

# **TENDER SPECIFICATION**

**No. BHE/PW/PUR/BHT-CNI/659**

FOR

HANDLING AT SITE STORES/STORAGE YARD, TRANSPORTATION TO SITE OF WORK, COMPLETE ERECTION, CHECKING OF CALIBRATION, TESTING, COMMISSIONING AND HANDING OVER OF CONTROL & INSTRUMENTATION WORKS FOR BOILER, STEAM TURBINE, TURBO-GENERATOR AND THEIR AUXILIARIES, STATION C&I OF 2X500 MW UNIT 1&2

AT

MAHARASHTRA STATE POWER GENERATION COMPANY LTD  
BHUSAWAL THERMAL POWER STATION (EXPANSION PROJECT)

2x500 MW

BHUSAWAL, DIST-JALGAON

MAHARASHTRA

## **PART II - PRICE BID**



**BHARAT HEAVY ELECTRICALS LIMITED**

(A Govt. of India Undertaking)

POWER SECTOR - WESTERN REGION

345, KINGS WAY - NAGPUR 440 001

BHARAT HEAVY ELECTRICALS LIMITED  
(A GOVERNMENT OF INDIA UNDERTAKING)  
POWER SECTOR - WESTERN REGION  
SHREEMOHINI COMPLEX  
345, KINGSWAY - NAGPUR 440 001

**TENDER SPECIFICATION DOCUMENT ISSUE DETAILS**

HANDLING AT SITE STORES/STORAGE YARD, TRANSPORTATION TO SITE OF WORK, COMPLETE ERECTION, CHECKING OF CALIBRATION, TESTING, COMMISSIONING AND HANDING OVER OF CONTROL & INSTRUMENTATION WORKS FOR BOILER, STEAM TURBINE, TURBO-GENERATOR AND THEIR AUXILIARIES, STATION C&I OF 2X500 MW UNIT 1&2

AT

MAHARASHTRA STATE POWER GENERATION COMPANY LTD  
BHUSAWAL THERMAL POWER STATION (EXPANSION PROJECT)  
BHUSAWAL, DIST-JALGAON  
MAHARASHTRA

EARNEST MONEY DEPOSIT: Please refer Section-15 of Special Conditions of Contract

LAST DATE AND TIME FOR RECEIPT OF OFFERS: Please refer forwarding letter

THESE TENDER SPECIFICATION DOCUMENTS CONTAINING PART-I TECHNICAL BID SPECIFICATION AND PART- II PRICE BID FORMAT ARE ISSUED TO:

M/s. ....

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PLEASE NOTE:

THESE TENDER DOCUMENTS ARE NOT TRANSFERABLE.  
For Bharat Heavy Electricals Limited

Dy. GEN MANAGER (Purchase)  
PLACE: NAGPUR  
DATE:

**BHARAT HEAVY ELECTRICALS LIMITED: PSWR: Nagpur**  
**T.S. No. BHE/PW/PUR/BHT-CNI/659**  
**PRICE BID**

NAME OF THE WORK: HANDLING AT SITE STORES/STORAGE YARD, TRANSPORTATION TO SITE OF WORK, COMPLETE ERECTION, CHECKING OF CALIBRATION, TESTING, COMMISSIONING AND HANDING OVER OF CONTROL & INSTRUMENTATION WORKS FOR BOILER, STEAM TURBINE, TURBO-GENERATOR AND THEIR AUXILIARIES, STATION C&I OF 2X500 MW UNIT 1&2 AT MSPGCL BHUSAWAL THERMAL POWER STATION (EXPANSION PROJECT) BHUSAWAL, DIST-JALGAON MAHARASHTRA

Description of Work	TOTAL LUMP SUM AMOUNT	
	In Figures (in Rupees)	In Words (in Rupees)
Scope of work as mentioned in the tender specification no. BHE/PW/PUR/BHT-CNI/659 and the <b>BOQ attached as part of Price Bid</b>		

**Note:**

1. Amount quoted shall be considered as the total lumpsum amount for the complete BOQ as given in Part-II: Price Bid.
2. Individual item rates shall be in proportion to the weightages specified in the BOQ
3. Refer Clause 11.6.0 of tender specification for variation in quantity.

**Date**

**Signature & Official Seal of Bidder**

BHARAT HEAVY ELECTRICALS LIMITED  
PS-WR NAGPUR  
T.S. No. BHE/PW/PUR/BHT-CNI/659  
BILL OF QUANTITIES

1 of 6

SL. NO.	DESCRIPTION	TOTAL QTY	UOM	PERCENTAGE WEIGHTAGE
A1	Control Panel (approx L1000 X B1000 X H2500, 400Kg ) - one panel	40	Nos	0.554%
A2	Control Panel (approx L1001 to 1500 X B1000 X H2500, 800 Kg) - suit of two panels	69	Nos	1.530%
A3	Control Panel (approx L1501 to 2250 X B1000 X H2500, 1200 Kg) - suit of three panels	16	Nos	0.443%
A4	Control Panel (approx L2251 to 3000 X B1000 X H2500, 1600 Kg) - suit of four panels	2	Nos	0.067%
A5	Unit Control panel	2	Set	0.166%
A6	Electrical control panel 1900x1000x2355	2	Set	0.111%
A7	Transducer Panel	2	Set	0.044%
A8	Master and Slave Clock system	2	Set	0.100%
A9	Generator Instrumentation cabinet including annunciator (1230 x 1060 x 2550, 600 Kgs)	2	No	0.067%
A10	Feeder Remote Power Cabinet, OD= 1200X2315X600 MM, approx Wt. 636 kg/ panel	16	No	0.266%
A11	120 KVA UPS with inverter, bypass line equipment, ACDB and 750 AH Battery system	2	Set	0.222%
A12	DCDB for 24 V DC Charger for SG &TG pkg.	2	Set	0.055%
A13	DCDB for 24 V DC Charger for BOP pkg.	2	Set	0.055%
A14	Vibration monitoring system for Fans and Pulverisers	2	Set	0.166%
A15	Vibration monitoring system for main turbine / generator	2	Set	0.222%
A16	Vibration monitoring system for BFP/CEP/ACWP/ECWP	2	Set	0.166%
A17	Vibration monitoring system for TDBFPs	4	Sets	0.166%
A18	DC motor starter box for scanner fan	2	No	0.033%
A19	Control panels for Centrifuges	6	Nos	0.100%
A20	Positioner cabinets (380x380x210) for LPBP CV1, LPBP CV2, Spray water CV	6	Nos	0.017%
A21	Control Panel for HP dosing system (1000x800x2000, 3.0 MT)	2	No	0.078%
A22	Burner Tilt Shear Pin Failure Indication Box	8	Nos	0.055%
A23	Air Heater Rotor Stoppage Alarm Box	8	Sets	0.055%
A24	FSSS Local Oil Gun Maintenance Switch Box	40	Nos	0.067%
A25	Local Instrument racks (LIR)	164	Nos	1.454%
A26	Local Instrument enclosures (LIE)	120	Nos	1.663%
A27	NETWORK PANELS & Power Distribution box(800x800x2100)	8	Nos	0.133%
A28	WALL MOUNTED NETWORK ENCLOSURES (500x600x600)	6	Sets	0.042%
A29	HART MANAGEMENT SYSTEM including CABINET	2	Set	0.055%
A30	Electronic Water Level Indicator (EWLI)	6	Sets	0.166%

SL. NO.	DESCRIPTION	TOTAL QTY	UOM	PERCENTAGE WEIGHTAGE
A31	Steam tube leak detection sysetm, 800x2315x800 mm, approx wt. 600kg/panel	2	Set	0.111%
A32	Direct Water Level Gauge	4	Sets	0.033%
A33	Hydrogen Purity analyser	2	No	0.055%
A34	Fire Protection switch	8	No	0.016%
A35	Reverse Rotation Indicators for TDBFP & MDBFP	6	No	0.025%
		0		0.000%
B1	Solenoid valves (3 way, AC/DC, 1/4", 1/2", 1", NPT/BSP, single/dual coil)	180	Nos	0.150%
B2	HEA Exciter system	40	Sets	0.188%
B3	Flame Scanner Head Assembly	88	Nos	0.366%
B4	Air filter regulators / Lubricators (1/2", 1", 0-6KG, 0-10 KG)	200	Nos	0.166%
B5	Speed Regulators / Air lock valves in oil gun corner rack	40	Nos	0.067%
B6	Heavy Duty Limit Switch	40	Nos	0.089%
B7	max Engineering / operator / storian / LAN / WAN / Shift in charge / stn in charge / gateway / interface PC / HART etc., PC/Server Station with ASCII Keyboard, Mouse & 21" Colour Monitor, individual UPS	40	Sets	0.277%
B8	Printers (80/132 col Dot Matrix, A3 Inkjet, A3 Laserjet, etc)	20	Sets	0.067%
B9	LVS (Large Video Screen) made up of 5X1 matrix. Each LVS of DLP/LCD type, Rear projection type, 67 inches diagonal size, with 1024x768 resolution non interlaced	6	Sets	0.200%
B10	Laboratory Setup for Customer	1	Set	0.111%
B11	Vertical indicators (moving coil / bar graph)	40	Nos	0.078%
B12	Flow integrators	4	Nos	0.008%
B13	Digital / bargraph indicators	98	Nos	0.190%
B14	Recorder 24 / 30 Channel	4	Nos	0.017%
B15	Recorder 3 channel	2	Nos	0.006%
B16	Speed switch / Speed detector	8	Nos	0.022%
B17	Moisture Sensor probe and dew point monitor	4	Set	0.089%
B18	Rotor Earth fault Detector	2	Nos	0.008%
B19	Coal Bunker Level Monitoring Strain gauge (8 per set)	16	Sets	0.266%
B20	CO Analyzer (in situ type)	6	Sets	0.100%
B21	O2 (OXYGEN ) Analyzer	12	Set	0.200%
B22	Dust emission monitor (Installation at around 88 M in chimney)	2	Sets	0.055%
B23	SWAS Sample handling system with racks & Sample conditioning panel with chiller & analyzers	2	Sets	0.333%
B24	Analyzer Panel including various analyser	2	Set	0.222%
B25	Flue Gas Analyzer-SOX/NOX/COWith Panel	2	Sets	0.111%
B26	Alkalyser Unit	2	Nos	0.033%
		0		0.000%
C1	Pressure Switch / DP Switch / DP indicating switch	388	Nos	0.538%
C2	Temperature Switch / Thermostat	40	Nos	0.055%
C3	Float type Level Switch	66	Nos	0.201%
C4	Electronic Level Switch (with amplifier, etc), Capacitance or conductivity type	44	Nos	0.195%

SL. NO.	DESCRIPTION	TOTAL QTY	UOM	PERCENTAGE WEIGHTAGE
C5	Electronic Level Transmitter (with amplifier, etc), Capacitance or conductivity type	52	Nos	0.245%
C6	Flow switch (Mechanical / Electronic)	4	Nos	0.011%
C7	Pressure Gauge / DP gauge/DP Indicator	1048	Nos	1.452%
C8	Temperature Gauge (all types)	500	Nos	0.693%
C9	Level Indicator / Level Gauge	46	Nos	0.191%
C10	Flow indicator / Flow Gauge / Flow meter/Acoustic flow meter (coal)	20	Nos	0.083%
C11	Pressure / DP / Flow (DP type) / Level -Transmitter	488	Nos	1.352%
C12	Electronic Pressure / DP Transmitter	520	Nos	1.441%
C13	Level Transmitter (displacer type)	40	Nos	0.166%
C14	By Pass Rotameter	6	Nos	0.025%
C15	Flow Transmitter (Pulse / mass flow / target type) including flanges	4	Nos	0.028%
C16	Thermocouple / RTDs with thermowell (all types) along with converters wherever applicable	3090	Nos	4.282%
C17	MTM Thermocouple upto 17 M length	116	Nos	0.354%
C18	MTM Thermocouple over 17 M upto 22 M length	312	Nos	1.038%
C19	MTM Thermocouple over 22 M upto 28 M length	64	Nos	0.222%
C20	MTM Thermocouple over 28 M upto 35 M length	12	Nos	0.045%
C21	Thermocouple assy with 6 / 9 Cr-Al MI T/C along with integral JB	20	Nos	0.078%
C22	I/P converters	184	Nos	0.255%
C23	Pneumatic Pressure controller with accessories	8	Nos	0.038%
C24	Position Transmitters	136	Nos	0.188%
C25	Conductivity cells and switch	4	Nos	0.013%
C26	Conductivity Sensor and Transmitter	12	Nos	0.040%
C27	Vacuum switch	6	Nos	0.008%
C28	SADC Cylinders	176	Nos	0.976%
				0.000%
D1	Pulveriser Lube oil skid	16	Sets	0.222%
D2	Fan & Mill Lube oil skid	12	Sets	0.233%
D3	Furnace Temperature probe including local panel/box and all accessories	4	Nos	0.022%
D4	Coal Feeder local panel/ instruments commissioning	16	Nos	0.133%
D5	Electrical regulating drives: (Valve, damper, scoop)	12	Nos	0.050%
D6	Pneumatic regulating drives: (Valve, damper) incl SADC, Burner tilt	330	Nos	0.915%
D7	Commissioning of Hydraulic actuators	80	Nos	0.399%
D8	Condenser vacuum pump system	2	Set	0.044%
D9	Corner valve/ Trip valves commissioning	40	Nos	0.078%
D10	Open/Close type pneumatic gates / dampers / valves	200	Nos	0.554%
D11	Mill Discharge Valve power cylinders (set of four)	20	Sets	0.083%
D12	Only healthiness checking of embedded RTD / T/C	900	Nos	0.499%
D13	Limit Switches (checking and adjusting only).	185	Nos	0.077%
D14	ERV Controller	4	Nos	0.061%
D15	LP Dosing system(Ammonia and Hydrazine)	2	Set	0.067%
D16	CWP Butterfly valves	6	Set	0.083%
		0		0.000%
E1	GI earthing wire	7000	Meters	0.175%

SL. NO.	DESCRIPTION	TOTAL QTY	UOM	PERCENTAGE WEIGHTAGE
E2	Flexible pipe 1 1/2"	500	Meters	0.042%
E3	Aluminium strip (300 x 25 x 2)	1800	Nos	0.299%
E4	GI Strip (300 x 25 x 2)	3400	Nos	0.612%
E5	MS Flat 50 x 6 mm	3768	Meters	0.522%
E6	Hoses-1/4", 1/2", 1", SS/Teflon, Braided/unbraided, upto 5M length	152	Nos	0.034%
E7	Perforated cable tray and accessories (with or without cover) 50mm	7000	Meters	1.261%
E8	Perforated cable tray and accessories (with or without cover) 100mm	12000	Meters	2.494%
E9	Perforated cable tray and accessories (with or without cover) 150mm	2900	Meters	0.683%
E10	Perforated cable tray and accessories (with or without cover) 300mm	200	Meters	0.053%
E11	Cantilever arm for 100 mm tray	1660	Nos	0.138%
E12	Cantilever arm for 150 mm tray	2220	Nos	0.246%
E13	Single channel (accessory for traywork)	3880	Meters	0.667%
E14	Base plate (for Single channel: accessory for traywork)	3880	Nos	0.538%
E15	Cable duct 60 x 60 x 1000	400	Meters	0.083%
E16	Cable duct 100 x 100 x 1000	100	Meters	0.024%
E17	Cable duct 180 x 100 x 1000	200	Meters	0.058%
E18	Cable duct 250 x 100 x 1000	200	Meters	0.067%
		0		0.000%
F1	Screened Copper Cable 2P x 0.5 sqmm armoured / unarmoured	106560	Meters	2.953%
F2	Screened Copper Cable 4P x 0.5 sqmm armoured / unarmoured	486060	Meters	14.817%
F3	Screened Copper Cable 8P x 0.5 sqmm armoured / unarmoured	246880	Meters	8.210%
F4	Screened Copper Cable 10P / 12P x 0.5 sqmm armoured / unarmoured	57800	Meters	2.082%
F5	Screened Copper Cable 16P x 0.5 sqmm armoured / unarmoured	4000	Meters	0.155%
F6	Screened Copper Cable 20P x 0.5 sqmm armoured / unarmoured	22000	Meters	0.914%
F7	Screened Copper cable 5C/7C x 1.5 sq. mm armoured/unarmoured	33000	Meters	1.463%
F8	Screened Copper cable 5C x 2.5 sq. mm armoured/unarmoured	23200	Meters	1.093%
F9	2C x 2.5 sq. mm, Control cable	400	Meters	0.012%
F10	4C x 1.5 sq. mm, Control cable	3600	Meters	0.120%
F11	10C x 2.5 sq. mm, Control cable	17000	Meters	0.707%
F12	10C x 1.5 sq. mm, Control cable	32000	Meters	1.241%
F13	Compensating cable 2P x 0.5 sqmm type Tx/Sx/Kx unarmoured/armoured	6000	Meters	0.183%
F14	Compensating cable 2P x 1.5 sqmm type Tx/Sx/Kx unarmoured/armoured	12800	Meters	0.426%
F15	Compensating cable 4P x 1.5 sqmm type Tx/Sx/Kx unarmoured/armoured	12000	Meters	0.432%

SL. NO.	DESCRIPTION	TOTAL QTY	UOM	PERCENTAGE WEIGHTAGE
F16	Compensating cable 6P x 1.5 sqmm type Tx/Sx/Kx unarmoured/armoured	20000	Meters	0.776%
F17	Copper Cable 2 or 3 triad, 0.5/1.5 sqmm armoured/unarmoured	13000	Meters	0.540%
F18	THERMOCOUPLE EXT CABLE, 2PX0.5SQMM NICR/CUCU-NI	24000	Meters	0.798%
F19	1Cx95 sqmm Cu cable	26000	Meters	1.369%
F20	1Cx16 sqmm Cu cable	10000	Meters	0.277%
F21	2Cx6 sqmm Cu cable	36000	Meters	1.197%
F22	Laying, etc of Optical fibre cables on cable trays, conduits etc (termination supervision by other agency) with minor civil works	3000	Meters	0.124%
F23	Network UTP Cables (special termination using UTP connectors involved)	8500	Meters	0.306%
		0		0.000%
G1	Junction boxes upto 48 way	286	Nos	0.515%
G2	Junction boxes above 48 way	350	Nos	0.679%
G3	CJCB Junction boxes upto 48 way	256	Nos	0.532%
G4	CJCB Junction boxes above 48 way	10	Nos	0.022%
G5	2PB or 3PB Pushbutton box	36	Nos	0.060%
G6	Impulse Pipe A106 Gr C 3/4" NB Sch 80	5200	Meters	2.017%
G7	Impulse Pipe A106 Gr B 1" NB Sch 80	400	Meters	0.177%
G8	Impulse Pipe A106 Gr C 1/2" NB Sch 160	2800	Meters	0.970%
G9	Impulse Pipe A106 Gr C 1/2" NB Sch 80	9000	Meters	2.993%
G10	Impulse Pipe A213 TP316H Gr C 1/2" NB Sch 40	1200	Meters	0.416%
G11	Impulse Pipe A213 TP316H Gr C 1/2" NB Sch 160	1500	Meters	0.561%
G12	Impulse Pipe A335 P22 1/2" NB XXS	1400	Meters	0.621%
G13	Impulse pipe AS 3/4" SCH 80 (D25 x4 mm)	1400	Meters	0.543%
G14	Impulse pipe FCS 3/4" SCH 80 (D25 x 4 mm)	4800	Meters	1.929%
G15	Tube OD (21.30 x 3.73) SA106 Gr B	1800	Meters	0.748%
G16	Tube OD (33.40 x 4.55) SA106 Gr B	3500	Meters	1.552%
G17	Impulse pipe CS 1" SCH 160 (D33.4 x 6.35 mm)	100	Meters	0.043%
G18	Impulse pipe CS 3/2" SCH 40 (D48.3 x 3.68 mm)	100	Meters	0.044%
G19	Impulse pipe CS 3/2" SCH 160 (D48.3 x 7.13 mm)	100	Meters	0.046%
G20	Impulse pipe CS 1/4" (D13.5 x 2.6 mm)	674	Meters	0.168%
G21	Impulse pipe CS (D17.2 x 1.8 mm)	200	Meters	0.058%
G22	Impulse pipe SS 1/2" SCH 160	200	Meters	0.078%
G23	Impulse pipe SS 1/2" (D21.3 x 2.6 mm) Sch 40	2260	Meters	0.908%
G24	SS tube D6 x 1.0/1.5mm	120	Meters	0.023%
G25	CS tube D16 x 2.6	1000	Meters	0.346%
G26	CS tube DN 80	40	Meters	0.016%
G27	2" CS pipe Sch 40	400	Meters	0.155%
G28	Impulse pipe AS 1/4" (D13.5 x 2.6 mm)	128	Meters	0.035%
G29	GI Pipe (1/2", 1") Heavy grade	6000	Meters	1.247%
G30	GI Pipe (1.5 ", 2") Heavy grade	1020	Meters	0.382%
G31	Copper tube 6mm/8mm / 1/4" (Sheathed / bare)	5800	Meters	0.803%
G32	Copper tube 3/8" (Sheathed / bare)	200	Meters	0.039%
G33	Structural steel for fabrication	60	Tons	1.995%
G34	MS Sheet 3 to 4 mm thick	20	Sq. M.	0.078%



SL. NO.	DESCRIPTION	TOTAL QTY	UOM	PERCENTAGE WEIGHTAGE
G35	Assembly of JB mounting frames (approx 1100 x 424 x 700)	28	Nos	0.132%
G36	Assembly of JB mounting frames (approx 1100 x 718 x 1700)	42	Nos	0.244%
G37	Assembly of JB mounting frames (approx 2100 x 718 x 1700)	8	Nos	0.055%
G38	Assembly of JB mounting frames (approx 1600 x 718 x 1700)	22	Nos	0.134%
G39	Assembly of JB mounting frames (approx 1600 x 585 x 1700)	10	Nos	0.058%
G40	Assembly of JB mounting frames (approx 2100 x 470 x 1700)	10	Nos	0.067%
G41	Assembly of local gauge board 1400 x 450 x 1900 mm	28	Nos	0.194%
G42	Plant Control Desk / CRT desk	2	Sets	0.222%
G43	Computer furniture for all Servers, PCs, Printers	2	Sets	0.194%
	TOTAL .			100.000%