

TENDER SPECIFICATION
NO: BHE/PW/PUR/VNT-CNI/792

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 AND ITS AUXILIARIES, TURBOGENERATOR AND ITS AUXILIARIES FOR 2X500 MW VINDHYACHAL SUPER THERMAL POWER PROJECT **UNIT NOS -11 & 12**

AT

VINDHYACHAL SUPER THERMAL POWER STATION

NTPC LIMITED

VINDHYACHAL

SIDDHI, MADHYA PRADESH

VOLUME II - PRICE BID



BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

POWER SECTOR - WESTERN REGION

345, KINGS WAY - NAGPUR 440 001

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VOLUME – II-PRICE BID

THESE TENDER DOCUMENTS CONTAINING VOLUME-II PRICE BID IS ISSUED TO:

M/s.....

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(THESE TENDER DOCUMENTS ARE NOT TRANSFERABLE)

FOR BHARAT HEAVY ELECTRICALS LIMITED

ADDL. GENERAL MANAGER (PURCHASE)

PLACE: NAGPUR

DATE :

BHARAT HEAVY ELECTRICALS LIMITED : PSWR : Nagpur
T.S. No. BHE/PW/PUR/VNT-CNI/792
RATE SCHEDULE: VOLUME-II PRICE BID (Page 1 of 19)

SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
I1.0	Cable tray and Accessories					I.1.0
I1.0.1	Perforated cable tray and accessories (with or without cover) 50mm	2625	Meter			
I1.0.2	Perforated cable tray and accessories (with or without cover) 100mm	11400	Meter			
I1.0.3	Perforated cable tray and accessories (with or without cover) 150mm	11565	Meter			
I3.0	Cable laying including earthing wires					I.3.0
I3.0.1	Screened Copper Cable 2P x 0.5 sqmm armoured / unarmoured	38200	Meter			
I3.0.2	Screened Copper Cable 4P x 0.5 sqmm armoured / unarmoured	318000	Meter			
I3.0.3	Screened Copper Cable 8P x 0.5 sqmm armoured / unarmoured	121400	Meter			
I3.0.4	Screened Copper Cable 10P / 12P x 0.5 sqmm armoured / unarmoured	46100	Meter			
I3.0.5	Screened Copper Cable 16P x 0.5 sqmm armoured / unarmoured	1200	Meter			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
13.0.6	Screened Copper Cable 10P x 0.6 sqmm armoured / unarmoured	180	Meter			
13.0.7	Screened Copper Cable 2P x 1.3 sqmm armoured / unarmoured	22000	Meter			
13.0.8	Screened Copper Cable 2P/4C x 1.5 sqmm armoured / unarmoured	15600	Meter			
13.0.9	Screened Copper Cable 19C x 1.5 sqmm armoured / unarmoured	7800	Meter			
13.0.10	Screened Copper Cable 2C x 2.5 sqmm armoured / unarmoured	28800	Meter			
13.0.11	Screened Copper Cable 3C x 2.5 sqmm armoured / unarmoured	121400	Meter			
13.0.12	Screened Copper Cable 5C x 2.5 sqmm armoured / unarmoured	8000	Meter			
13.0.13	Screened Copper Cable 7C x 2.5 sqmm armoured / unarmoured	6000	Meter			
13.0.14	Screened Copper Cable 10C x 2.5 sqmm armoured / unarmoured	600	Meter			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
13.0.15	Screened Copper Cable 16C x 2.5 sqmm armoured / unarmoured	20000	Meter			
13.0.16	Screened Copper Cable 3C x 16 sqmm armoured / unarmoured	4000	Meter			
13.0.17	Copper Cable 2 or 3 triad, 0.5/1.5 sqmm armoured/unarmoured	100	Meter			
13.0.18	Copper Cable 6 triad, 0.5/1.5 sqmm armoured/unarmoured	100	Meter			
13.0.19	Compensating cable 1P/2P x 0.5 sq mm type Tx/Sx/Kx unarmoured/armoured	20000	Meter			
13.0.20	Compensating cable 4P x 1.3 sqmm type Tx/Sx/Kx unarmoured/armoured	100	Meter			
13.0.21	Compensating cable 6P x 1.3 sqmm type Tx/Sx/Kx unarmoured/armoured	100	Meter			
13.0.22	Special Cable 5C x 1.5 Sq.mm	1000	Meter			
13.0.23	Laying, etc of Optical fibre cables on cable trays, conduits etc (termination supervision by other agency) with minor civil works	8000	Meter			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
13.0.24	Network UTP Cables (special termination using UTP connectors involved)	12368	Meter			
13.0.25	Cable duct 100 x 100 x 1000	400	Meter			
13.0.26	Cable duct 180 x 100 x 1000	200	Meter			
13.0.27	Cable duct 250 x 100 x 1000	200	Meter			
13.0.28	Hoses-1/4", 1/2" , 1", SS/Teflon, Braided/unbraided, upto 5M length	634	Meter			
14.0	Junction box/Push Button station					14.0
14.0.1	Junction boxes upto 48 way	768	No			
14.0.2	Junction boxes above 48 way	366	No			
14.0.3	CJCB Junction boxes upto 48 way	10	No			
14.0.4	CJCB Junction boxes above 48 way	10	No			
14.0.5	2PB or 3PB Pushbutton box	10	No			
14.0.6	Fire protection switch in IP65 box	4	No			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
14.0.7	FSSS Local Oil Gun Maintenance Switch Box	40	No			
15.0	Conduits/Impulse pipe/tubes					1.5.0
15.0.1	Impulse pipe CS ½" SCH 80 (D21.3 x 3.73 mm)	1800	Meter			
15.0.2	Impulse pipe AS ½" SCH 160 (D21.3 x 4.78 mm)	750	Meter			
15.0.3	Impulse pipe CS 1" SCH 80 (D33.4 x 4.55 mm)	3000	Meter			
15.0.4	Impulse pipe AS P22 1/2" NB SCH XXS	450	Meter			
15.0.5	Impulse pipe AS P22 3/4" NB SCH80 (D25 x 4 mm)	500	Meter			
15.0.6	Impulse pipe AS P91 1/2" NB SCH XXS	120	Meter			
15.0.7	Impulse pipe CS GR C 1/2" NB SCH 80	2400	Meter			
15.0.8	Impulse pipe CS GR C 3/4" NB SCH 80	3200	Meter			
15.0.9	Impulse pipe CS GR C 1/2" NB SCH 160	700	Meter			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
15.0.10	Impulse pipe ASTM CS GR C 1" NB SCH 80	450	Meter			
15.0.11	Impulse pipe CS (D16 x 2.6mm)	3800	Meter			
15.0.12	CS pipe 2" Sch 40	50	Meter			
15.0.13	GI Pipe (1/2", 1") Heavy grade	3880	Meter			
15.0.14	Seamless CS tube 13.5 x 2.6 mm	460	Meter			
15.0.15	Seamless CS tube 21.3 x 2.3 mm	822	Meter			
15.0.16	Seamless SS tube 13.5 x 2.6 mm	60	Meter			
15.0.17	Seamless SS tube 21.3 x 2.3 mm	640	Meter			
15.0.18	Seamless AS tube 13.5 x 2.6 mm	24	Meter			
15.0.19	Seamless AS tube 21.3 x 2.3 mm	850	Meter			
15.0.20	CS tube 33.7 x 3.38 mm	4	Meter			
15.0.21	CS tube DN 80	40	Meter			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
15.0.22	Copper tube 6mm/8mm / 1/4" (Sheathed / bare)	7000	Meter			
15.0.23	Copper tube 3/8" (Sheathed / bare)	200	Meter			
15.0.24	Copper tube 1/2" to 1" (Sheathed / bare)	50	Meter			
16.0	Miscellaneous Structural steel including frames for Panels/Racks/Instruments, supports for cable tray/pipes/tubes, Canopies etc					1.6.0
16.0.1	Structural steel for fabrication	16	Tons			
16.0.2	Aluminium strip (25 x 3 mm)	1980	No			
16.0.3	Assembly of JB mounting frames (approx. dim. 1700 x 1600 x 750 mm)	18	No			
16.0.4	Assembly of JB mounting frames (approx. dim.1500 x 800 x 1800 mm)	4	No			
16.0.5	Assembly of JB mounting frames (approx. dim.1700 x 1600 x 850 mm)	4	No			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
16.0.6	Assembly of JB mounting frames (approx. 700 x1100 x 450 mm)	6	No			
16.0.7	Assembly of JB mounting frames (approx. 1700 x2600 x 150 mm)	10	No			
16.0.8	Assembly of JB mounting frames (approx. 1500 x2100 x 500 mm)	6	No			
17.0	Panels/Cubicles/Racks/Enclosures/Monitors/Computer/Computer peripheral/PLCs/UPS/Batteries					1.7.0
17.0.1	Assembly of local gauge board (1400 x 450 x1900 mm)	22	No			
17.0.2	Control Panel (approx. weight 400kg, 1000(L) X 1000(B) X 2500(H) mm) - one panel	14	No			
17.0.3	Control Panel (approx. weight 800kg, 1500(L) X 1000(B) X 2500(H) mm) - suit of two panels	38	No			
17.0.4	Control Panel (approx. weight 1200kg, 2250(L) X 1000(B) X 2500(H) mm) - suit of three panels	20	No			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
17.0.5	Control Panel (approx. weight 1600kg, 3000(L) X 1000(B) X 2500(H) mm) - suit of four panels	2	No			
17.0.7	Control Panel for HP dosing system (approx. weight 3000Kg, 1000(L) x 800(B) x 2000(H) mm)	2	No			
17.0.8	Gravimetric Feeder Remote Panel (approx. weight 636kg, 1400(L) x 610(B) x 2365(H) mm)	20	No			
17.0.9	Elevator control panel	4	No			
17.0.10	Control panels for Centrifuges	8	No			
17.0.11	Steam leak detection (STLD) system panel (approx. 800(L) x 2315(B) x 800(H) mm)	4	Set			
17.0.12	Furnace flame viewing system - remote panel (approx. weight 300kg, 700(L) x 2100(B) x 700(H) mm)	2	Set			
17.0.13	Furnace flame viewing system - local panel (approx. weight 100kg, 1220(L) x 1470(B) x 610(H) mm)	8	Set			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
17.0.14	NETWORK PANELS (approx. 800 x 800 x 2100 mm)	8	No			
17.0.15	Vibration monitoring system for main turbine / generator	2	Set			
17.0.16	Vibration monitoring system for TDBFP	4	Set			
17.0.17	Vibration monitoring system for Generator end winding	2	Set			
17.0.18	DC motor starter box for scanner fan	2	No			
17.0.19	Burner Tilt Shear Pin Failure Indication Box	12	No			
17.0.20	Air Heater Rotor Stoppage Alarm Box	4	Set			
17.0.21	Electronic Water Level Indicator (EWLI)	8	Set			
17.0.22	LP Dosing sysetm	4	Set			
17.0.23	Condenser vacuum pump system	2	Set			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
17.0.24	Generator Instrumentation cabinet including annunciator (approx. weight 600 Kg, 1230 x 1060 x 2550 mm)	2	No			
17.0.25	Acoustic pyrometer remote cabinet including PC station (approx. 1400 x 2365 x 800 mm)	2	Set			
17.0.26	Positioner cabinets (approx. 380 x 380 x 210 mm) for LPBP CV1, LPBP CV2, Spray water CV	4	No			
17.0.27	Local Instrument racks (LIR)	122	No			
17.0.28	Local Instrument enclosures (LIE)	86	No			
17.0.29	WALL MOUNTED NETWORK ENCLOSURES (approx. 500 x 600 x 600 mm)	2	Set			
17.0.30	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	30	Set			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
17.0.31	Printers (80/132 col Dot Matrix, A3 Inkjet, A3 Laserjet, etc)	8	Set			
17.0.32	Mini UPS for computers	4	No			
17.0.33	Graphical Interface Units	4	Set			
17.0.34	Computer furniture for all Servers, PCs, Printers	4	Set			
17.0.35	240V UPS Distribution boards	8	No			
17.0.36	24 V DC Battery Charger for SG Main with each set comprising of 2 chargers, 1 DCDB and 1 battery Bank	4	Set			
17.0.37	24 V DC Battery Charger for TG Main with each set comprising of 2 chargers, 1 DCDB and 1 battery bank	4	Set			
17.0.38	24 V DC Battery Charger for FOPH with each set comprising of 2 chargers, 1 DCDB and 1 battery bank	1	Set			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
17.0.39	24 V DC Battery Charger for Auxillary Boiler with each set comprising of 2 chargers, 1 DCDB and 1 battery bank	1	Set			
18.0	Instruments/Devices including sensors/Cells/Probes etc					1.8.0
18.0.1	Latching relay 24V, 5A	8	No			
18.0.2	Moisture Sensor probe and dew point monitor	2	Set			
18.0.3	Furnace Temperature probe including local panel/box and all accessories	4	No			
18.0.4	Air filter regulators / Lubricators (1/2", 1", 0-6KG, 0-10 KG)	136	No			
18.0.5	Speed Regulators / Air lock valves in oil gun corner rack	40	No			
18.0.6	Solenoid valves (3 way, AC/DC, 1/4", 1/2", 1", NPT/BSP, single/dual coil)	314	No			
18.0.7	Pneumatic Pressure controller with accessories	12	No			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
18.0.8	Heavy Duty Limit Switch	150	No			
18.0.9	Limit Switches (checking and adjusting only).	200	No			
18.0.10	Speed switch / Speed detector	16	No			
18.0.11	Pressure Switch / DP Switch / DP indicating switch	110	No			
18.0.12	Temperature Switch / Thermostat	50	No			
18.0.13	Float type Level Switch	32	No			
18.0.14	Electronic Level Switch (with amplifier, etc), Capacitance or conductivity type	60	No			
18.0.15	Conductivity type Level Switch for CRH Drain Pot	2	Set			
18.0.16	Vacuum switch	6	No			
18.0.17	Flow switch (Mechanical / Electronic)	8	No			
18.0.18	Ultrasonic Transmitters	10	No			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
18.0.19	Pressure / DP / Flow (DP type) / Level - Transmitter	406	No			
18.0.20	Level Transmitter (displacer type)	22	No			
18.0.21	Flow Transmitter (Pulse / mass flow / target type) including flanges	6	No			
18.0.22	Temperature transmitters	972	No			
18.0.23	Speed transmitter	12	No			
18.0.24	Position Transmitters	20	No			
18.0.25	Electronic Level Transmitter (with amplifier, etc), Capacitance or conductivity type	8	No			
18.0.26	Pressure Gauge / DP gauge/DP Indicator	852	No			
18.0.27	Temperature Gauge (all types)	584	No			
18.0.28	Level Indicator / Level Gauge	48	No			
18.0.29	Direct Water Level Gauge (DWLG)	4	Set			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
18.0.30	Flow indicator / Flow Gauge / Flow meter/Acoustic flow meter (coal)	24	No			
18.0.31	Thermocouple / RTDs with thermowell (all types) along with converters wherever applicable	811	No			
18.0.32	MTM Thermocouple upto 17 M length	160	No			
18.0.33	MTM Thermocouple over 17 M upto 22 M length	496	No			
18.0.34	MTM Thermocouple over 22 M upto 28 M length	286	No			
18.0.35	MTM Thermocouple over 28 M upto 35 M length	76	No			
18.0.36	SADC Cylinders	176	No			
18.0.37	Rotameters	32	No			
18.0.38	HEA Exciter system	40	Set			
18.0.39	Flame Scanner Head Assembly	88	No			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
18.0.40	Vertical indicators (moving coil / bar graph)	5	No			
18.0.41	Flow integrators	2	No			
18.0.42	Digital / bargraph indicators	10	No			
18.0.43	Recorder 24 / 30 Channel	2	No			
18.0.44	Recorder 3 channel	2	No			
18.0.45	Hydrogen Purity analyser	4	No			
19.0	Commissioning and Testing activities for Equipments erected by other agencies, like control valves, on/off valves, electrical/pneumatic valves, actuators, solenoid valves, valves, limit switches, ERV controllers, power cylinders, Pressure & Temperature Guages/Transmitters,etc					1.9.0
19.0.1	Rack mounted instruments commissioning	6	Set			
19.0.2	Coal Feeder local panel/ instruments Commissioning	20	No			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
19.0.3	Electrical regulating drives: (Valve, damper, scoop)	20	No			
19.0.4	Pneumatic regulating drives: (Valve, damper) incl Burner tilt	296	No			
19.0.5	Commissioning of Hydraulic actuators	60	No			
19.0.6	Corner valve/ Trip valves commissioning	136	No			
19.0.7	Open/Close type pneumatic gates / dampers / valves	314	No			
19.0.8	ERV Controller (approx. weight 10kg, 400 x 350 x 190 mm)	18	No			
19.0.9	Pulveriser Lube oil skid	20	Set			
19.0.10	Fan Lube oil skid	12	Set			
19.0.11	Only healthiness checking of embedded RTD / T/C	500	No			

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SL. NO.	DESCRIPTION	QTY	UOM	UNIT RATE	TOTAL AMOUNT	APPLICABLE TOP
I10.0	Power Cylinders					I.10.0
I10.0.1	Mill Discharge Valve power cylinders (set of four)	20	Set			
GRAND TOTAL IN Rupees (IN FIGURES)						
GRAND TOTAL IN Rupees (IN WORDS)						

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