

# **TENDER SPECIFICATION**

**NO: BHE/PW/PUR/KKT-ELE/627**

**FOR**

**HANDLING AT SITE STORES/STORAGE YARD, TRANSPORTATION TO SITE OF  
WORK, COMPLETE ERECTION, CHECKING OF CALIBRATION, TESTING,  
COMMISSIONING AND HANDING OVER OF ELECTRICAL WORKS FOR 1x 500  
MW, KHAPERKHEDA TPP,**

**AT**

**MAHARASHTRA STATE POWER GENERATION CO. LTD.**

**KHAPERKHEDA, MAHARASHTRA**

**PART 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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**MAHARASHTRA STATE POWER GENERATION CO. LTD.**

**KHAPERKHEDA, MAHARASHTRA**

EARNEST MONEY DEPOSIT: RS. : Rs.2, 00,000.00 (Rs. TWO LAKH ONLY)

LAST DATE AND TIME FOR:

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

M/s.....  
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(THESE TENDER DOCUMENTS ARE NOT TRANSFERABLE)

FOR BHARAT HEAVY ELECTRICALS LIMITED

Dy. GENERAL MANAGER (PURCHASE)

PLACE: NAGPUR

DATE :

**BHARAT HEAVY ELECTRICALS LIMITED : PSWR : NAGPUR**  
**TENDER SPECIFICATION No. BHE/PW/PUR/ KKT-ELE/627**

**BHARAT HEAVY ELECTRICALS LIMITED : PSWR : Nagpur**  
**T.S. No. BHE/PW/PUR/KKT-ELE/627**  
**Price Bid (Page 1 of 1)**

**NAME OF THE WORK:** ERECTION, CHECKING OF CALIBRATION, TESTING, COMMISSIONING  
OF ELECTRICAL WORKS FOR 1x 500 MW, KHAPERKHEDA TPP, AT  
MSPGCL, KHAPAKHEDA MAHARASTRA

<b>Description of Work</b>	<b>TOTAL LUMP SUM AMOUNT</b>	
	<b>In Figures (in Rupees)</b>	<b>In Words (in Rupees)</b>
HANDLING AT SITE STORES/STORAGE YARD, TRANSPORTATION TO SITE OF WORK, COMPLETE ERECTION, CHECKING OF CALIBRATION, TESTING, COMMISSIONING AND HANDING OVER OF ELECTRICAL WORKS FOR 1x 500 MW, KHAPERKHEDA TPP, AT <b>MAHARASHTRA STATE POWER GENERATION CO. LTD.</b> <b>KHAPERKHEDA, MAHARASHTRA</b>  BOQ attached as part of Price Bid		

**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 11.4.0 of tender specification for variation in quantity.

DATE

SIGNATURE & OFFICIAL SEAL OF BIDDER

**BHARAT HEAVY ELECTRICALS LIMITED**  
**PSWR - NAGPUR**  
**BILL OF QUANTITIES**  
**T.S. No. BHE/PW/PUR/KKT-ELE/627**

**TRANSPORTATION FROM STORES / STORAGE YARD TO ERECTION SITE, ASSEMBLY, ERECTION, ALIGNMENT, TESTING, INTEGRATED ELECTRICAL TESTING OF CONTROL & PROTECTION SYSTEM, CALIBRATION WHEREEVER NECESSARY, COMMISSIONING, CHARGING & HANDING OVER OF THE FOLLOWING EQUIPMENTS/ SYSTEMS OF MAIN PLANT ELECTRICALS AT KHAPERKHEDA TPP -MSPGCL 1X500 MW.**

SI No	DESCRIPTION	QTY	UOM	Weightage
<b>A:</b>	<b>POWER TRANSFORMERS</b>			
A1.1	Single-phase 200 MVA, 21/420 KV, 1 PH OFF CKT+ - 10%, ONAN/ONAF/OFAP, Cooled <b>Generator Transformer</b> including all accessories, piping, cabling etc. as described in Tender Specification.	3	No.	10.32%
A1.2	Single-phase 200 MVA, 21/420 KV, OFAF Cooled Spare Generator Transformer including all accessories like piping, cabling etc. as described in Tender Specification EXCEPT COOLING BANK	1	No.	2.64%
A1.3	25 MVA, 3-phase 21/6.9 kV <b>Unit Auxiliary Transformer (UAT)</b> including all accessories, piping, cabling etc as described in tender specification. Also including one Neutral Grounding Transformer (NGR) for each UAT.	2	No.	2.64%
A1.4	70 MVA, 3-phase 400/11.5/6.9 kV <b>Station Transformer (ST)</b> , OLTC , ONAN/ONAF/OFAP including all accessories, piping, cabling etc as described in tender specification. Also including two nos Neutral Grounding Transformer (NGR) for each ST.	2	No.	4.02%
A1.5	<b>Unit Service Transformer</b> , 1600 KVA Dry type, Dyn1, AN cooled ,3 phase 6.6 / 0.433 kV with off load tap switch , including all loose accessories of transformer etc. as described in tender specification.	8	No.	1.27%
<b>B:</b>	<b>ISOLATED PHASE BUS DUCT FOR GENERATOR TRANSFORMER</b>			
B1.1	Isolated Phase Bus Duct (21 KV) for interconnection of Generator Generator Transformers, UAT 1 and UAT 2 along with all accessories & auxiliaries as described in the Tender Specification.	1	Set	8.99%
<b>C:</b>	<b>SEGREGATED PHASE BUS DUCT 11 &amp; 6.6 kV</b>			
C1.1	6.6 kV, 2500 AMPS, SP Bus Duct from Unit Auxiliary Transformer (25 MVA - 5CAT01) to Switchgear Board # 5CA.(Approx length 104 m)	1	Set	0.83%
C1.2	6.6 kV, 2500 AMPS, SP Bus Duct from Unit Auxiliary Transformer (25 MVA - 5CBT01) to Switchgear Board # 5CB.(Approx length 94 m)	1	Set	0.75%
C1.3	6.6 kV, 3200 AMPS, SP Bus Duct from Station Transformer (400/11.5/6.9 KV, 70 MVA, - 5A) to Switchgear Board # 0CA.(Approx length 57 m)	1	Set	0.45%
C1.4	11 kV, 2250 AMPS SP Bus Duct from Station Transformer (400/11.5/6.9 KV, 70 MVA - 5A) to Switchgear Board # 0BA.(Approx length 43 m)	1	Set	0.34%
C1.5	6.6 kV, 3200 AMPS SP Bus Duct from Station Transformer (400/11.5/6.9 KV, 70 MVA - 5B) to Switchgear Board # 0CB.(Approx length 47 m)	1	Set	0.37%
C1.6	11 kV, 2250 AMPS SP Bus Duct from Station Transformer (400/11.5/6.9 KV, 70 MVA - 5B) to Switchgear Board # 0BB.(Approx length 33 m)	1	Set	0.26%
C1.7	6.6 kV, 2500 AMPS, Tie SP Bus Duct from Unit Switchgear Board # 5CA to SWSB # 0CA.(Approx length 30 m)	1	Set	0.24%
C1.8	6.6 kV, 2500 AMPS, Tie SP Bus Duct from Unit Switchgear Board # 5CB to SWSB # 0CB.(Approx length 30 m)	1	Set	0.24%
C1.9	6.6 kV, 3200 AMPS, Tie SP Bus Duct from Station Switchgear Board # 0CA to SWSB # 0CB.(Approx length 63 m)	1	Set	0.50%
C1.10	11 kV, 2250 AMPS, Tie SP Bus Duct from Station Switchgear Board # 0BA to SWSB # 0BB.(Approx length 63 m)	1	Set	0.50%

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SI No	DESCRIPTION	QTY	UOM	Weightage
<b>D:</b>	<b>11 kV &amp; 6.6 kV INDOOR SWITCHGEAR. EACH BOARD CONSISTING OF VACUUM BREAKER TYPE VM 12, PT PANELS, AUXILIARY TRANSFORMER PANEL, BUS EXTENSION CHAMBERS &amp; ACCESSORIES etc. EACH BREAKER IS HOUSED WITH CONTROL, METERING &amp; PROTECTION DEVICES.</b>			
D1.1	11 kV STATION SWITCHGEAR BOARD NO. OBA. Each Board consists of 16 Nos. panels. Overall dimension of each panel 820(W)x2692(H)x2355(D) mm, Panel shall be supplied in 8 loose shipping sections, Each shipping section weight approx. 3 MT.	1	Set	0.76%
D1.2	11 kV STATION SWITCHGEAR BOARD NO. OBB. Each Board consists of 15 Nos. panels. Overall dimension of each panel 820(W)x2692(H)x2355(D) mm, Panel shall be supplied in 8 loose shipping section, Each shipping section weight approx. 3 MT.	1	Set	0.71%
D1.3	6.6 kV Unit Switchgear Board # 5CA & 5 CB. Each board shall have 25 panels and supplied in 13 loose sections. Overall dimension of each panel is approx. 820(W)x2692(H)x2355(D) mm, Each shipping section weight is approximately 3 MT.	2	Set	2.38%
D1.4	6.6 kV Station Switchgear Board # OCA & # OCB. Each Board shall have 18 panels and supplied in 9 loose shipping sections. Overall dimension of each panel 820(W)x2692(H)x2355(D) mm, Each shipping section weight is approximately 3.00 MT.	2	Set	1.71%
D1.5	6.6 kV Station Switchgear Board # OCC (AHP) Board shall have 30 panels and supplied in 15 loose shipping sections. Overall dimension of each panel 820(W)x2692(H)x2355(D) mm, Each shipping section weight is approximately 3.00 MT.	1	Set	1.43%
D1.6	6.6 kV Station Switchgear Board # OCD Board shall have 24 panels and supplied in 12 loose shipping sections. Overall dimension of each panel 820(W)x2692(H)x2355(D) mm, Each shipping section weight is approximately 3.00 MT.	1	Set	1.14%
D1.7	BTS Panel. Overall dimension of each panel -820(W)x2692(H)x2355(D) mm, Each Panel weight is approximately 0.5 MT.	2	Set	0.53%
D1.8	Earthing Truck accessories, Overall dimension of each truck-700(W) X 1300(H) X 900(D), & Wt. 0.5 MT/Truck.	16	Nos.	0.17%
<b>E:</b>	<b>VARIABLE FREQUENCY DRIVE SYSTEM FOR ID FANS</b>			
E1.1	Transportation from stores / storage yards to erection site , erection , assembly , testing & commissioning of VARIABLE FREQUENCY DRIVE of ID FANS consist of Load Converter Inverter Panels,Adapter Panels,Control Panels. Reactors ,Transformers, Vacuum Breakers and associated accessories, as per tender specification.	2	Set	1.90%
<b>F:</b>	<b>DIGITAL AUTOMATIC VOLTAGE REGULATOR</b>			
F1.1	Transportation from store / storage yard to erection site , Erection, Assembly, Testing & Commissioning of Digital Excitation Equipments / System , System consist of Regulation / Thyristor / field suppression panels & accessories as per tender specification.	1	Set	0.63%
<b>G:</b>	<b>GENERATOR, GT, ST &amp; UAT PROTECTION &amp; METERING PANELS</b>			
G1.1	<b>Generator, Generator Transformer, Unit Transformers</b> , "Control / Protection & Metering Panels", (4 Panels), Over all dimension of each panel-2600mm(H)x1200mm(W)x1200mm(D),approx weight 600 Kg each Panel.	1	Set	0.42%
G1.2	<b>Station Transformer</b> , "Control / Protection & Metering Panels", (1 Panel), Over all dimension of each panel - 2600mm(H)x1200mm(W)x1200mm(D),approx weight 600 Kg each Panel.	1	Set	0.11%
G1.3	DC motor starter panels, etc (DC JOP, DC EOP, Seal oil panel), including resistance boxes. Approx weight 0.5 MT each.	3	Nos.	0.16%

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SI No	DESCRIPTION	QTY	UOM	Weightage
<b>H:</b>	<b>ELECTROSTATIC PRECIPITATOR (ESP)</b>			
H1.1	LT Main Switch Board (Double front, Draw out type), Overall dimensions 11577X1700X2450 mm, Weight of each board 12.0 MT, and supplied in loose shipping sections	4	Set	1.59%
H1.2	Auxiliary Control Panel (Double front, Draw out type), Overall Dimension 12787 L x 1700 mm W x 2450 H mm, Weight of each panel 13 MT and supplied in loose shipping sections	4	Nos.	1.59%
H1.3	Electronic Control Panel, Overall dimensions 700X650X2000mm, Weight of each panel 0.3MT. One number BAPCON Electronic module along with cables and connectors, size 280 L x 210 D x 210 H mm shall be supplied loose for mounting in the panel at site	72	Set	2.48%
H1.4	STATCON PANEL Overall dimension 1000X500X2050 mm, Weight of each panel 0.2 MT One number STATCON Electronic module for each panel (along with cables) connectors size 280 L x 210 D x 210 H mm shall be supplied loose for mounting in the panel at site	4	Set	0.11%
H1.5	RAPPER CONTROL PANEL Overall dimension 1000X500X2050 mm, Weight of each panel 0.2 MT. 2 Nos. RAPCON Electronic modules for each panel (along with cables connectors ) size 280 L x 210 D x 210 H mm shall be supplied loose for mounting in the panel at site	8	Set	0.34%
H1.6	<b>IOS PC</b> , Computer Furniture, Data Logger PC, Printer, PC termination box, peripheral cables etc. APPROX WEIGHT 100 KG.	1	Set	0.03%
H1.7	Junction Boxes ( Power) 600x278x515 mm approx.	144	Nos.	0.69%
H1.8	Junction Boxes ( Power) 450x150x300 mm approx.	24	Nos.	0.09%
H1.9	Junction Boxes 250 x150 x400 mm (Control) .	68	Nos.	0.18%
H1.10	Ash Level Indicator comprising of level probe with extension lagging pipe, Electronic Unit, Interconnecting Cabling, Conduit, etc.	288	Set	3.05%
H1.11	Opacity Monitor Consisting of Transmitter & Receiver, Electronic Unit, Air Blower unit, Weather Proof housings, Junction boxes, flexible hoses, mounting flanges with pipe for Transmitter, Receiver & Air blower, interconnected cables etc. for mounting on ESP outlet duct.	4	Nos.	0.15%
H1.12	Start Stop Push Button Station Dimensions 180X100X250 mm Wt. 5 Kg.	152	Nos.	0.40%
H1.13	Thermostats including Calibration.	80	Nos.	0.34%
<b>I:</b>	<b>SOOT BLOWER SYSTEM : 415 VOLT ELECTRICAL SYSTEMS OF SOOT BLOWERS COMPRISING OF SOOT BLOWER LT MCC WITH ACCESSORIES ALONG WITH COMMISSIONING OF THE SOOT BLOWERS</b>			
I1.1	Soot Blower Motor Control Center, double front, overall dimension 16600(W)x2400(H)x900(D), WT 11.4 MT, shall be supplied in ten loose shipping sections	1	No.	0.48%
<b>J:</b>	<b>CABLE LAYING, GLANDING, TERMINATION, FERRULING, CLAMPING &amp; DRESSING OF LT POWER, CONTROL CABLES &amp; SCREEN CABLES</b>			
<b>J1</b>	<b>HT/LT POWER &amp; CONTROL CABLES</b>			
J1.1	3.3 KV, 1 Core x 630 SQMM AL ARMOURED	5000	m	0.85%
J1.2	2C x 120 SQMM AL ARMOURED	45000	m	5.24%
J1.3	3C X 50 sqmm Aluminium	3000	m	0.29%
J1.4	3C X 16 sqmm Aluminium	21000	m	1.56%
J1.5	3.5C X 120 Aluminium	3000	m	0.48%
J1.6	2C x 2.5 SQMM COPPER	8000	m	0.42%

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SI No	DESCRIPTION	QTY	UOM	Weightage
J1.7	3C x 2.5 SQMM COPPER	86000	m	5.00%
J1.8	5C X 2.5 sqmm Copper	20000	m	1.48%
J1.9	7C x 2.5 SQMM COPPER	16000	m	1.35%
J1.10	12C X 2.5 sqmm Copper	41000	m	3.90%
<b>J2</b>	<b>LT SCREENED CABLES (Armoured)</b>			
J2.1	4C X 1.5 sq.mm. Copper screened	51000	meter	3.24%
<b>K:</b>	<b>ABOVE GROUND EARTHING MATERIALS</b>			
K1.1	50 x 6 GI Flats	3000	m	0.95%
K1.2	30 x 5 mm GI Flat	3700	m	0.98%
K1.3	3.15 MM GI WIRE	33150	kg	1.75%
<b>L:</b>	<b>GALVANISED CABLE TRAYS COMPLETE WITH COUPLER PLATES, FASTENERS, CLAMPS AND FIXING HARDWARE, PRE-FABRICATED CABLE RACKS, METAL CHANNEL FELXIBLE BOTLABLE CABLE SUPPORT SYSTEM</b>			
L1.1	Ladder type 600(W) x 120 (H) mm	1,000	Nos.	0.32%
L1.2	Ladder type 450(W) x 120 (H) mm	600	Nos.	0.16%
L1.3	Ladder type 300(W) x 120 (H) mm	900	Nos.	0.21%
L1.4	Ladder type 150(W) x 120 (H) mm	1,600	Nos.	0.34%
<b>M:</b>	<b>MISC. ITEMS</b>			
M1.1	Structural Steel fabrication & installation (MS angle, Channel, Plate etc)	42	MT	2.89%
<b>N:</b>	<b>TESTING &amp; ASSISTANCE FOR COMMISSIONING OF SYSTEMS / EQUIPMENTS</b>			
N1.1	HEATING ELEMENTS FOR HOPPER (PANEL TYPE)	144	SET	0.38%
N1.2	HEATING ELEMENTS FOR SUPPORT/ SHAFT INSULATOR HEATER	360	No.	0.95%
N1.3	High Voltage Rectifier Transformers Testing, Assistance for Commissioning & oil filtration only.	72	Nos.	2.48%
N1.4	Testing & Commissioning of Collecting, Emitting, GD Screen Motor	152	Nos.	0.40%
N1.5	Testing and Commissioning of HT motors for pumps, fans, etc.	25	Nos.	0.66%
N1.6	Testing & Commissioning of Wall, Long Retractable, Air Heater Soot Blower	292	Nos.	1.24%
N1.7	Generator system testing. As per tender specification.	1	SET	0.26%
N1.8	Testing & Assistance for Commissioning of Electrical Operated Actuators alongwith Valves, Dampers, Gates, etc. (Regulating & ON/OFF Type).	500	500	3.97%
<b>O:</b>	<b>ELECTRICAL HOIST DSL CABLE TRAILING SYSTEM</b>			
O1.1	The hoist work comprises, erection, Testing Commissioning of Switch Fuse Unit, Cable Guide Trolley, Dog chain or Angle / I beam support arrangement, Real Insulators, Limit Switches , Trailing Cable, Testing of Control Panel, Motor and Assistance during Final Load test as described elsewhere in Tender.	4	Nos.	0.34%
	<b>TOTAL PERCENTAGE</b>			100.00%

DATE :

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