

# TENDER SPECIFICATION

No. BHE/PW/PUR/KLT-CLE/1149

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 ,ELECTRICAL WORKS FORHRSG AND ITS AUXILIARIES,GAS TURBINE AND ITS AUXILIARIES, TURBOGENERATOR AND ITS AUXILIARIES, STATION C&I FOR 2X150 MW OPG KUTCH PROJECT.

AT

OPG POWER GUJARAT PRIVATE LIMITED

BHADDRESHWAR

GUJARAT.

## VOLUME :II – PRICE BID-1149



**BHARAT HEAVY ELECTRICALS LIMITED**

(A GOVERNMENT OF INDIA UNDERTAKING)

POWER SECTOR - WESTERN REGION

SHREEMOHINI COMPLEX

345, KINGSWAY - NAGPUR 440 001

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**VOLUME :II – PRICE BID-1149**

EARNEST MONEY DEPOSIT: Please see Notice Inviting Tender.

LAST DATE FOR: Please see Notice Inviting Tender.

TENDER SUBMISSION:

THESE TENDER SPECIFICATION DOCUMENTS CONTAINING **VOLUME-I-Tech Bid**, **VOLUME- II-Price Bid** AND  
VOLIME-IBCD Rev-01 Rev-01 ARE ISSUED TO:

M/s. ....

PLEASE NOTE:

THESE TENDER SPECS DOCUMENTS ARE NOT TRANSFERABLE.

For Bharat Heavy Electricals Limited

AGM (Purchase)

Place: Nagpur

Date:

Job: E, T and C of C&I and Electrical PACKAGE at 2X150 MW OPG KUTCH PROJECT GUJARAT

SL. NO.	DESCRIPTION	UOM	Qty	UNIT RATE (Rs.)	Unit Rates in Words (In Rs)	TOTAL AMOUNT (Rs.)	Applicable term of payment
<b>I1.0</b>	<b>Cable tray and Accessories</b>						<b>I.1</b>
<b>I1.0.1</b>	Perforated cable tray and accessories (with or without cover) 50mm	Meter	4920				
<b>I1.0.2</b>	Perforated cable tray and accessories (with or without cover) 100mm	Meter	8100				
<b>I1.0.3</b>	Perforated cable tray and accessories (with or without cover) 150mm	Meter	850				
<b>I1.0.4</b>	Perforated cable tray and accessories (with or without cover) 300mm	Meter	140				
<b>I2.0</b>	<b>Cable laying including earthing wires</b>						<b>I.3</b>
<b>I2.0.1</b>	Screened Copper Cable 2P x 0.5 sqmm armoured / unarmoured	Meter	21920				
<b>I2.0.2</b>	Screened Copper Cable 4P x 0.5 sqmm armoured / unarmoured	Meter	44080				
<b>I2.0.3</b>	Screened Copper Cable 8P x 0.5 sqmm armoured / unarmoured	Meter	29600				
<b>I2.0.4</b>	Screened Copper Cable 5C/7C x 1.5 sqmm armoured / unarmoured	Meter	10000				
<b>I2.0.5</b>	Screened Copper Cable 10C x 1.5 sqmm armoured / unarmoured	Meter	16000				
<b>I2.0.6</b>	Compensating cable 1P/2P x 0.5 sq mm type Tx/Sx/Kx/Rx unarmoured/armoured	Meter	10500				

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SL. NO.	DESCRIPTION	UOM	Qty	UNIT RATE (Rs.)	Unit Rates in Words (In Rs)	TOTAL AMOUNT (Rs.)	Applicable term of payment	
I2.0.7	Compensating cable 4P x 0.5 sq mm type Tx/Sx/Kx/Rx unarmoured/armoured.	Meter	14000					
I2.0.8	Compensating cable 6P x 0.5 sq mm type Tx/Sx/Kx/Rx unarmoured/armoured	Meter	13000					
I2.0.9	Compensating cable 1P/2P x 1.31sq mm type Tx/Sx/Kx/Rx unarmoured/armoured	Meter	7400					
I2.0.10	Network UTP Cables (special termination using UTP connectors involved)	Meter	3000					
I2.0.11	Hoses-1/4", 1/2" , 1", SS/Teflon, Braided/unbraided, upto 5M length	Meter	104					
I2.0.12	Flexible pipe 1"	Meter	10					
I2.0.13	Flexible pipe 2"	Meter	1					
I2.0.14	Cable duct 60 x 60 x 1000	Meter	760					
I2.0.15	Cable duct 180 x 100 x 1000	Meter	320					
I2.0.16	Cable duct 250 x 100 x 1000	Meter	300					
I4.0	<b>Junction box/Push Button station</b>							<b>1.4</b>

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SL. NO.	DESCRIPTION	UOM	Qty	UNIT RATE (Rs.)	Unit Rates in Words (In Rs)	TOTAL AMOUNT (Rs.)	Applicable term of payment
I4.0.1	Junction boxes upto 48 way	No	438				
I4.0.2	FSSS Local Oil Gun Maintenance Switch Box	No	24				
I4.0.3	CJCB Junction boxes above 48 way	No	34				
I5.0	<b>Conduits/Impulse pipe/tubes</b>						<b>1.5</b>
I5.0.1	Impulse pipe CS ½" SCH 80 (D21.3 x 3.73 mm)	Meter	1400				
I5.0.2	Impulse pipe CS (16 x 2.6 mm)	Meter	1200				
I5.0.3	Impulse pipe ASTM A 335 P22 1/2 " Sch XXS	Meter	800				
I5.0.4	Impulse pipe CS GR B 1/2" NB SCH 80	Meter	1500				
I5.0.5	Impulse pipe A106 GR C 3/4" NB SCH 80	Meter	5000				
I5.0.6	Impulse pipe A106 GR C 1/2" NB SCH 160	Meter	1400				
I5.0.7	Impulse pipe A106 GR C 1/2" NB SCH 80	Meter	4000				
I5.0.8	Impulse pipe A106 GR B 1" NB SCH 80	Meter	700				
I5.0.9	A 213 TP 316H 1/2" NB SCH 40	Meter	1100				

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I5.0.10	A 213 TP 316H 1/2" NB SCH 40	Meter	400					
I5.0.11	Cr-Mo pipe 21.3 x 3.73 mm	Meter	1000					
I5.0.12	SS pipe 60.3 x 2.8 mm	Meter	200					
I5.0.13	SS pipe 33.4 x 3.4 mm	Meter	220					
I5.0.14	SS pipe 21.3 x 2.8 mm	Meter	400					
I5.0.15	SS pipe 17.1 x 1.8 mm	Meter	60					
I5.0.16	SS tube 12.7 x 2.1 mm	Meter	1400					
I5.0.17	Copper tube 6mm/8mm / 1/4" (Sheathed / bare)	Meter	3650					
I5.0.18	Copper tube 1/2" to 1" (Sheathed / bare)	Meter	150					
I5.0.19	SS pipe 2"	Meter	10					
I6.0	Miscellaneous Structural steel including frames for Panels/Racks/Instruments, supports for cable tray/pipes/tubes, Canopies etc							1.6

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SL. NO.	DESCRIPTION	UOM	Qty	UNIT RATE (Rs.)	Unit Rates in Words (In Rs)	TOTAL AMOUNT (Rs.)	Applicable term of payment
I6.0.1	Structural steel for fabrication	MT	25				
I6.0.2	Aluminium strip (25 x 3 mm)	Meter	870				
I7.0	<b>Panels/Cubicles/Racks/Enclosures/Monitors/Computer/Computer peripheral/PLCs/UPS/Batteries</b>						I.7
I7.0.1	Assembly of local gauge board (approx. weight 650kg, 2200(L) x 300(B) x 1800(H) mm)	No	8				
I7.0.2	Control Panel (approx. weight 400kg, 750(L) X 750(B) X 2415(H) mm) - one panel	No	5				
I7.0.3	Control Panel (approx. weight 800kg, 1500(L) X 750(B) X 2415(H) mm) - suit of two panels	No	16				
I7.0.4	Control Panel (approx. weight 1200kg, 2250(L) X 750(B) X 2415(H) mm) - suit of three panels	No	5				
I7.0.5	Control Panel (approx. weight 1600kg, 3000(L) X 750(B) X 2415(H) mm) - suit of four panels	No	1				
I7.0.6	Control Panel (approx. weight 2000kg, 3750(L) X 750(B) X 2415(H) mm) - suit of five panels	No	2				
I7.0.7	Control Panel for HP dosing system (approx. weight 3000Kg, 1000(L) x 800(B) x 2000(H) mm)	No	2				
I7.0.8	Volumetric Coal feeder control panel(Approx Dim. 1200 x 600 x 2315)	No	10				
I7.0.9	Control panels for Centrifuges	No	2				

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SL. NO.	DESCRIPTION	UOM	Qty	UNIT RATE (Rs.)	Unit Rates in Words (In Rs)	TOTAL AMOUNT (Rs.)	Applicable term of payment
17.0.10	Unit Control panel (1500 (W) X 1000(D) X 2345(H)	No	2				
17.0.11	Generator /Electrical control panel (approx. 1900(L) x 1000(B) x 2355(H) mm)	No	2				
17.0.12	NETWORK PANELS (approx. weight 400kg, 750(L) X 750(B) X 2415(H) mm) - one panel	No	4				
17.0.13	T & AVT panel (approx. 800 x 2415 x 800 mm)	No	2				
17.0.14	Vibration monitoring system for Mills ,FD,ID,&PA Fans A&B	Set	2				
17.0.15	Vibration monitoring system for main turbine / generator	Set	2				
17.0.16	Vibration monitoring system for BFP	Set	2				
17.0.17	DC motor starter box for scanner fan (approx. weight 50kg, 375(L) x 900(B) x 1120(H) mm)	No	2				
17.0.18	Burner Tilt Shear Pin Failure Indication Box	No	2				
17.0.19	Air Heater Rotor Stoppage Alarm Box	Set	4				
17.0.20	Electronic Water Level Indicator (EWLI)	Set	8				

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SL. NO.	DESCRIPTION	UOM	Qty	UNIT RATE (Rs.)	Unit Rates in Words (In Rs)	TOTAL AMOUNT (Rs.)	Applicable term of payment
17.0.21	LP Dosing sysetm	Set	2				
17.0.22	Positioner cabinets (approx. 380 x 380 x 210 mm) for LPBP CV1, LPBP CV2, Spray water CV	No	12				
17.0.23	Local Instrument racks (LIR)/Local Instrument enclosures (LIE)	No	190				
17.0.24	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	Set	24				
17.0.25	Printers (80/132 col Dot Matrix, A3 Inkjet, A3 Laserjet, etc)	Set	12				
17.0.26	Computer furniture for all Servers, PCs, Printers	Set	2				
17.0.27	Plant Control Desk	Set	2				
18.0	<b>Instruments/Devices including sensors/Cells/Probes etc</b>						1.8
18.0.1	Latching relay 24V, 5A	No	4				
18.0.2	Furnace Temperature probe including local panel/box and all accessories	No	4				
18.0.3	Air filter regulators / Lubricators (1/2", 1", 0-6KG, 0-10 KG)	No	150				
18.0.4	Speed Regulators / Air lock valves in oil gun corner rack	No	6				
18.0.5	Solenoid valves (3 way, AC/DC, 1/4", 1/2", 1", NPT/BSP, single/dual coil)	No	142				

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SL. NO.	DESCRIPTION	UOM	Qty	UNIT RATE (Rs.)	Unit Rates in Words (In Rs)	TOTAL AMOUNT (Rs.)	Applicable term of payment
I8.0.6	Pneumatic Pressure controller with accessories	No	1				
I8.0.7	Pneumatic Temperature controller with accessories		1				
I8.0.8	Speed switch / Speed detector	No	6				
I8.0.9	Pressure Switch / DP Switch / DP indicating switch	No	132				
I8.0.10	Temperature Switch / Thermostat	No	8				
I8.0.11	Float type Level Switch	No	2				
I8.0.12	Electronic Level Switch (with amplifier, etc), Capacitance or conductivity type	No	38				
I8.0.13	Vacuum switch	No	6				
I8.0.14	Flow switch (Mechanical / Electronic)	No	4				
I8.0.15	Pressure / DP / Flow (DP type) / Level -Transmitter	No	424				
I8.0.16	Level Transmitter (displacer type)	No	2				
I8.0.17	Flow Transmitter (Pulse / mass flow / target type) including flanges	No	2				
I8.0.18	Speed transmitter	No	6				

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SL. NO.	DESCRIPTION	UOM	Qty	UNIT RATE (Rs.)	Unit Rates in Words (In Rs)	TOTAL AMOUNT (Rs.)	Applicable term of payment
18.0.19	Electronic Level Transmitter (with amplifier, etc), Capacitance or conductivity type / Guided Wave Radar(GWR) transmitter	No	6				
18.0.20	Pressure Gauge / DP gauge/DP Indicator	No	484				
18.0.21	Temperature Gauge (all types)	No	348				
18.0.22	Level Indicator / Level Gauge	No	40				
18.0.23	Direct Water Level Gauge (DWLG)	Set	4				
18.0.24	Flow indicator / Flow Gauge / Flow meter/Acoustic flow meter (coal)	No	2				
18.0.25	Thermocouple / RTDs with thermowell (all types) along with converters wherever applicable	No	477				
18.0.26	MTM Thermocouple upto 17 M length	No	132				
18.0.27	MTM Thermocouple over 17 M upto 22 M length	No	60				
18.0.28	Purge meter for mill	No	10				
18.0.29	SADC Cylinders	No	160				
18.0.30	HEA Exciter system	Set	24				
18.0.31	Flame Scanner Head Assembly	No	32				

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SL. NO.	DESCRIPTION	UOM	Qty	UNIT RATE (Rs.)	Unit Rates in Words (In Rs)	TOTAL AMOUNT (Rs.)	Applicable term of payment
18.0.32	Flow integrators	No	2				
18.0.33	Recorder 3 channel	No	3				
18.0.34	Rotor Earth fault Detector	No	2				
18.0.35	O2 (OXYGEN ) Analyzer	SET	8				
18.0.36	SOx/NOx/CO Analyzer (Insitu type)	SET	2				
18.0.37	Opacity monitor/Dust analyzer.	SET	2				
18.0.38	SWAS Sample handling system with racks & Sample conditioning panel with chiller	SET	2				
18.0.39	SWAS Analyzer Panel including various analyzers	SET	2				
18.0.40	I/P converters	No	184				
18.0.41	Rotameters	No	2				
18.0.42	speed measuring loop	No	12				
18.0.43	proximeters	No	40				
18.0.44	Laboratory Setup for Customer	No	1				

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SL. NO.	DESCRIPTION	UOM	Qty	UNIT RATE (Rs.)	Unit Rates in Words (In Rs)	TOTAL AMOUNT (Rs.)	Applicable term of payment
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						19.0
19.0.1	Rack mounted instruments commissioning	Set	12				
19.0.2	Coal Feeder local panel/ instruments commissioning	No	10				
19.0.3	Electrical regulating drives: (Valve, damper, scoop)	No	4				
19.0.4	Pneumatic regulating drives: (Valve, damper) incl Burner tilt	No	146				
19.0.5	Commissioning of Hydraulic actuators	No	12				
19.0.6	Corner nozzle valve/ Trip valves commissioning	No	70				
19.0.7	Open/Close type pneumatic gates / dampers / valves	No	112				

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SL. NO.	DESCRIPTION	UOM	Qty	UNIT RATE (Rs.)	Unit Rates in Words (In Rs)	TOTAL AMOUNT (Rs.)	Applicable term of payment
I9.0.8	ERV Controller (approx. weight 25kg, 350 x 290 mm)	No	8				
I9.0.9	Limit Switches (checking and adjusting only).	No	50				
I9.0.10	Only healthiness checking of embedded RTD / T/C	No	100				
I9.0.11	Fan Lube oil skid	Set	12				
I9.0.12	Pulveriser Lube oil skid	Set	10				
I10.0	<b>Power Cylinders</b>						
I10.0.1	Mill Discharge Valve power cylinders (set of four)	Set	10				
I11.0	<b>Miscellaneous items (items not covered under above heads)</b>						
I11.0.02	Master and Slave Clock system	Set	1				
	<b>ELECTRICAL</b>						
<b>SN</b>	<b>DESCRIPTION</b>						
<b>SECTION-E1 : CABLE TRAY AND</b>							<b>I.1</b>
E.1.1	Ladder type 450(W) x 120 (H) mm	Meter	1425				

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SL. NO.	DESCRIPTION	UOM	Qty	UNIT RATE (Rs.)	Unit Rates in Words (In Rs)	TOTAL AMOUNT (Rs.)	Applicable term of payment
E.1.2	Ladder type 300(W) x 120 (H) mm	Meter	750				
E.1.3	Ladder type 150(W) x 120 (H) mm	Meter	1175				
E.1.4	Ladder type 50(W) x 120 (H) mm	Meter	500				
<b>SECTION-E2A: LT POWER CABLES(Generally armoured or unarmoured, Screened or Unscreened)</b>							<b>1.2.0</b>
E.2A.1	2C X 120 sqmm Aluminium	Meter	12000				
E.2A.2	3C X 10 sqmm Aluminium	Meter	5000				
E.2A.3	3C X 35 sqmm Aluminium	Meter	700				
E.2A.4	3.5C X 120 sqmm Aluminium	Meter	400				
<b>SECTION-E2B : LT CONTROL CABLES (Generally armoured or unarmoured, Screened or Unscreened)</b>							<b>1.2.0</b>
E.2B.1	2C x2.5 sqmm Copper unarmored	Meter	7000				
E.2B.2	3Cx2.5 sqmm Copper	Meter	64200				
E.2B.3	4Cx 1.5 sqmm Copper screened	Meter	7000				

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E.2B.4	10Cx 2.5 sqmm Copper	Meter	9000				
<b>SECTION-E3;JUNCTION BOXES AND PUSH BUTTON</b>							<b>1.3.0</b>
E.3.1	Junction Boxes for start/stop PB approx Dimensions 762Lx610(W) mm.approx.weight 12 Kg.approx.	No	8				
E.3.2	Junction Boxes approx Dimensions 450(L) x150(D) x300(H) mm approx.weight 12 Kg.approx.	No	44				
E.3.3	Junction Boxes approx Dimensions 250(L) x150(D) x400(H) mm approx.weight 12 Kg.approx.	No	12				
E.3.4	Start Stop Push Button Station Dimensions 180(L)X100(D)X250(H) mm, weight 2 Kg.approx.	No	68				
<b>SECTION-E4 : STRUCTURAL STEEL</b>							<b>1.4.0</b>
E.4.1	Structural Steel fabrication & installation ( MS angle, Channel, Plate etc)	MT	15				
<b>SECTION-E5A; STARTER PANEL/BOXES/POWER</b>							<b>1.5.0</b>
E.5A.1	CO2 Fire extinguish system including solenoid valves,Approx dimension of control panel; 800(L) x500(D) x1500(H)mm, Approx wt 500 Kg	No	2				
E.5A.2	Generator protection (STG) panels,Approx dimension 2600mm(H)X1200mm(W)X1200mm(D), Approx weight 3T	No	4				
<b>SECTION-E5B: ELECTRICAL HOIST DSL CABLE</b>							<b>1.5.0</b>
E.5B.1	Electrically operated hoist 3T(EOT)	Set	4				
<b>SECTION-E5 C:SWITCHGEARS / MCC /PCC</b>							<b>1.5.0</b>

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E.5C.1	Soot Blower Motor Control Center, double front, overall dimension approx 21500(W)x2400(H)x500(D),approx WT 10T,	No	2				
E.5C.2	LT Main Switch Board approx.Overall dimensions 5800(L)X1600/900(D)X2400(H) mm, approx.Weight of each board 5.15 MT	No	2				
E.5C.3	Auxiliary control panel approx.Overall dimensions 3200(L)X900(D)X2400(H) mm, approx.Weight of each board 2.6 MT.	No	4				
<b>SECTION-E5 D : STARTER PANEL/BOXES/POWER DISTRIBUTION BOX/MARSHALLING BOXES</b>							<b>1.5.0</b>
E.5D.1	Electronic Control Panel . Overall dimensions 600X550X2000mm, Weight of each panel 0.25MT. BAPCON Electronic modules / rotary switches, etc along with cables and connectors, shall be supplied loose for mounting in the panel at site.	No	32				
E.5D.2	RAPPER CONTROL PANEL Approx.Overall dimension 1000X500X2050 mm, approx. Weight of each panel 0.202 MT. 2 Nos. RAPCON Electronic modules for each panel (along with cables connectors ) size 280 x210x210 mm shall be supplied loose for mounting in the panel at site	No	4				
E.5D.3	Ash Level Indicator comprising of level probe with extension lagging pipe, Electronic Unit, Interconnecting Cabling, Conduit, etc.Approx.Overall dimension 900(L)X100(D)X100(H)mm, approx. Weight 3 kg .	set	64				
<b>SECTION-E5E: DIGITAL AUTOMATIC VOLTAGE</b>							<b>1.5.0</b>

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E.5E.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.	Set	2				
<b>SECTION-E5F: LA assy/NGT/NGR/SP.</b>							<b>1.5.0</b>
E.5F.1	NGT,Approx dimension 2400Lx 1001D x1700H,approx wt 2MT.	No	2				
E.5F.2	NGR,Approx dimension 1450Lx 1000D x1200 H,approx wt 1 MT.	No	2				
E.5F.3	LAVT,Approx dimension 2500Lx 2300D x2300H,approx wt 2MT.	No	2				
<b>SECTION-E6:EQUIPMENT EARTHING MATERIALS</b>							<b>1.6.0</b>
E.6.1	50 x 6 mm GI earthing flat	Meter	2000				
E.6.2	30 X 5 mm GI earthing flat	Meter	1400				
E.6.3	3.15 mm GI earthing wire	Meter	7200				
<b>SECTION-E9 : ONLY TESTING &amp; COMMISSIONING</b>							<b>1.9.0</b>
E.9.1	Thermostat for hopper/support insulator,Approx dimension 350Lx 100D x100 H,approx wt 1 kg including calibration.	No	36				
E.9.2	High Voltage Rectifier Transformers (95 KV , 1200 mA) including oil filtration.	No	32				
E.9.3	Heating elements for Hopper Heater, Support Insulator Heater, Shaft Insulator Heaters of ESP	No	928				
E.9.4	Testing & Commissioning of Gered motor for Collecting electrode rapping/ GD Screen rapping.	No	68				

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E.9.5	Electrically (LT) Operated Valves, Dampers and Gates with Actuators, Limit Switches etc. (Regulating & ON/OFF Type).	No	400				
E.9.6	Generator system testing including arranging clearance from statutory regulatory authority	No	2				
E.9.7	Testing and commissioning of 6.6 KV HT motors including dryout	No	26				
E.9.8	Testing and commissioning of 415 V LT motors including dry out	No	206				
E.9.9	Testing and Commissioning of soot blower control panel, including mounting of mimic ,	No	4				
E.9.10	Testing & Commissioning of Wall, Long Retractable, Air Heater Soot Blower	No	284				
E.9.11	Mechanical interlocks system	No	4				
<b>Grand Total in figures (In Rs)</b>							
<b>Grand Total in Words</b> Rs.....							