 Nos. \$		
268.	A.4.6.4, C.1.8.3, C.1.8.4, F.7.2, G.1.3.4, G.1.3.9	Flow Indicators/ Flow Meters/ Rotameters	29 Nos. \$		
269.	E.2.5.3	Position Transmitters	8 Nos. \$		
270.	A.1.11.1, A.3.7.2, G.2.7.14	Checking of Limit Switches	168 Nos. \$		
271.	E.1.7.4	Checking of speed switch	2 Nos. \$		

Total _____

Note: The quantity indicated is tentative only and is liable for variation. Payment will be made as per actual quantum of work executed.

* Lump sum rate to be quoted per set

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