

TENDER SPECIFICATION

TENDER NO. BHEL/ NR/SCT/ KOSTI /ELEC/ 836

FOR

“ERECTION, TESTING, COMMISSIONING TRIAL OPERATION AND HANDING OVER OF BALANCE WORKS OF ELECTRICAL PACKAGE 4 X 125 MW AT KOSTI TPS, SUDAN.”

PART II – PRICE BID



Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northern Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301(INDIA)

Registered Office: BHEL House, Siri Fort, New Delhi – 110 049, India

Website: www.bhel.com



ISO 9001, ISO 14001,
OHSAS 18001 & SA 8000
certified company
SubContract and Purchase
Deptt.

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THIS TENDER SPECIFICATION ISSUED TO:

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Registered Office: BHEL House, Siri Fort, New Delhi – 110 049, India

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RATE SCHEDULE

Sl no	Name of Board / Equipment	UOM	Nos	SCOPE	RATE	AMOUNT
A	SWITCHYARD					
	Switchyard Equipments	SET	1	BE+C		
B	MAIN TRANSFORMER					
1	Generator Transformer-	NO	1	BE+C		
2	Unit Aux Transformer-04,3	NO	2	BE+C		
3	Station Transformer -2	NO	1	BE+C		
4	Generator Transformer-3,2,1	NO	3	E+C		
5	Unit Aux Transformer-2,1	NO	2	E+C		
6	Station Transformer -1	NO	1	E+C		
C	IP HT BUSDUCT					
1	Generator IP Busduct	NO	4	E+C		
D	6.6 kV SWITCHGEAR					
1	Unit Board – 1CA - 13 Panels	NO	1	E+C		
2	Unit Board – 1CB - 11 Panels	NO	1	E+C		
3	Unit Board – 2CA- 13 Panels	NO	1	E+C		
4	Unit Board – 2CB - 11 Panels	NO	1	E+C		
5	Unit Board – 3CA- 13 Panels	NO	1	BE+C		
6	Unit Board – 3CB - 11 Panels	NO	1	BE+C		
7	Unit Board – 4CA - 13 Panels	NO	1	BE+C		
8	Unit Board – 4CB - 11 Panels	NO	1	BE+C		
9	Station Board – 0CA - 13 Panels	NO	1	E+C		
10	Station Board – 0CB - 13 Panels	NO	1	E+C		
11	Station Board – 0CC - 13 Panels	NO	1	BE+C		
12	Station Board – 0CD - 12 Panels	NO	1	BE+C		
13	Station Board – 0CE - 14 Panels	NO	1	E+C		
E	SP HT BUSDUCT	NO				
1	UAT-1 - 1CA / 1CB	NO	1	E+C		
2	UAT-2 - 2CA / 2CB	NO	1	E+C		
3	UAT-3 - 3CA / 3CB	NO	1	BE+C		
4	UAT-4 - 4CA / 4CB	NO	1	BE+C		
5	STN TRF -1 - 0CA / 0CB	NO	1	E+C		
6	STN TRF -2 - 0CC / 0CD	NO	1	BE+C		
7	0CA – 1CA	NO	1	E+C		
8	0CA – 2CA	NO	1	E+C		
9	0CB – 1CB	NO	1	E+C		
10	0CB – 2CB	NO	1	E+C		
11	0CA – 0CC	NO	1	E+C		
12	0CB– 0CD	NO	1	BE+C		
13	0CC – 3CA	NO	1	BE+C		
14	0CC – 4CA	NO	1	BE+C		
15	0CD – 3CB	NO	1	BE+C		
16	0CD – 4CB	NO	1	BE+C		
F	NUETRAL GROUDING RESISTOR	NO				
1	NGR for UAT-4,3 , ST -2	NO	4	BE+C		
2	NGR for UAT-1,2 , ST -1	NO	4	E+C		
G	LT MCC					
1	415V UNIT PCC-1	NO	1	E+C		
2	415V UNIT PCC-2	NO	1	BE+C		
3	415V UNIT PCC-3	NO	1	BE+C		
4	415V UNIT PCC-4	NO	1	BE+C		
5	415V DG PCC-1	NO	1	BE+C		
6	415V EMERGENCY MCC-1	NO	1	E+C		
7	415V EMERGENCY MCC-2	NO	1	E+C		
8	415V EMERGENCY MCC-3	NO	1	BE+C		
9	415V EMERGENCY MCC-4	NO	1	BE+C		
10	415V BOILER & BOILER VALVE MCC-1	NO	1	E+C		
11	415V BOILER & BOILER VALVE MCC-2	NO	1	E+C		
12	415V BOILER & BOILER VALVE MCC-3	NO	1	BE+C		
13	415V BOILER & BOILER VALVE MCC-4	NO	1	BE+C		
14	415V TURBINE & TURBINE VALVE MCC-1	NO	1	E+C		
15	415V TURBINE & TURBINE VALVE MCC-2	NO	1	E+C		
16	415V TURBINE & TURBINE VALVE MCC-3	NO	1	BE+C		
17	415V TURBINE & TURBINE VALVE MCC-4	NO	1	BE+C		

RATE SCHEDULE

Sl no	Name of Board / Equipment	UOM	Nos	SCOPE	RATE	AMOUNT
18	415V STATION PCC-1	NO	1	E+C		
19	415V STATION PCC-2	NO	1	BE+C		
20	415V WORKSHOP DB	NO	1	E+C		
21	415V FUEL OIL PMCC	NO	1	BE+C		
22	415V VENTILLATION MCC-1	NO	1	E+C		
23	415V VENTILLATION MCC-2	NO	1	BE+C		
24	415V MISC. MCC-1	NO	1	BE+C		
25	415V MISC. MCC-2	NO	1	BE+C		
26	415V CONTROL ROOM A/C MCC	NO	1	BE+C		
27	415V SERVICE BUILDING A/C MCC	NO	1	E+C		
28	415V ESP AREA MCC-1	NO	1	E+C		
29	415V ESP AREA MCC-2	NO	1	BE+C		
30	415V CT PMCC-1	NO	1	E+C		
31	415V CT PMCC-3	NO	1	E+C		
32	415V CLWPH SWGR	NO	1	E+C		
33	415V ETP MCC	NO	1	E+C		
34	415V DM PLANT MCC	NO	1	BE+C		
35	415V PT PLANT MCC	NO	1	BE+C		
36	415V CHLORINATION PLANT MCC	NO	1	BE+C		
37	415V RAW WATER PH (PLANT SIDE) MCC	NO	1	BE+C		
38	415V RAW WATER PH (RIVER SIDE) MCC	NO	1	E+C		
39	110V UNIT DC DB-1	NO	1	E+C		
40	110V UNIT DC DB-2	NO	1	E+C		
41	110V UNIT DC DB-3	NO	1	BE+C		
42	110V UNIT DC DB-4	NO	1	BE+C		
43	415V ADMIN BUILDING MCC	NO	1	E+C		
44	SOOTBLOWER MCC PANEL	NO	4	E+C		
H	SERVICE TRANSFORMERS	NO				
1	1000 kVA , 6.6 kV / 433 V , Off CTS - Dry Type	NO	6	BE+C		
2	1000 kVA , 6.6 kV / 433 V , Off CTS - Dry Type	NO	2	E+C		
3	1600 KVA , 6.6 kV / 433 V , Off CTS- Dry Type	NO	2	BE+C		
4	1600 KVA , 6.6 kV / 433 V , Off CTS- Dry Type	NO	2	E+C		
5	1000 kVA , 6.6 kV / 433 V , Off CTS - Oil Filled	NO	6	BE+C		
6	1000 kVA , 6.6 kV / 433 V , Off CTS - Oil Filled	NO	4	E+C		
7	1600 kVA , 6.6 kV / 433 V , Off CTS - Oil Filled	NO	2	BE+C		
8	1600 kVA , 6.6 kV / 433 V , Off CTS - Oil Filled	NO	2	E+C		
9	2000 kVA , 6.6 kV / 433 V , Off CTS - Oil Filled	NO	2	BE+C		
11	2500 kVA , 6.6 kV / 11.5 kV , Off CTS - Oil Filled	NO	2	BE+C		
14	2500 kVA , 11 kV /6.9 kV, Off CTS - Oil Filled	NO	2	E+C		
16	630 kVA , 6.6 kV / 433 V , Off CTS - Oil Filled	NO	4	E+C		
I	LT SEGREGATED PHASE BUSDUCT :					
1	Busduct Rated 1600A	NO	6	BE+C		
2	Busduct Rated 2500A	NO	6	BE+C		
3	Busduct Rated 3000A	NO	1	BE+C		
4	Busduct Rated 1600A	NO	4	E+C		
5	Busduct Rated 2500A	NO	10	E+C		
6	Busduct Rated 3000A	NO	1	E+C		
J	LOCAL PUSH BUTTON STATIONS AND STARTERS :					
1	LPBs	NO	230	E+C		
2	LPBs	NO	70	BE+C		
3	Local starters	NO	80	E+C		
K	DC SYSTEM :					

RATE SCHEDULE

Sl no	Name of Board / Equipment	UOM	Nos	SCOPE	RATE	AMOUNT
1	110 V Battery Chargers	NO	4	E+C		
2	110 V Battery Chargers	NO	4	BE+C		
3	110 V Ni-Cd. Battery Bank .	NO	4	E+C		
4	110 V Ni-Cd. Battery Bank .	NO	4	BE+C		
L	UPS					
1	35 kVA UPS	NO	1	BE+C		
2	ACDB	NO	1	BE+C		
3	VOLTAGE STAB	NO	1	BE+C		
4	BATTERY KPH 120P	set	1	BE+C		
5	60 kVA UPS	NO	4	BE+C		
6	ACDB-1	NO	4	BE+C		
7	ACDB -2	NO	4	BE+C		
8	VOLTAGE STAB	NO	4	BE+C		
9	BATTERY KPH 206	set	4	BE+C		
10	250 kVA UPS	NO	1	E+C		
11	ACDB	NO	1	E+C		
12	VOLTAGE STAB	NO	1	E+C		
13	BATTERY KPH 890	set	1	E+C		
M	CONTROL PANELS	NO				
1	U C P	NO	4	BE+C		
2	E C P	NO	2	BE+C		
3	GEN/ GT / UAT Protection Panel	NO	4	BE+C		
4	Station Trf Relay Panel	NO	2	BE+C		
5	AVR Panel	NO	4	BE+C		
6	Unit Control Desk	NO	8	BE+C		
7	DCS PANELS – SG , TG , BOP, HMI	NO	232	BE+C		
8	PLC PANELS – BOP System	NO	6	E+C		
9	PLC PANELS – BOP System	NO	2	BE+C		
10	VIBRATION MONITORING SYSTEM PANEL	NO	4	BE+C		
11	FURNACE TEMP PROBE STARTER BOX	NO	4	BE+C		
12	DC SCANNER AIR FAN STARTER BOX	NO	4	BE+C		
13	BHEL-VISION EWLI ASCERTOR CABINET	NO	8	BE+C		
14	BHEL-VISION EWLI DISPLAY UNIT	NO	8	BE+C		
15	FURNACE CCTV – LOCAL UNIT	NO	4	E+C		
16	LARGE VIDEO SCREEN	NO	2	BE+C		
17	MASTER CLOCK PANEL	NO	4	BE+C		
18	CCTV PANEL	NO	4	BE+C		
19	SWAS – PRIMARY SAMPLING RACK	NO	4	BE+C		
20	SWAS – PRIMARY SAMPLING RACK	NO	4	BE+C		
21	SWAS – WET PANEL	NO	4	BE+C		
22	SWAS DRY PANEL	NO	4	BE+C		
23	SWAS - CHILLER	NO	4	BE+C		
24	SWAS – HOTWELL CONDUCTIVITY BOX	NO	8	BE+C		
25	DG AMF CONTROL PANEL	NO	3	BE+C		
26	DG MCC PANEL	NO	1	BE+C		
27	DG 24 V CHARGER	NO	3	BE+C		
28	DG 24 V BATTERY	NO	3	BE+C		
29	DG Aux ACDB	NO	3	BE+C		
N	FIELD INSTRUMENTS	NO				
1	Pressure / Temp / Level Gauges	NO	1362	E+C		
2	Pressure / Temp / Level Gauges	NO	500	BE+C		
3	Pressure / Temp / Level Switches	NO	411	E+C		
4	Pressure / Temp / Level Switches	NO	137	BE+C		
5	Pressure / Temp/ Level Transmitters	NO	716	E+C		
6	Pressure / Temp/ Level Transmitters	NO	250	BE+C		
7	Analysers	NO	70	E+C		
8	Analysers	NO	20	BE+C		
9	Flow meters	NO	4	E+C		
10	Flow meters	NO	4	BE+C		
11	DWLI / EWLI	NO	12	E+C		
12	DWLI / EWLI	NO	4	BE+C		
13	RTDs / Thermocouples	NO	583	E+C		
14	RTDs / Thermocouples	NO	150	BE+C		
15	MTM Thermocouples	NO	219	E+C		

RATE SCHEDULE

Sl no	Name of Board / Equipment	UOM	Nos	SCOPE	RATE	AMOUNT
16	MTM Thermocouples	NO	73	BE+C		
17	Bearing thermo Elements	NO	124	E+C		
18	Opacity Monitor with accesories	NO	4	E+C		
19	Relative / Absolute Vibration Sensors (with proximeters)	NO	168	E+C		
20	Shaft Expansion Sensors (with proximeters)	NO	16	E+C		
21	Axial Shift Sensors (with proximeters)	NO	12	E+C		
22	Speed Probes	NO	24	E+C		
23	Calibration of SOV operated Trip Valves	NO	50	E+C		
24	Callibration / commissioning of regulating Control Valves with positioners / LS / PFT	NO	80	E+C		
25	Commissioning of motorised actuators	NO	400	E+C		
26	Flame Scanner Assembly	NO	48	E+C		
27	Pnuematic Power Cylinders with PFT (Boiler)	NO	192	E+C		
28	Limit Switches /Heavy duty Limit Switches (for BTPS)	NO	228	E+C		
29	Air Filter Regulators + I / P Converter	NO	72	E+C		
30	Flexible hoses - 1/4 " (2 meter long) , 1" (3 meter long)	NO	48	E+C		
31	Temperature / controller	NO	40	E+C		
32	Position Transmitters	NO	50	E+C		
33	Junction Boxes – 6/12/24/36/48way	NO	188	E+C		
34	Junction Boxes – 6/12/24/36/48way	NO	60	BE+C		
35	Junction Boxes – 64/72/96 way	NO	241	E+C		
36	Junction Boxes – 64/72/96 way	NO	80	BE+C		
37	SS / Copper Tubing (1/4 " , 1/2 ")	RM	2800	E+C		
38	1/2 , 3/4 " CS impulse Pipe	RM	21000	E+C		
39	1/2 , 3/4 " CS impulse Pipe	RM	3000	BE+C		
40	1/2 , 3/4 " AS impulse Pipe	RM	1300	E+C		
41	1/2 , 3/4 " AS impulse Pipe	RM	500	BE+C		
42	3/4",1/2 " SS impulse Pipe	RM	5160	E+C		
43	Special Pipes – Cr- Mo	RM	2000	E+C		
44	Gi Pipe – 1/2 " , 3/4" , 1" , 1 1/2"	RM	3000	E+C		
45	LOCAL INSTRUMENT RACK (LIR) TYPE A/B	NO	111	E+C		
46	LOCAL INSTRUMENT RACK (LIR) TYPE A/B	NO	60	BE+C		
47	LOCAL INSTRUMENT PANEL (LIE) TYPE A/B	NO	42	E+C		
48	LOCAL INSTRUMENT PANEL (LIE) TYPE A/B	NO	14	BE+C		
49	PC set with monitor / keyboard / power supply unit	NO	30	E+C		
50	PC set with monitor / keyboard / power supply unit	NO	10	BE+C		
51	UCB Loose Supplied Inserts	NO	58	E+C		
O	ELECTRICAL SYSTEMS					
1	500 line Telephone Exchange and the communication network as described in tech details	SET	1	E+C		
2	PA System : The system consists of 3 nos operator console as described in tech details	SET	1	E+C		
3	CCTV System : This consists of Desk Top Monitor as described in tech details	SET	1	E+C		
4	Master Clock System : The system consists of the Main Clock Panel as described in tech details	SET	1	E+C		
				E+C		
P	STATION LIGHTING			E+C		
	The Station Lighting System provided lighting for the entire Power Station – both indoors and outdoors . The System broadly consists of the following sub-systems :					

RATE SCHEDULE

Sl no	Name of Board / Equipment	UOM	Nos	SCOPE	RATE	AMOUNT
1	Lighting Distribution Boards (AC + DC)	--	NO	10	E+C	
2	Lighting Panels (AC + DC)		NO	43	E+C	
3	Lighting Fixtures (AC + DC)		NO	400	E+C	
4	Receptacles		NO	365	E+C	
5	Street Lighting Poles		NO	252	E+C	
6	Emergency Lighting Units		NO	30	E+C	
7	Ceiling Fans		NO	10	E+C	
8	Switch Board for Local Control		NO	70	E+C	
9	Lighting Distribution Boards (AC + DC)	--	NO	20	BE+C	
10	Lighting Panels (AC + DC)		NO	43	BE+C	
11	Lighting Fixtures (AC + DC)		NO	2200	BE+C	
12	Receptacles		NO	60	BE+C	
13	Street Lighting Poles		NO	0	BE+C	
14	Emergency Lighting Units		NO	30	BE+C	
15	Ceiling Fans		NO	0	BE+C	
16	Switch Board for Local Control		NO	70	BE+C	
Q	FIRE SEALING SYSTEM:					
1	Fire Sealing System will be applied to close all cable openings . The system will be Mortar type or Foaming Type .	SQ M		1165	E+C	
R	6.6 kV HT Cu Cable					
1	3C X 120 Sq. mm.	MTR		7500	E+C	
2	3C X 150 Sq. mm.	MTR		1500	E+C	
3	1C X 300 Sq. mm.	MTR		750	E+C	
S	1.1 kV LT Cu Power Cable					
1	3C-240	MTR		5250	E+C	
2	3C-185	MTR		7500	E+C	
3	3C-95	MTR		1500	E+C	
4	3C-50	MTR		2250	E+C	
5	3C-25	MTR		4500	E+C	
6	3C-16	MTR		1500	E+C	
7	3C-10	MTR		7500	E+C	
8	3C-06	MTR		7875	E+C	
9	3C-04	MTR		9000	E+C	
10	3.5C-150	MTR		5625	E+C	
11	3.5C-35	MTR		9375	E+C	
12	1C-630	MTR		5250	E+C	
13	1C-400	MTR		14250	E+C	
14	2C-185	MTR		1125	E+C	
15	2C-50	MTR		750	E+C	
16	2C-25	MTR		8250	E+C	
17	2C-16	MTR		7125	E+C	
18	2C-10	MTR		3000	E+C	
19	2C-06	MTR		2250	E+C	
20	5C-04	MTR		10500	E+C	
21	4C-16	MTR		8625	E+C	
T	1.1 kV LT Cu Control Cable					
1	2C – 2.5 Sq. mm	MTR		78000	E+C	
2	3C – 2.5 Sq. mm	MTR		138000	E+C	
3	4C – 2.5 Sq. mm	MTR		57000	E+C	
4	7C – 2.5 Sq. mm	MTR		84000	E+C	
5	12C – 2.5 Sq. mm	MTR		54000	E+C	
6	19C – 2.5 Sq. mm	MTR		34500	E+C	
7	24C – 2.5 Sq. mm	MTR		3000	E+C	
U	Signal Cable					
1	2P, 0.5	MTR		120500	E+C	
2	4P, 0.5	MTR		341000	E+C	
3	6P, 0.5	MTR		43000	E+C	
4	8P,0.5	MTR		79500	E+C	
5	12P, 0.5	MTR		20500	E+C	
6	24P, 0.5	MTR		3000	E+C	

RATE SCHEDULE

Sl no	Name of Board / Equipment	UOM	Nos	SCOPE	RATE	AMOUNT
7	Compensating Cable	MTR	74000	E+C		
V	Special Cables					
1	UTP Cable for DCS	MTR	18750	E+C		
2	Fibre Optic cables for CCTV	MTR	11250	E+C		
3	Pre fab cables	MTR	3750	E+C		
W	Galvanised Ladder Type Cable Tray complete with Coupler Plates, Fasteners, Clamps and Fixing Hardware					
1	600 mm wide	MTR	12,500	E+C		
2	450 mm wide	MTR	7,500	E+C		
3	300 mm wide	MTR	1,000	E+C		
4	150 mm wide	MTR	750	E+C		
5	100 mm wide	MTR	500	E+C		
X	Galvanised Perforated Type Cable Tray complete with Coupler Plates, Fasteners, Clamps and Fixing Hardware					
1	600 mm wide	MTR	3,000	E+C		
2	450 mm wide	MTR	1,000	E+C		
3	300 mm wide	MTR	2,500	E+C		
4	150 mm wide	MTR	750	E+C		
Y	Earthing System					
1	Installation of Above ground Earthing Conductor	MTR	13,000	E+C		
2	Installation of Below ground Earthing Conductor	MTR	10,000	E+C		
3	Installation of Earthing Electrodes	NOS	150	E+C		
Z	Hot dip galvanised MS sheet 1.6mm thick for covering of cable shaft	SQ. M	150	E+C		
					TOTAL	