

# **TENDER SPECIFICATION**

**NO: BHE/PW/PUR/BHT-ELE/647**

**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 2x 500 MW, BHUSAWAL TPP,

**AT**

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

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**BHUSAWAL** THERMAL POWER STATION (EXPANSION PROJECT)

BHUSAWAL, DIST-JALGAON

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.....  
.....

(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/ MHT-ELE/647**

**BHARAT HEAVY ELECTRICALS LIMITED: PSWR: Nagpur**  
**T.S. No. BHE/PW/PUR/BHT-ELE/647**  
**Price Bid (Page 1 of 1)**

**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 ELECTRICAL WORKS FOR 2x 500 MW, BHUSAWAL TPP, AT MAHARASHTRA STATE POWER GENERATION COMPANY LTD **BHUSAWAL** THERMAL POWER STATION (EXPANSION PROJECT) BHUSAWAL, DIST-JALGAON, MAHARASHTRA

<b>Description of Work</b>	<b>TOTAL LUMP SUM AMOUNT</b>	
	<b>In Figures (in Rupees)</b>	<b>In Words (in Rupees)</b>
Scope of work as mentioned in the tender specification no. <b>BHE/PW/PUR/BHT-ELE/647 AND 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 11.4.0 of tender specification for variation in quantity.

DATE

SIGNATURE & OFFICIAL SEAL OF BIDDER

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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 2x 500 MW, BHUSAWAL TPP, AT MAHARASHTRA STATE POWER GENERATION COMPANY LTD BHUSAWAL THERMAL POWER STATION (EXPANSION PROJECT) BHUSAWAL, DIST-JALGAON, MAHARASHTRA.

SI No	DESCRIPTION	QTY	UOM	WEIGHTAGES
<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.	6	No.	12.550%
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.	1.610%
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.	4	No.	3.220%
A1.4	80 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.	2.450%
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.	16	No.	1.545%
<b>B:</b>	<b>ISOLATED PHASE BUS DUCT FOR GENERATOR TRANSFORMER</b>			
B1.1	Isolated Phase Bus Duct (21 KV) for interconnection of Generator Transformer, UAT 1 and UAT 2 along with all accessories & auxiliaries as described in the Tender Specification.	2	Set	9.653%
<b>C:</b>	<b>SEGREGATED PHASE BUS DUCT 11 &amp; 6.6 kV : -Lump sum rate for transportation from store /storage yard to erection site, erection, assembly, testing &amp; commissioning of Segregated Phase Bus Duct including support structure, equipments &amp; all accessories of the following area as per tender specification.</b>			
C1.1	6.6 kV, 2500 AMPS, SP Bus Duct from Unit Auxiliary Transformer (25 MVA -5CAT01) to Switchgear Board # 5CA.(Approx length 44 m)	1	Set	0.212%
C1.2	6.6 kV, 2500 AMPS, SP Bus Duct from Unit Auxiliary Transformer (25 MVA -5CBT01) to Switchgear Board # 5CB.(Approx length 52 m)	1	Set	0.250%
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 51 m)	1	Set	0.246%
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 51 m)	1	Set	0.294%
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 39 m)	1	Set	0.190%
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 39 m)	1	Set	0.236%
C1.7	6.6 kV, 2500 AMPS, Tie SP Bus Duct from Unit Switchgear Board # 5CA to SWSB # 0CA.(Approx length 22 m)	1	Set	0.106%
C1.8	6.6 kV, 2500 AMPS, Tie SP Bus Duct from Unit Switchgear Board # 5CB to SWSB # 0CB.(Approx length 17 m)	1	Set	0.082%
C1.9	6.6 kV, 3200 AMPS, Tie SP Bus Duct from Station Switchgear Board # 0CA to SWSB # 0CB.(Approx length 11 m)	1	Set	0.053%
C1.10	11 kV, 2250 AMPS, Tie SP Bus Duct from Station Switchgear Board # 0BA to SWSB # 0BB.(Approx length 11 m)	1	Set	0.053%

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C1.11	6.6 kV, 2500 AMPS, Tie SP Bus Duct from Unit Switchgear Board # 4CA to SWSB # 0CA.(Approx length 10 m)	1	Set	0.048%
C1.12	6.6 kV, 2500 AMPS, Tie SP Bus Duct from Unit Switchgear Board # 4CB to SWSB # 0CB.(Approx length 15 m)	1	Set	0.072%
<b>C2</b>	<b>NON SEGREGATED LV 415 VOLT BUSDUCTS / NEUTRAL GROUNDING TRANSFORMER / NEUTRAL GROUNDING RESISTANCE Transportation of material from Stores/ storage yard to erection site, Erection, Assembly, Testing &amp; Commissioning of NSP BUS DUCTS for interconnection between service transformer and LT MCC.</b>			
C2.1	415 Volt LT BUS DUCT (for ESP boards only). Approx length of each set of Busduct- 6 meter, Typical cross section 1100 x 400, Weight 100 kg/mtr (approx) loose items like silicagel breather pipe, GI channel supports and associated accessories.	16	Set	2.574%
<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; ACESSORIES 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 15 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	0.386%
D1.2	11 kV STATION SWITCHGEAR BOARD NO. OBB. Each Board consists of 14 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	0.360%
D1.3	6.6 kV Unit Switchgear Board # 5CA . Each board shall have 27 panels and supplied in 14 loose sections. Overall dimension of each panel is approx. 820(W)x2692(H)x2355(D) mm, Each shipping section weight is approximately 3 MT.	1	Set	0.695%
D1.4	6.6 kV Unit Switchgear Board # 5 CB. Each board shall have 26 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.	1	Set	0.669%
D1.5	6.6 kV Station Switchgear Board # OCA . Each Board shall have 15 panels and supplied in 8 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	0.386%
D1.6	6.6 kV Station Switchgear Board # OCB. Each Board shall have 14 panels and supplied in 7 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	0.360%
D1.7	6.6 kV Station Switchgear Board # 4CA. Each Board shall have 27 panels and supplied in 14 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	0.695%
D1.8	6.6 kV Station Switchgear Board # 4CB. Each Board shall have 26 panels and supplied in 13 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	0.669%
D1.9	6.6 kV Station Switchgear Board # OCC (AHP) Board shall have 32 panels and supplied in 16 loose shipping sections. Overall dimension of each panel 820(W)x2692(H)x2129(D) mm, Each shipping section weight is approximately 3.00 MT.	1	Set	0.823%
D1.10	6.6 kV Station Switchgear Board # OCD Board shall have 32 panels and supplied in 16 loose shipping sections. Overall dimension of each panel 820(W)x2692(H)x2129(D) mm, Each shipping section weight is approximately 3.00 MT.	1	Set	0.823%

D1.11	BTS Panel. Overall dimension of each panel -750(W)x2300(H)x800(D) mm, weight of each panel is approximately 1.0 MT.	4	Set	0.643%
D1.12	Earthing Truck (Feeder & Busbar) , Overall dimension of each truck- 750(W) X 1500(H) X 950(D), & Wt. 0.5 MT/Truck.	20	Nos.	0.129%
<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.	4	Set	1.287%
<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.	2	Set	0.772%
<b>G:</b>	<b>GENERATOR, GT, ST &amp; UAT PROTECTION &amp; METERING PANELS,: TRANSPORTATION FROM STORES / STORAGE YARD TO ERECTION SITE, ASSEMBLY, ERECTION, TESTING, &amp; COMMISSIONING (which comprises of relay testing, functional checks of control / protection/ Metering circuit) OF GRP / SRP</b>			
G1.1	<b>Generator, Generator Transformer, Unit Transformers</b> , "Control / Protection & Metering Panels", (4 Panels), Over all dimension of each panel-2295mm(H)X1200mm(W)X1200mm(D),approx weight 600 Kg each Panel.	2	Set	0.515%
G1.2	<b>Station Transformer</b> , "Control / Protection & Metering Panels", (1 Panel), Over all dimension of each panel - 2295mm(H)X1200mm(W)X1200mm(D),approx weight 600 Kg each Panel.	2	Set	0.130%
G1.3	DC motor starter panels, etc (DC JOP, DC EOP, Seal oil panel), including resistance boxes. Approx weight 0.5 MT each.	6	Nos.	0.174%
<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	8	Set	1.930%
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	8	Nos.	1.930%
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 Hmm shall be supplied loose for mounting in the panel at site	144	Set	3.012%
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	8	Set	0.130%
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	16	Set	0.412%

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H1.6	<b>IOS PC</b> , Computer Furniture, Data Logger PC, Printer, PC termination box, peripheral cables etc. APPROX WEIGHT 100 KG.	2	Set	0.032%
H1.7	Junction Boxes ( Power) 600x278x515 mm approx.	288	Nos.	0.834%
H1.8	Junction Boxes ( Power) 450x150x300 mm approx.	48	Nos.	0.108%
H1.9	Junction Boxes 250 x150 x400 mm (Control) .	136	Nos.	0.220%
H1.10	Ash Level Indicator comprising of level probe with extension lagging pipe, Electronic Unit, Interconnecting Cabling, Conduit, etc.	576	Set	2.780%
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.	8	Nos.	0.154%
H1.12	Start Stop Push Button Station Dimensions 180X100X250 mm Wt. 5	304	Nos.	0.489%
H1.13	Thermostats including Calibration.	160	Nos.	0.412%
<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	2	No.	0.547%
<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	10000	m	0.965%
J1.2	2C x 120 SQMM AL ARMOURED	86000	m	5.534%
J1.3	3C X 50 sqmm Aluminium	5000	m	0.290%
J1.4	3C X 16 sqmm Aluminium	34000	m	1.532%
J1.5	3.5C X 120 Aluminium	7000	m	0.563%
J1.6	2C x 2.5 SQMM COPPER	16000	m	0.515%
J1.7	3C x 2.5 SQMM COPPER	148000	m	5.238%
J1.8	5C X 2.5 sqmm Copper	40000	m	1.544%
J1.9	7C x 2.5 SQMM COPPER	28000	m	1.261%
J1.10	12C X 2.5 sqmm Copper	65000	m	3.346%
<b>J2</b>	<b>LT SCREENED CABLES (Armoured)</b>			
J2.1	4C X 1.5 sq.mm. Copper screened	84000	meter	2.703%
<b>K:</b>	<b>ABOVE GROUNG EARTHING MATERIALS</b>			
K1.1	50 x 6 GI Flats	6000	m	0.810%
K1.2	30 x 5 mm GI Flat	7400	m	0.905%
K1.3	3.15 MM GI WIRE	16000	m	0.515%

<b>L:</b>	<b>GALVANISED CABLE TRAYS COMPLETE WITH COUPLER PLATES, FASTENERS, CLAMPS AND FIXING HARDWARE, PRE-FABRICATED CABLE RACKS, METAL CHANNEL FLEXIBLE BOTLABLE CABLE SUPPORT SYSTEM</b>			
L1.1	Ladder type 600(W) x 120 (H) mm	2,000	Nos.	0.386%
L1.2	Ladder type 450(W) x 120 (H) mm	1,200	Nos.	0.193%
L1.3	Ladder type 300(W) x 120 (H) mm	1,800	Nos.	0.261%
L1.4	Ladder type 150(W) x 120 (H) mm	3,200	Nos.	0.412%
<b>M:</b>	<b>MISC. ITEMS</b>			
M1.1	Structural Steel fabrication & installation (MS angle, Channel, Plate etc)	75	MT	2.896%
<b>N:</b>	<b>TESTING &amp; ASSISTANCE FOR COMMISSIONING OF SYSTEMS / EQUIPMENTS</b>			
N1.1	HEATING ELEMENTS FOR HOPPER (PANEL TYPE)	288	SET	0.463%
N1.2	HEATING ELEMENTS FOR SUPPORT/ SHAFT INSULATOR HEATER	720	No.	1.158%
N1.3	High Voltage Rectifier Transformers Testing, Assistance for Commissioning & oil filtration only.	144	Nos.	3.012%
N1.4	Testing & Commissioning of Collecting, Emitting, GD Screen Motor	304	Nos.	0.489%
N1.5	Testing and Commissioning of HT motors for pumps, fans, etc.	50	Nos.	0.804%
N1.6	Testing & Commissioning of Wall, Long Retractable, Air Heater Soot Blower	292	Nos.	0.752%
N1.7	Generator system testing. As per tender specification.	2	SET	0.290%
N1.8	Testing & Assistance for Commissioning of Electrical Operated Actuators alongwith Valves, Dampers, Gates, etc. (Regulating & ON/OFF Type).	1,000	Nos.	4.827%
<b>O:</b>	<b>ELECTRICAL HOIST DSL CABLE TRAILING SYSTEM - Transportation of material from Stores/ storage yard to erection site, Erection, Assembly, Testing &amp; Assistance for Commissioning of misc. Electrically Operated Hoist for ID /FD /PA Fans, Mill, ESP etc.</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	8	Nos.	0.386%
<b>Total</b>				<b>100.000%</b>