

TENDER SPECIFICATION BHEL PSSR SCT 2106

For

Package 1: Erection, Testing & Commissioning of Control and Instrumentation (C&I) works for Unit 1 and identified BOP areas;
Package 2: Erection, Testing & Commissioning of Control and Instrumentation (C&I) works for Unit 2 and identified BOP areas;
**At 2 X 660 MW Udangudi Thermal Power Project, Kallamoli,
Tiruchendur Taluk, Tuticorin District, Tamil Nadu**

VOLUME –II PRICE BID

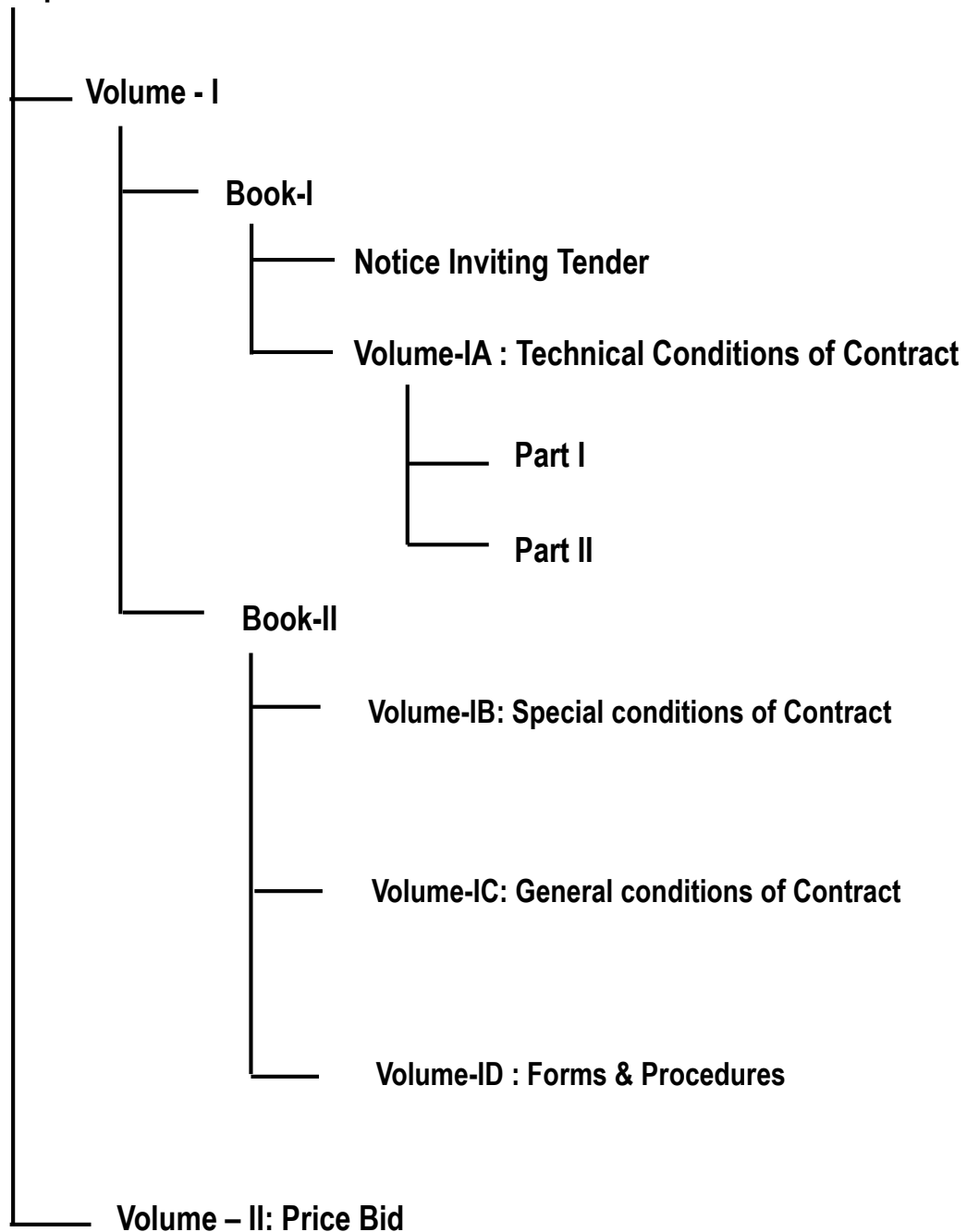


BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
Power Sector – Southern Region
BHEL Integrated Office Complex,
TNEB Road, Pallikaranai,
Chennai - 600100

TENDER SPECIFICATION CONSISTS OF

Tender Specification



PRICE BID

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Part C: Bill of quantities with weightage for amount of each items with respect to the total quoted price for Package -2	35

PART A

Instruction to Bidders:

1. The quantity indicated in the BOQ in Part C of Price Bid is approximate only and is liable for variation. Payment will be as per actual quantity executed and as certified by BHEL Engineer.
2. Tenderers are requested to affix their company seal and authorized signature in all pages.
3. Bidders shall quote 'Total Amount for Package-1' in the format enclosed as a separate Excel File in BHEL NIC e-Procurement portal for the subject tender and upload the same under 'Packet details - > Tender covers -> Finance '(Cover Type Description – Price Bid)' and same shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope of work defined in specification and in accordance with terms & conditions of the tender. Any other entry elsewhere in the price bid shall be treated as Null and Void. Quoting of rates in any other form/formats will not be entertained.
4. The above mentioned 'Total amount for Package-1' is for the entire Bill of Quantity (BOQ) for Package-1 given in Part -C of the Price Bid.
5. BHEL has pre-fixed the weightages for the amount of individual items of Bill of Quantity with respect to the 'Total Amount' in Part C of Price Bid.
6. Based on the pre-fixed weightages, the amount for the individual items of the Bill of Quantity shall be arrived at. This amount shall be rounded off to the nearest rupee.
7. Based on the quantities of individual item and the amount arrived in Sl. No: 6 above, unit rate of individual items shall be derived. This unit rate shall be rounded off to four decimal places.
8. Bidders to note that this is an item rate contract. Payment shall be made for the actual quantities of work executed as certified by BHEL Engineer.
9. Bidders to refer Clause 35 - Mode of Award of Notice Inviting Tender (NIT).

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
I	ERECTION AND COMMISSIONING OF LOCAL/FIELD MOUNTED INSTRUMENTS, DEVICES, SWITCHES	--		
B.1.1	PD Type Mass flow meter in HFO,LDO/HSD & HFO return line with mounting flanges, electronics amplifier box, inter connecting cabling, etc.	SET	2	.0000624
A.20.1 4,B.1. 11,D.3 .9,D.3 10,D.3 .13,E. 1.3,E. 2.4,E. 2.5,G. 5.2,G. 6.2,G. 7.5,K. 2.1,K. 2.5,K. 5.13	Pressure Transmitters / DP Transmitters / DP Type flow transmitters/Conductivity Transmitters/DP type LT	Nos	891	.0119214

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.20.1 ,A.20. 2,A.20 .10,E. 1.8,E. 2.10,G .5.6,K. 2.3,K. 5.8	Level Transmitter (Guided Wave/Ultrasonic/Capacitance Type) along with accessories	Nos	169	.0099394

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.20.4 ,B.1.2, B.6.1, C.1.1, D.3.7, D.3.8, E.1.1, E.1.2, E.2.3, E.2.6, E.3.1, F.1.4, G.5.1, G.6.1, G.7.6, K.2.2, K.5.7, K.6.14 ,K.7.4, K.7.5, K.7.7	Pressure / DP Gauge/Reverse Rotation Indicators	Nos	1,196	.0121633
K.7.1	Pressure Gauge with Switches	Nos	94	.0010234

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.20.6 ,B.1.3, B.6.3, C.1.2, D.3.3, E.1.12 ,E.2.2, F.1.5, G.5.4, G.6.4, G.7.4, G.11.1 ,G.11.2	Temperature Gauge	Nos	418	.0060953
C.1.3, E.1.7, E.2.7, E.3.2, F.1.6, F.1.7, G.11.4 ,K.2.4	Level Gauge	Nos	30	.0010375

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.20.5 ,B.1.4, B.6.2, D.3.1, D.3.12 ,D.5.1 2,E.1. 4,K.3. 1,K.4. 1,K.5. 6,K.7. 11	Pressure / Differential Pressure Switch / Temperature Switch	Nos	305	.0039883
A.20.7 ,A.20. 8,B.6. 15,E.4 .2,G.5. 5	Level Switches (RF/Float/Capacitance/Conductivity type) along with accessories	Nos	61	.002261

Part C : Bill of Quantities

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.20.3 ,D.3.2, D.3.5, E.1.5, E.1.6, E.2.9, E.4.1, G.2.1, G.5.3, G.6.3, G.7.1, G.7.2	Temperature Elements(RTD/Thermocouple with Thermowell/RTD with Thermowell) / Flow Elements	Nos	848	.0108124
A.20.1 1,E.1. 13	E/P Coverters, I/P Converters	Nos	37	.0004252
B.1.10 ,B.6.1 8,D.3. 11,E.1 .11,G. 7.7	Position Transmitters	Nos	81	.0012034
B.6.16	ERV Controller with Pressure Switch	SET	4	.0002975
B.1.5	FSSS Local Oil Gun Maintenance Switch Box	Nos	18	.0004081

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
B.1.6, F.1.3	H.E.A Exciter Box with Accessories	SET	17	.0006756
B.1.7, F.1.1	Flame Scanner Head Assembly with accessories	SET	33	.0012851
B.5.2	Feeder Coal Flow Assembly flange mounted with Electronics	SET	7	.0008594
B.6.4, B.6.5, B.6.6, B.6.7, B.6.8	MTM T/C (Route Length 8 to 18 MM) - 8MM OD	Nos	187	.005198
B.6.9, B.6.10, B.6.11, B.6.12, B.6.13	MTM T/C (Route Length 20 to 28 MM) - 8MM OD	Nos	303	.0152845
B.6.14	MTM T/C (Route Length 30 to 40 MM) - 8MM OD	Nos	5	.000257
B.1.9, B.6.17, D.3.4, G.5.7	Flow Switch/Flow meter/Flow Indicator/Vacuum Switch	Nos	22	.0004588
D.3.14	GO, No GO Switch	Nos	4	.0002899

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
D.3.6, K.1.10	On/Off Switch Box including light assembly and interconnecting heat resistant cable	SET	7	.0002618
E.2.11 ,G.11.3	Thermowells (Screwed & Welded)	Nos	36	.0002316
E.1.9, E.2.8, G.7.8	Speed Measuring Loop/Speed Probe/Speed Sensor/Vibration Transducer	Nos	62	.000742
A.20.1 3,J.1.1	Flow Transmitters (Other than DP type)	Nos	59	.0032596
A.20.1 2,B.11 .1.1,B. 11.1.2 ,B.11. 1.3,D. 4.4	Air Filter Regulator-(1/4 inch -1 inch)	Nos	72	.000544
E.1.10	Proximeter Units, Local Field Cable etc. for Governing Sytem	SET	32	.0004502
C.1.11	Averaging Pitot Tube	SET	2	.0000857
G.10.2	Emergency Push Buttons (for Fire Protection of TG)	Nos	12	.000396

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.20.9 ,B.6.1 9,E.2. 1	Temperature Transmitter	Nos	635	.0084962
K.6.3	Multisensor Detectors	Nos	1,300	.0018699
K.6.4, K.6.6	Air Sampling/Probe/IR (Air Purge) Detectors	Nos	69	.0002007
K.6.5	Beam Detectors/IR (Flame) Detectors	Nos	1	.0000145
K.7.17	Special Switches-Abort/Pneumatic/Manual	Nos	9	.0000523
K.6.12	Hooter cum Strobes	Nos	170	.0012334
K.6.11 ,K.6.1 3	Modules	Nos	344	.0100088
K.6.10	Digital Controllers	Nos	46	.0008932
K.7.2	Release Unit with Solenoid, CPG & Actuator	Nos	9	.000133
K.7.12	Gas Discharge E.P.B Inhibitor Unit 121 (L) x 82 (W) x 23 (D), 420 gms	Nos	8	.0002328
K.7.9, K.7.10	Pressure Regulator/Pressure Relief Vent	Nos	26	.0001886
K.6.7	Manual Call points	Nos	185	.0053826

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
K.6.15 ,K.7.1 3	EXIT/WARNING Signs	Nos	197	.000573
II	ERECTION AND COMMISSIONING OF SPECIAL INSTRUMENTS	--		
A.21.1 ,A.21. 2	High Temp/Low Temp O2 Analyzer	SET	19	.005643
A.21.5 ,D.1.1	Opacity Monitor	SET	5	.0020494
A.21.6	SOX/NOX/CO (Combined) Analyzer / Flue Gas Analyzer	SET	1	.0012035
A.21.3 ,A.21. 4,A.21 .7,A.2 1.8	CO/Velocity/HF/Mercury/NOX/SOX/NH3/Gas Flow Analyzer	SET	9	.0092942
A.22.1	SWAS System	SET	1	.0034083
A.23.2 .A	Installation of mounting pad, brackets for shaft vibration, key phasers for Package 1. This broadly covers equipments of Unit#1, CWPH of Unit#1 and Common, Compressor Pump House, CPU, Fire Water Pump House, Sea Water Intake Pump House, RODM	Set	1	.0032208
III	ERECTION AND COMMISSIONING OF UPS/BATTERY & BATTERY CHARGER	--		

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.26.1 .A	2X250 kVA UPS	SET	1	.0037932
A.27.1	2X20 kVA UPS	SET	10	.0138024
A.47.0	3 kVA/ 5kVA UPS	Nos	9	.0001348
A.26.7 .A	Battery 2140 AH/1820AH made up of around 252 cells with accessories for UPS System for Main Plant	SET	2	.0045967
A.27.6	Battery made up of around 110 cells, 200AH cells with accessories for UPS System for offsite locations	SET	20	.0200648
A.26.9	24 V DC Lead Acid Battery :Rating 535AH 24 V DC Total cells 12 nos with accessories for TG Siemens	SET	2	.0001911
K.1.8, K.5.3	Battery & Battery Charger (including panels and accessories) for Fire Protection System	SET	6	.000962
A.26.2 ,A.27. 2	ACDB	Nos	22	.0136358
A.26.8	24 V/ 125 A Battery Charger	Set	1	.0002464
IV	ERECTION AND COMMISSIONING OF CONTROL PANELS AND RELATED ACCESSORIES	--		
B.2.1	Acoustic Steam Leak Detector System consisting of 19 inch rack along with all loose supplied items such as controllers, electronic sensors, interfacing boxes, cables, etc.	SET	1	.0007487
D.2.1	Automatic Leakage Control System for Air Pre-Heater comprising of ALCS panels, Controllers, accessories and interconnecting cables	SET	1	.0008433

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
B.3.1	Furnace CCTV System (Panels, CCTV Head Assembly, AFRs, SS Hose mounted at Boiler, Remote Control Box, other related electronics, accessories, etc.)	SET	4	.0011731
G.1.1	Moisture Measurement System panel with controller and accessories	SET	1	.0002378
G.1.2	Generator end Vibration Monitoring Cabinet with cables, monitors and accessories	SET	1	.0002381
G.1.3	Grounding Brush Monitor	SET	1	.0001103
G.1.4	H2 Gas Analyzer Cabinet	SET	2	.0003882
A.42.1	Master Slave Clock System Panel with accessories, 42 U Panel, GPS Antennal, GPS Receiver	SET	1	.00016
A.42.2	Slave Clock (RS 485 based)/NTP Based	Nos	50	.0024291
B.5.1	Gravimetric Feeder Remote Power Cabinet and accessories	Nos	7	.0017248
A.26.6 ,A.27. 3	Battery Health Monitoring System Panels	Nos	22	.0037623
A.19.2 ,E.5.1	TSI System for BFP Drive Turbine / Main Turbine Complete Sensors and Assembly Items	SET	3	.0021152
A.19.1 ,B.1.8, F.1.2	19 inch racks for applications like Microprocessor based Flame Scanner Amplifier/TSI,etc.	SET	10	.005466
B.10.3	Pulveriser Dynamic Classifier - VFD Panel	Nos	7	.0020404

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.5.1, A.5.2, A.5.3, A.5.4	Network Panels	Nos	6	.0006247
A.28.8 ,A.28. 9,A.29 .6.5,G. 13.4	Network Enclosures with / without Ethernet Switches, bar graph enclosures	Set	16	.0009891
K.1.6, K.5.2	Diesel Engine Control Panel (Approx. dim 1200mm(h) x 600mm(w) x 300mm(b))	Nos.	6	.0008727
K.1.7	Control Panels (of Fire Water Pumps/Booster Pumps) (L 500mm x B 400mm x H 600mm)	Nos.	2	.0001616
K.3.3, K.4.3, K.5.5	Deluge Valve Control Panels	Nos	112	.003258
K.6.1, K.6.2	Fire Alarm/Repeater Panel	SET	9	.001309
K.7.6	Gas Release Panels with Batteries	SET	1	.0001454
K.6.26	Siren and its Control Panel	Set	1	.000613
V	ERECTION OF VFD PANELS IN SWRO SYSTEM (SUPERVISION OF ERECTION & COMMISSIONING IS IN OEM SCOPE.)	--		

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.16.1	HV VFD Panel	Set	2	.0017936
A.17.1	LV VFD Panel (1600mm(W) X 800mm (D) X 2300mm(H))	Set	6	.0014564
A.17.2	LV VFD Panel (1200mm(W) X 800mm (D) X 2300mm(H))	Set	2	.0003641
A.17.3 ,A.17.4	LV VFD Panel (1000mm(W) X 800mm (D) X 2300mm(H))	Set	4	.0005461
VI	PLACEMENT, ALIGNMENT,ERECTION, ELECTRICAL INTERCONNECTION, TESTING AND COMMISSIONING OF DCS PANELS	--		
A.2.1, A.3.1, A.3.4, A.4.1, A.4.2, A.9.1, A.10.1 ,A.10.3,A.11.2,A.12.1,A.13.1,A.15.1, A.18.1 ,A.23.1.3,G.13.1	Suite of One Cubicles	Nos	42	.0069532

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.1.1, A.2.2, A.3.5, A.8.1, A.9.2, A.10.2 ,A.11. 1,A.12 .2,A.1 3.2,A. 15.2,A .18.2, A.23.1 .2	Suite of Two Cubicles	Nos	19	.0049194
A.1.2, A.2.3, A.3.2, A.3.6, A.3.7, A.6.1, A.7.1, A.9.3, A.13.3 ,A.23. 1.1	Suite of Three Cubicles	Nos	34	.0145197

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.1.3, A.2.4, A.3.3	Suite of Four Cubicles	Nos	10	.0046198
A.1.4	Suite of Five Cubicles	Nos	2	.0011856
VII	INSTALLATION AND COMMISSIONING OF HMI SYSTEM WITH COMPLETE ACCESSORIES AND CONNECTIVITY	--		
A.36.1 .3,A.3 6.1.4, A.36.1 .5,A.3 6.1.6, A.36.2 .2,A.3 6.3.3, A.36.3 .4,A.3 6.3.5, A.36.3 .6,A.3 6.3.7, A.36.4 .2,A.3 6.4.3, K.6.17	Printers (Laser Jet/Dotmatrix A4/A3/COLOUR/BW)	Nos	31	.0012694

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.34.1	LED Based Video Wall comprising of LVS and rear projection module, in 5x1 matrix with individual cube of size (80 in.- 84 in. diagonal with 1600 mm x 1200 mm) along with controller 1 set and Rear Access DLP cube Video Wall comprising of LVS and rear projection module, in 1x1 configuration with cube size of (80 in.- 84 in. diagonal with 1600 mm x 1200 mm) along with controller 1 set and other interconnectors like matrix switchers, port splitters and cables like DVI Cables, Video Cables, serial cable, power supply sockets, bezel/frame for the complete LVS video wall, and Mounting stand approx. 1200 mm height / arrangement etc. with overall dimensions of the complete video wall arrangement as approx. 9944.6 mm (chord) x 2400 mm (height) x 964 mm { width }	SET	1	.0044084
A.34.2	LED Based Video Wall comprising of LVS and rear projection module, in 2x1 matrix with individual cube of size (80 in.- 84 in. diagonal with 1600 mm x 1200 mm) along with controller 1 set and and other interconnectors like matrix switchers, port splitters and cables like DVI Cables, Video Cables, serial cable, power supply sockets, bezel/frame for the complete LVS video wall, and Mounting stand approx. 1200 mm height / arrangement etc. with overall dimensions of the complete video wall arrangement as approx. 3296.2 mm(chord)x2400mm(height)x964mm{width}	SET	1	.0016517
A.35.0	80 in. LED TV along with controller 1 set and and other interconnectors like matrix switchers, port splitters and cables like DVI Cables, Video Cables, serial cable, power supply sockets, etc. and Mounting stand approx. 1200 mm height / arrangement etc.	SET	1	.000879

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.21.9 ,A.23. 4,A.36 .1.1,A. 36.1.2 ,A.36. 2.1,A. 36.3.1 ,A.36. 3.2,A. 36.4.1 ,G.13. 2,G.13 .3,K.6. 16	OWS with Monitor/Servers (incl. monitor) /Stations/User PC/OPC Client, alongwith UPS upto 1kVA	Nos	59	.0040846
VIII	VOID	--		
IX	INSTALLATION OF FURNITURES	--		
A.43.2	Unit Control Desk-8 Section with Accessories	SET	1	.0015006
A.43.3	Operator Desk-3 Section with Accessories	SET	3	.0018889
A.43.4	Operator Desk-2 Section with Accessories	SET	2	.0009322

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.21.1 0,A.23 .5,A.4 3.5,K. 6.18,A .43.6, K.6.19	Computer Table / Printer Table, along with chairs	SET	53	.0052035
A.43.7 ,A.48. 0	Almirah/Safety Locker/Printer Rack	SET	13	.0005904
X	VOID	--		
XI	ERECTION AND COMMISSIONING OF JB/PUSH BUTTONS	--		

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.23.3 ,A.31. 1,A.31 .2,A.3 1.3,A. 31.4,B .9.1,B. 9.2,B. 9.4,B. 9.5,B. 9.7,D. 5.6,E. 4.3,E. 6.7,F. 1.8,F. 1.9,K. 7.14	Junction Boxes upto 48 Way	Nos	766	.0148739
A.31.5 ,A.31. 6,A.31 .7,B.9. 3,B.9. 6,B.10 .4,G.1 0.1	Junction Boxes Above 48 Way upto 96 Way	Nos	101	.0024711

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.16.2 ,A.17.5	Push Button Station	Nos	14	.0001677
D.5.7	SVEB (5,12,15 Valve Variant) (Solenoid Valve Enclosure Boxes 660mmx450mm and 660mmx660mm) and interconnections	Nos.	30	.000734
A.31.8 ,A.31.9,A.31.10	Junction Box for Temperature Transmitter	Nos	98	.0052726
XII	ERECTION AND COMMISSIONING OF LIE/LIR	--		
E.6.1, E.6.2, E.6.3, E.6.4	Local Gauge Boards	SET	10	.0012852
A.28.1 ,A.28.2,A.28.3,B.10.1	Local Instrument Enclosure	SET	77	.0099919

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.28.4 ,A.28. 5,A.28 .6,A.2 8.7,B. 10.2,E .6.5,E. 6.6,G. 8.1,G. 8.2,G. 12.16	Local Instrument Rack	SET	74	.0088676
XIII	ERECTION AND COMMISSIONING OF PNEUMATIC POWER CYLINDERS (ON/OFF & REGULATING TYPE)	--		
B.4.1	SADC	SET	116	.0092574
B.4.2	PA/ID/FD Blade Pitch & other Control Dampers	SET	30	.0047781
B.4.3, B.4.4, F.1.14	Hot Air/Cold Air/FD Fan Regulating Dampers	SET	16	.0029427
B.4.5	Dynavane Filter Pressure Control Damper with SMART positioner	SET	1	.0001616
E.4.4	Solenoid Operated Valves	SET	14	.0001328

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
E.9.10 ,K.3.2, K.4.2, K.5.4, K.7.8	Solenoid Valves	Nos	136	.0014935
XIV	LAYING OF POWER CABLES	--		
A.26.3	UN 0000 - Uninyvin- Equivalent: 1Cx109 Sqmm Cu	Mtrs	1,600	.0018105
A.26.1 2	3CX10SQmm	Mtrs	200	.0000433
B.7.26	3Cx16.0 sq.mm	Mtrs	2,200	.0004763
A.27.7	Uninyvin Cables, size 00 (68.3 sq.mm Cu Cable)	Mtrs	6,000	.0042543
A.26.1 0	2C X 35 sq.mm	Mtrs	1,000	.0002121
K.5.12	1CX90 sq.mm	Mtrs	200	.0000545
A.26.1 1	1CX400sqmm	Mtrs	800	.0005366
XV	TERMINATION OF POWER CABLES	--		
A.26.5	UN 0000 - 1CX109 SQMM CU	Nos	12	.0000409
A.27.5	Uninyvin Cables, size 00 (68.3 sq.mm Cu Cable)	Nos	40	.0000787

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
K.5.14	1CX90 sq.mm	Nos	2	.0000026
A.26.1 4	1CX400sqmm	Nos	6	.0000353
A.26.1 3	2C X 35 sq.mm	Nos	8	.0000082
A.26.1 5	3CX10SQmm	Nos	2	.0000014
B.7.27	3CX16SQmm	Nos	14	.0000161
XVI	LAYING AND TERMINATION OF CONTROL CABLES, POWER CABLES, LOOP CABLES	--		
B.7.17 ,D.5.4. 1,K.1. 9,K.3. 4,K.4. 4,K.4. 5,K.5. 10,K.7 .15,K. 6.21,K .6.22	2CX1.5 SQMM/2CX2.5 SQMM	Mtrs	95,338	.0202015

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.29.4 .1,A.2 9.4.3, B.7.14 ,D.5.3. 1,D.5. 4.2,F. 4.1,A. 42.4,B .7.25, G.4.1	3CX1.5 SQMM/3CX2.5 SQMM/4CX2.5 SQMM/4CX6 SQMM	Mtrs	119,200	.0276755
A.29.4 .2,A.2 9.5.1, B.7.15 ,B.7.1 8,B.7. 19,K.5 .9	5CX2.5 SQMM/7CX2.5 SQMM/5CX1.5SQMM	Mtrs	24,310	.0061737
B.7.20 ,B.7.2 1,D.5. 3.2	9CX2.5 SQMM/10CX1.5 SQMM/ 10CX2.5 SQMM/12CX2.5 SQMM	Mtrs	32,300	.010254
XVII	LAYING AND TERMINATION OF INDIVIDUAL & OVERALL SHIELDED (TYPE G/F), TWISTED PAIR, ARMOURED/UNARMOURED CABLES, KX TYPE CABLES, OFC, OTHER SPECIAL CABLES	--		

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.29.1 .1,A.2 9.1.4, A.29.2 .1,A.2 9.3.1, A.29.5 .2,A.2 9.5.4, A.42.5 ,B.7.1, B.7.2, B.7.6, B.7.7, B.7.10 ,B.7.1 6,B.7. 24,D.5 .1.1,F. 3.1,J.2 .1,J.3. 1	2PX0.5 SQMM/ 2TX0.5SQMM/ 2PX1.5SQMM/ 2PX1.31SQMM/ 2PX16AWG KX/NX/G CABLE, Heat Flux Sensor Cable 2P	Mtrs	289,000	.0611578

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.29.1 .2,A.2 9.2.2, A.29.3 .2,A.2 9.3.3, A.29.5 .3,B.7. 3,B.7. 8,B.7. 11,B.7 .13,B. 7.22,D .5.1.2, D.5.2. 1,E.8. 1,J.2.2 .J.2.3, J.3.2	4PX0.5 SQMM/ 6PX0.5SQMM, F/G CABLE, 4PX1.31 SQ.MM KX,	Mtrs	307,000	.0747535

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.29.1 .3,A.2 9.2.3, A.29.3 .4,B.7. 4,B.7. 9,B.7. 12,D.5 .1.3,D. 5.2.2,J .2.4,J. 3.3	8PX0.5 SQMM CABLE, 8PX1.31SQMM KX Type	Mtrs	316,190	.1067957
A.29.2 .4,A.2 9.3.5, B.7.5, B.7.23 ,D.5.1. 4,D.5. 2.3,J.2 .5,J.3. 4	12PX0.5 SQMM/ 12PX1.31 SQMM KX CABLE	Mtrs	111,250	.0447341
A.29.6 .1,A.4 2.6,G. 13.5	CAT-6 UTP CABLES/Ethernet Cables	Mtrs	28,500	.0036188

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.26.4 ,A.27. 4,A.42 .3	RS-485/RG-58 CABLE	Mtrs	13,400	.0053894
A.29.6 .3,K.6. 23	HDPE Conduits	Mtrs	10,465	.0147961
A.23.6 ,A.29. 6.2,A. 42.7,K .6.24	Laying of Optical Fibre Cable	Mtrs	18,130	.0065221
A.23.7 ,A.29. 6.4,A. 42.8,K .6.25	Splicing of Optical Fibre Cable	Nos	462	.0022039
J.2.6	16PX0.5SQMM	Mtrs	11,000	.0052658
J.2.7	24PX0.5SQMM	Mtrs	10,000	.0067848
K.6.8, K.6.9	Digital LHS Cables	Mtrs	37,800	.0080096
XVIII	ERECTION OF CABLE TRAYS WITH/WITHOUT COVER	--		

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.30.1 ,A.30.3,B.8.1,D.5.5.1,E.8.2,F.1.10	PERFORATED CABLE TRAYS 50 MM WIDE	Mtrs	4,980	.0095897
A.30.2 ,A.30.4,B.8.2,D.5.5.2	PERFORATED CABLE TRAYS 100 MM WIDE	Mtrs	5,550	.0135656
B.8.3, E.8.3, F.1.11	PERFORATED CABLE TRAYS 150 MM WIDE	Mtrs	1,895	.0052942
A.30.5	PERFORATED CABLE TRAYS 200 MM WIDE	Mtrs	100	.0003143
A.30.6 ,K.7.1 6	PERFORATED CABLE TRAYS 300 MM WIDE	Mtrs	130	.0004995
A.41.2	Duct Tray - 60x60x1000 mm	Mtrs	210	.0004512
A.41.3	Duct Tray - 180x100x1000 mm	Mtrs	110	.0004202
A.41.4	Duct Tray - 250x100x1000 mm	Mtrs	110	.0007066

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
XIX	FABRICATION AND INSTALLATION OF STRUCTURAL STEEL	--		
A.41.1 ,B.12. 1,D.5. 8,E.7. 1,E.7. 2,F.1. 13,G.1 0.3,K. 5.11	STRUCTURAL STEEL (ISMC/ISMB/ANGLE etc)	MT	54.2	.0210508
XX	ASSEMBLY AND ERECTION OF MOUNTING FRAMES	--		
A.41.5	Assembly and Installation of Mounting frames with loose supplied prefabricated materials like slotted angles, channels, etc.	MT	2.5	.0003172
XXI	ERECTION AND TESTING OF IMPULSE PIPES CS/AS/SS , CPVC PIPES, CU TUBES	--		

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.32.4 ,B.11. 2.3,B. 11.2.6 ,C.1.8, C.1.9, C.1.10 ,G.9.5, G.9.6, G.9.7, G.9.8, G.9.9	AS tubes upto 1 inch	Mtrs	3,910	.0172927

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.32.1 ,A.32.2,A.32.3,B.11.2.1,2.1,B.11.2.2,B.11.2.4,5,C.1.5,C.1.6,C.1.7,E.7.3,E.7.8,G.9.1,F.1.12,G.9.3,G.9.4	CS tubes upto 1 inch, 16X2.6mm, 13.5 X 2.6	Mtrs	24,180	.0864766
A.22.2 ,E.7.4,G.9.2	CS pipes 2 inch and above	Mtrs	410	.0044602

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.22.5 ,A.32. 5,A.32 .6,A.3 2.7,B. 11.1.4 ,B.11. 1.5,B. 11.1.6 ,B.11. 1.7,B. 11.1.8 ,B.11. 2.7,C. 1.4,D. 5.11,E .7.5,E. 7.6,E. 7.7	SS upto 1 inch, 12.7x2.1, 6x1.5, Cr. Al. Pipe 21.3 x 3.73mm	Mtrs	17,645	.0214645
A.22.4 ,A.22. 3	SS pipes above 1 inch upto 2 inch	Mtrs	40	.0000889
A.33.0	CPVC Pipes	Mtrs	2,600	.0012938
D.5.10	Cu tubes upto 1 inch	Mtrs	3,000	.0020072
XXII	ERECTION AND TESTING OF HOSES, TUBES & GI PIPES	--		

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
B.11.1 .9,B.1 1.1.10 ,B.11. 1.11	1/4,1/2,1 INCH TEFLON HOSE 1MTR/2MTR/3MTR LONG	Nos	160	.0003369
B.12.2	1/2 inch GI Pipe	Mtrs	1,300	.0025451
XXIII	CHECKING & COMMISSIONING OF THE FOLLOWING ERECTED BY MECHANICAL AGENCY	--		
B.13.8	Burner Tilt Shear Pin Failure Indication JB with accessories	Nos	8	.000742
C.2.1, D.5.9. 3,D.5. 9.4,E. 9.5,E. 9.11,E .9.12, F.2.1, F.2.2, F.2.3, G.12.1 7,G.14 .0,J.4. 1,K.7. 3	Control Valves with Smart positioner/AFR/Air Lock valves etc	SET	409	.0078112
D.4.6	Field Instruments (Level Gauges/Pressure/DP/Temperature Gauges)	Nos	18	.0002676

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
B.13.1 ,B.13.6,D.3.15,D.5.9.1,D.5.9.6,G.12.5	Limit Switches/Level Switches	Nos	100	.0007226
B.13.5 ,D.4.2	Pneumatic Actuators for Dampers	Nos	80	.0120335
H.1.1, D.4.7	RTDs/Thermowells of various drives	Nos	843	.0048089
B.13.7 ,D.4.3, D.5.9.5,G.12.6	Solenoid Valves for different applications like Corner Station valves, Regulating valves, etc.	Nos	328	.0028815
XXIV	REMOVAL, CALIBRATION & RE-FIXING OF INSTRUMENTS ERECTED BY OTHER AGENCIES	--		
G.12.4	Field Instruments (Transmitters)	Nos	24	.0003992
E.5.2, H.1.2	Field Instruments (Temperature Gauges/Indicators)	Nos	109	.0015402
XXV	LOOP CHECKING OF THE INSTRUMENTS OF THE FOLLOWING EQUIPMENTS/ACTUATORS/DAMPERS	--		

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
G.3.1	Loop checking of instruments of Generator, Turbine	Set	1	.0008557
B.13.3 ,B.13. 4,C.2. 2,D.4. 1,D.5. 9.2,E. 9.7,F. 2.4,F. 2.6,G. 12.7,G .12.8, G.12.1 5,G.15 .0,H.1. 3,J.4.2	Electrical Actuators for Valves/ Dampers, including loop checking	Nos	282	.0041689
XXVI	REMOVAL, CALIBRATION AND REFIXING OF INSTRUMENTS, CHECKING SOLENOID VALVES, DRIVES, INCLUDING WIRING ON THE RACK ETC	--		
D.4.5, D.4.8, D.4.9, D.4.10 ,E.9.1, E.9.3, G.12.1 0	Lub Oil System/Oil Centrifuge Unit/Lub Oil skid/Main Oil Tank	SET	20	.0019694

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
G.12.3	Oil Centrifuge Unit	SET	2	.0002787
J.4.3,J.4.4,J.4.5,J.4.6	Dosing Skid (Oxygen, Ammonia, NaOH,Hydrazine)	SET	5	.0004566
E.9.8	Hydraulic Coupling of MDBFP	SET	1	.0002552
G.12.1	Condenser Vacuum Pump	SET	4	.0005684
B.13.9	Gravimetric Feeder comprising of Feeder mounted C&I equipment	SET	7	.0008621
G.12.9	HPSU Skid for Governing Control	SET	1	.000249
E.9.9	Governing Console Board	SET	2	.0004083
B.10.5,B.10.6,G.12.11	HP/LP Bypass/HWL-1&2/MEFCV control valve skid instrumentation	SET	3	.0005709
G.12.12,G.12.13	Seal Oil Unit / Stator water Unit	SET	2	.0003995
G.12.14	H2 Dryer Unit	SET	2	.0002742
A.44.1	Transducers-Voltage/Current/Frequency output 4-20 mA	Nos	25	.0005634

Part C : Bill of Quantities

Tender Specification for Package 1 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-1 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
XXVI I	REMOVAL, CALIBRATION & RE-FIXING OF INSTRUMENTS FOR ACID CLEANING	--		
J.5.1	Temp. Gauges	Nos	3	.0000385
J.5.2	Pressure Gauges	Nos	2	.0000263
J.5.3	Thermocouple Stem type and MTM	Nos	8	.0000296
J.5.4	Junction Boxes	Nos	3	.0000622
XXVI II	ELECTRONIC EARTH PITS	--		
L	Electronic Earth Pits: Treated Earth pit of Galvanised MS pipe of 65 mm Dia, 3000 mm long perforated with clamp, funnel and accessories including all civil works, filling of earth pit of size min 400x400x3000 mm with alternate layer of charcoal & salt as per IE specification and making of brick chamber, with both side plastering, supply and fixing of manhole with CI cover plate/RCC Slab etc. complete as per IS 3043 (only 3000 mm long, 65 NB Galvanized MS pipe shall be supplied by BHEL; All other accessories as mentioned above are in vendor's scope). If desired resistivity is not achieved then Bentonite mix to be used by the contractor. Supply of Bentonite mix is in the scope of bidder.	Nos	15	.0026217
TOTAL Weightage				0.9999981

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
I	ERECTION AND COMMISSIONING OF LOCAL/FIELD MOUNTED INSTRUMENTS, DEVICES, SWITCHES	--		
B.1.1	PD Type Mass flow meter in HFO,LDO/HSD & HFO return line with mounting flanges, electronics amplifier box, inter connecting cabling, etc.	SET	2	.0000778
A.20.1 4,B.1. 11,D.3 .9,D.3 10,D.3 .13,E. 1.3,E. 2.4,E. 2.5,G. 5.2,G. 6.2,G. 7.5	Pressure Transmitters / DP Transmitters / DP Type flow transmitters/Conductivity Transmitters/DP type LT	Nos	608	.01014
A.20.1 .A.20. 2,A.20 .10,E. 1.8,E. 2.10,G .5.6	Level Transmitter (Guided Wave/Ultrasonic/Capacitance Type) along with accessories	Nos	65	.0047651

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.20.4 ,B.1.2, B.6.1, C.1.1, D.3.7, D.3.8, E.1.1, E.1.2, E.2.3, E.2.6, E.3.1, G.5.1, G.6.1, G.7.6, K.6.14	Pressure / DP Gauge/Reverse Rotation Indicators	Nos	698	.0088483
A.20.6 ,B.1.3, B.6.3, C.1.2, D.3.3, E.1.12 ,E.2.2, G.5.4, G.6.4, G.7.4, G.11.1 ,G.11. 2	Temperature Gauge	Nos	381	.0069251

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
C.1.3, E.1.7, E.2.7, E.3.2, G.11.4	Level Gauge	Nos	23	.0009915
A.20.5 ,B.1.4, B.6.2, D.3.1, D.3.12 ,E.1.4, K.3.1, K.4.1	Pressure / Differential Pressure Switch / Temperature Switch	Nos	204	.0033251
A.20.7 ,A.20. 8,B.6. 15,E.4 .2,G.5. 5	Level Switches (RF/Float/Capacitance/Conductivity type) along with accessories	Nos	61	.0028183

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.20.3 ,D.3.2, D.3.5, E.1.5, E.1.6, E.2.9, E.4.1, G.2.1, G.5.3, G.6.3, G.7.1, G.7.2	Temperature Elements(RTD/Thermocouple with Thermowell/RTD with Thermowell) / Flow Elements	Nos	825	.0131118
A.20.1 1,E.1. 13	E/P Coverters, I/P Converters	Nos	37	.00053
B.1.10 ,B.6.1 8,D.3. 11,E.1 .11,G. 7.7	Position Transmitters	Nos	81	.0014999
B.6.16	ERV Controller with Pressure Switch	SET	4	.0003709
B.1.5	FSSS Local Oil Gun Maintenance Switch Box	Nos	18	.0005087
B.1.6	H.E.A Exciter Box with Accessories	SET	16	.0007926

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
B.1.7	Flame Scanner Head Assembly with accessories	SET	32	.0015533
B.5.2	Feeder Coal Flow Assembly flange mounted with Electronics	SET	7	.0010712
B.6.4, B.6.5, B.6.6, B.6.7, B.6.8	MTM T/C (Route Length 8 to 18 MM) - 8MM OD	Nos	187	.0064792
B.6.9, B.6.10, B.6.11, B.6.12, B.6.13	MTM T/C (Route Length 20 to 28 MM) - 8MM OD	Nos	303	.0190517
B.6.14	MTM T/C (Route Length 30 to 40 MM) - 8MM OD	Nos	5	.0003203
B.1.9, B.6.17, D.3.4, G.5.7	Flow Switch/Flow meter/Flow Indicator/Vacuum Switch	Nos	22	.0005719
D.3.14	GO, No GO Switch	Nos	4	.0003614
D.3.6	On/Off Switch Box including light assembly and interconnecting heat resistant cable	SET	2	.0000932

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
E.2.11 ,G.11.3	Thermowells (Screwed & Welded)	Nos	36	.0002887
E.1.9, E.2.8, G.7.8	Speed Measuring Loop/Speed Probe/Speed Sensor/Vibration Transducer	Nos	62	.0009249
J.1.1	Flow Transmitters (Other than DP type)	Nos	3	.0002066
A.20.1 2,B.11 .1.1,B. 11.1.2 ,B.11. 1.3,D. 4.4	Air Filter Regulator-(1/4 inch -1 inch)	Nos	72	.0006781
E.1.10	Proximeter Units, Local Field Cable etc. for Governing Sytem	SET	32	.0005612
C.1.11	Averaging Pitot Tube	SET	2	.0001069
G.10.2	Emergency Push Buttons (for Fire Protection of TG)	Nos	12	.0004936
A.20.9 ,B.6.1 9,E.2. 1	Temperature Transmitter	Nos	620	.0103401
K.6.3	Multisensor Detectors	Nos	700	.001255

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
K.6.6	Air Sampling/Probe/IR (Air Purge) Detectors	Nos	30	.0001088
K.6.5	Beam Detectors/IR (Flame) Detectors	Nos	7	.0001269
K.6.12	Hooter cum Strobes	Nos	95	.0008592
K.6.11 ,K.6.1 3	Modules	Nos	186	.0067455
K.6.10	Digital Controllers	Nos	25	.0006051
K.6.7	Manual Call points	Nos	115	.0041707
K.6.15	EXIT/WARNING Signs	Nos	101	.0003662
A.25.2	MDF with integrated protection module - 600 ports	Set	1	.0001429
A.25.4 ,A.25. 5	IP Phone/Desktop/Wall mounted phone with accessories and interconnections	Nos.	525	.0022632
II	ERECTION AND COMMISSIONING OF SPECIAL INSTRUMENTS	--		
A21.1, A21.2	High Temp/Low Temp O2 Analyzer	SET	18	.0066637
A.21.5 ,D.1.1	Opacity Monitor	SET	5	.0025545

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.21.6	SOX/NOX/CO (Combined) Analyzer / Flue Gas Analyzer	SET	1	.0015001
A.21.3 .A.21. 4,A.21 .7,A.2 1.8	CO/Velocity/HF/Mercury/NOX/SOX/NH3/Gas Flow Analyzer	SET	9	.011585
A.22.1	SWAS System	SET	1	.0042484
A.23.2 .B	Installation of mounting pad, brackets for shaft vibration, key phasers for Package 2. This broadly covers equipments of Unit#2, CWPB of Unit#2	Set	1	.0019823
III	ERECTION AND COMMISSIONING OF UPS/BATTERY & BATTERY CHARGER	--		
A.26.1 .B	2X200 kVA UPS	SET	1	.0037825
A.27.1	2X20 kVA UPS	SET	2	.0034408
A.25.1 1,A.47 .0	3 kVA/ 5kVA UPS	Nos	10	.0001866
A.26.7 .B	Battery 2140 AH/1820AH made up of around 252 cells with accessories for UPS System for Main Plant	SET	2	.0057296
A.27.6	Battery made up of around 110 cells, 200AH cells with accessories for UPS System for offsite locations	SET	4	.005002

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.26.9	24 V DC Lead Acid Battery :Rating 535AH 24 V DC Total cells 12 nos with accessories for TG Siemens	SET	2	.0002382
A.25.6	48V FCBC with 48V DC Ni-Cd batteries	Set	2	.0006788
A.26.2 .A.27. 2	ACDB	Nos	6	.0046355
A.24.6	Power Distribution Panel for Simulator	Nos	1	.0002063
A.26.8	24 V/ 125 A Battery Charger	Set	1	.0003071
IV	ERECTION AND COMMISSIONING OF CONTROL PANELS AND RELATED ACCESSORIES	--		
B.2.1	Acoustic Steam Leak Detector System consisting of 19 inch rack along with all loose supplied items such as controllers, electronic sensors, interfacing boxes, cables, etc.	SET	1	.0009332
D.2.1	Automatic Leakage Control System for Air Pre-Heater comprising of ALCS panels, Controllers, accessories and interconnecting cables	SET	1	.0010511
B.3.1	Furnace CCTV System (Panels, CCTV Head Assembly, AFRs, SS Hose mounted at Boiler, Remote Control Box, other related electronics, accessories, etc.)	SET	4	.0014622
G.1.1	Moisture Measurement System panel with controller and accessories	SET	1	.0002964
G.1.2	Generator end Vibration Monitoring Cabinet with cables, monitors and accessories	SET	1	.0002968
G.1.3	Grounding Brush Monitor	SET	1	.0001374
G.1.4	H2 Gas Analyzer Cabinet	SET	2	.0004839

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
B.5.1	Gravimetric Feeder Remote Power Cabinet and accessories	Nos	7	.0021499
A.26.6 ,A.27.3	Battery Health Monitoring System Panels	Nos	6	.001279
A.19.2 ,E.5.1	TSI System for BFP Drive Turbine / Main Turbine Complete Sensors and Assembly Items	SET	3	.0026365
A.19.1 ,B.1.8	19 inch racks for applications like Microprocessor based Flame Scanner Amplifier/TSI,etc.	SET	9	.0061319
B.10.3	Pulveriser Dynamic Classifier - VFD Panel	Nos	7	.0025433
A.5.1, A.5.2, A.5.4	Network Panels	Nos	5	.0006489
A.24.9 ,A.25.3,A.38.8,A.38.9,A.28.8,A.28.9, G.13.4 ,A.29.6.5	Network Enclosures with / without Ethernet Switches, bar graph enclosures	Set	51	.00393
A.25.1	IP based EPABX system Panel (consisting server, gateway, switch etc)	Set	1	.0002063

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.45.0	Erection of Plant Security System Panel (size: 1000mmx800mmx2400mm weighing 700kg) (Commissioning by OEM)	Nos.	2	.0004607
K.3.3, K.4.3	Deluge Valve Control Panels	Nos	62	.002248
K.6.1	Fire Alarm/Repeater Panel	SET	2	.0003626
V	VOID	--		
VI	PLACEMENT, ALIGNMENT,ERECTION, ELECTRICAL INTERCONNECTION, TESTING AND COMMISSIONING OF DCS PANELS	--		
A.2.1, A.3.1, A.4.1, A.9.1, A.10.1 ,G.13. 1,A.14 .1	Suite of One Cubicles	Nos	18	.0037144
A.1.1, A.2.2, A.8.1, A.9.2, A.10.2 ,A.12. 2,A.23 .1.2	Suite of Two Cubicles	Nos	8	.0025819

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.1.2, A.2.3, A.3.2, A.3.6, A.23.1 .1,A.1 4.2	Suite of Three Cubicles	Nos	24	.0127753
A.1.3, A.2.4, A.3.3	Suite of Four Cubicles	Nos	10	.0057585
A.1.4	Suite of Five Cubicles	Nos	2	.0014778
VII	INSTALLATION AND COMMISSIONING OF HMI SYSTEM WITH COMPLETE ACCESSORIES AND CONNECTIVITY	--		

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.24.4 ,A.25. 8,A.36 .1.3,A. 36.1.4 ,A.36. 1.5,A. 36.1.6 ,A.36. 2.2,A. 36.3.7 ,A.37. 3,A.37 .4,A.3 7.5,A. 38.6,A .38.7, A.36.4 .3	Printers (Laser Jet/Dotmatrix A4/A3/COLOUR/BW)	Nos	59	.0030113

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.34.1	LED Based Video Wall comprising of LVS and rear projection module, in 5x1 matrix with individual cube of size (80 in.- 84 in. diagonal with 1600 mm x 1200 mm) along with controller 1 set and Rear Access DLP cube Video Wall comprising of LVS and rear projection module, in 1x1 configuration with cube size of (80 in.- 84 in. diagonal with 1600 mm x 1200 mm) along with controller 1 set and other interconnectors like matrix switchers, port splitters and cables like DVI Cables, Video Cables, serial cable, power supply sockets, bezel/frame for the complete LVS video wall, and Mounting stand approx. 1200 mm height / arrangement etc. with overall dimensions of the complete video wall arrangement as approx. 9944.6 mm (chord) x 2400 mm (height) x 964 mm {width}	SET	1	.0054949
A.24.1	LED Based Video Wall comprising of LVS and rear projection module with individual cube of size (80 inch diagonal with 1600 mm x 1200 mm) along with controller 1 set and and other interconnectors like matrix switchers, port splitters and cables like DVI Cables, Video Cables, serial cable, power supply sockets, bezel/frame for the complete LVS video wall, and Mounting stand approx. 1200 mm height / arrangement etc. with overall dimensions of the video wall arrangement as approx. 1600mm(length)x2400mm(height)x964mm{width}	SET	1	.0013696

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.21.9 ,A.23. 4,A.24 .2,A.2 4.3,A. 24.5,A .25.7, A.37.1 ,A.37. 2,A.38 .1,A.3 8.2,A. 38.3,A .38.5, A.36.1 .1,A.3 6.1.2, A.36.2 .1,G.1 3.2,G. 13.3,A .36.4. 1	OVS with Monitor/Servers (incl. monitor) /Stations/User PC/OPC Client, alongwith UPS upto 1kVA	Nos	268	.0231267
A.38.4 ,A.39. 0	LED TV (40 inch , 55 inch)	Set	11	.0007594

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
VIII	HMI PACKAGE TO BE INSTALLED AND COMMISSIONED AT TANGEDCO HQRS	--		
A.46.0	HMI Package to be installed at TANGEDCO HQRS comprising of PCs, Printer, etc. and their interconnectivity	Set	1	.00041
IX	INSTALLATION OF FURNITURES	--		
A.43.2	Unit Control Desk-8 Section with Accessories	SET	1	.0018705
A.43.3	Operator Desk-3 Section with Accessories	SET	3	.0023545
A.43.4	Operator Desk-2 Section with Accessories	SET	1	.000581
A.21.1 0,A.23 .5,A.4 3.5,A. 25.9,A .43.1. 2,A.43 .1.3,A. 25.10, A.43.6	Computer Table / Printer Table, along with chairs	SET	63	.0077099
A.43.7 ,A.43. 1.4,A. 48.0	Almirah/Safety Locker/Printer Rack	SET	14	.0007925

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.43.1 .1	Control Desk-4 sections with accessories	SET	2	.0018705
X	INSTALLATION OF C&I BENCH FOR CALIBRATION INSTRUMENTS	--		
A.40.0	Demonstration of lab instruments and Installation of Electronic Test Bench	SET	1	.0091885
XI	ERECTION AND COMMISSIONING OF JB/PUSH BUTTONS	--		
A.23.3 ,A.31. 1,A.31 .2,A.3 1.3,A. 31.4,B .9.1,B. 9.2,B. 9.4,B. 9.5,B. 9.7,E. 4.3,E. 6.7,A. 25.19	Junction Boxes upto 48 Way	Nos	733	.0177412

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.31.5 ,A.31.6,A.31.7,B.9.3,B.9.6,B.10.4,G.10.1	Junction Boxes Above 48 Way upto 96 Way	Nos	101	.0030801
A.31.8 ,A.31.9,A.31.10	Junction Box for Temperature Transmitter	Nos	92	.0061698
XII	ERECTION AND COMMISSIONING OF LIE/LIR	--		
E.6.1, E.6.2, E.6.3, E.6.4	Local Gauge Boards	SET	10	.0016019
A.28.1 ,A.28.2,A.28.3,B.10.1	Local Instrument Enclosure	SET	77	.0124546

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.28.4 ,A.28. 5,A.28 .6,A.2 8.7,B. 10.2,E .6.5,E. 6.6,G. 8.1,G. 8.2,G. 12.16	Local Instrument Rack	SET	73	.0109039
XIII	ERECTION AND COMMISSIONING OF PNEUMATIC POWER CYLINDERS (ON/OFF & REGULATING TYPE)	--		
B.4.1	SADC	SET	116	.0115391
B.4.2	PA/ID/FD Blade Pitch & other Control Dampers	SET	30	.0059558
B.4.3, B.4.4	Hot Air/Cold Air/FD Fan Regulating Dampers	SET	14	.0032095
B.4.5	Dynavane Filter Pressure Control Damper with SMART positioner	SET	1	.0002014
E.4.4	Solenoid Operated Valves	SET	14	.0001655
E.9.10 ,K.3.2, K.4.2	Solenoid Valves	Nos	65	.0008897

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
XIV	LAYING OF POWER CABLES	--		
A.26.3	UN 0000 - Uninyvin- Equivalent: 1Cx109 Sqmm Cu	Mtrs	1,600	.0022568
A.26.1 2	3CX10SQmm	Mtrs	200	.000054
B.7.26	3Cx16.0 sq.mm	Mtrs	2,200	.0005937
A.27.7	Uninyvin Cables, size 00 (68.3 sq.mm Cu Cable)	Mtrs	1,200	.0010606
A.26.1 0	2C X 35 sq.mm	Mtrs	1,000	.0002644
A.26.1 1	1CX400sqmm	Mtrs	800	.0006688
XV	TERMINATION OF POWER CABLES	--		
A.26.5	UN 0000 - 1CX109 SQMM CU	Nos	12	.0000509
A.27.5	Uninyvin Cables, size 00 (68.3 sq.mm Cu Cable)	Nos	8	.0000196
A.26.1 4	1CX400sqmm	Nos	6	.000044
A.26.1 3	2C X 35 sq.mm	Nos	8	.0000102

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.26.1 5	3CX10SQmm	Nos	2	.0000018
B.7.27	3CX16SQmm	Nos	14	.0000201
XVI	LAYING AND TERMINATION OF CONTROL CABLES, POWER CABLES, LOOP CABLES	--		
B.7.17 ,K.3.4, K.4.4, K.4.5, K.6.21 ,K.6.2 2	2CX1.5 SQMM/2CX2.5 SQMM	Mtrs	44,052	.011635
A.29.4 .1,B.7. 14,A.2 4.8,A. 25.20, B.7.25 ,G.4.1, J.6.0	3CX1.5 SQMM/3CX2.5 SQMM/4CX2.5 SQMM/4CX6 SQMM	Mtrs	85,500	.0247439

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu
at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.29.4 .2,A.2 9.5.1, B.7.15 ,B.7.1 8,B.7. 19	5CX2.5 SQMM/7CX2.5 SQMM/5CX1.5SQMM	Mtrs	23,300	.0073757
B.7.20 ,B.7.2 1	9CX2.5 SQMM/10CX1.5 SQMM/ 10CX2.5 SQMM/12CX2.5 SQMM	Mtrs	27,300	.0108028
XVII	LAYING AND TERMINATION OF INDIVIDUAL & OVERALL SHIELDED (TYPE G/F), TWISTED PAIR, ARMOURED/UNARMOURED CABLES, KX TYPE CABLES, OFC, OTHER SPECIAL CABLES	--		

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.29.1 .1,A.2 9.1.4, A.29.2 .1,A.2 9.3.1, A.29.5 .2,A.2 9.5.4, B.7.1, B.7.2, B.7.6, B.7.7, B.7.10 ,B.7.1 6,B.7. 24,J.2. 1,J.3.1	2PX0.5 SQMM/ 2TX0.5SQMM/ 2PX1.5SQMM/ 2PX1.31SQMM/ 2PX16AWG KX/NX/G CABLE, Heat Flux Sensor Cable 2P	Mtrs	186,400	.049168

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.29.1 .2,A.2 9.2.2, A.29.3 .2,A.2 9.3.3, A.29.5 .3,B.7. 3,B.7. 8,B.7. 11,B.7 .13,B. 7.22,E .8.1,J. 2.2,J.2 .3,J.3. 2,J.3.5	4PX0.5 SQMM/ 6PX0.5SQMM, F/G CABLE, 4PX1.31 SQ.MM KX,	Mtrs	274,590	.0833414
A.29.1 .3,A.2 9.2.3, A.29.3 .4,B.7. 4,B.7. 9,B.7. 12,J.2. 4,J.3.3	8PX0.5 SQMM CABLE, 8PX1.31SQMM KX Type	Mtrs	251,410	.1058452

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.29.2 .4,A.2 9.3.5, B.7.5, B.7.23 ,J.2.5, J.3.4,J .3.6	12PX0.5 SQMM/ 12PX1.31 SQMM KX CABLE	Mtrs	76,250	.0382174
A.24.7 ,A.25. 16,A.3 8.13,A .29.6. 1,G.13 .5	CAT-6 UTP CABLES/Ethernet Cables	Mtrs	28,300	.0044791
A.26.4 ,A.27. 4	RS-485/RG-58 CABLE	Mtrs	600	.0003008
A.29.6 .3,K.6. 23	HDPE Conduits	Mtrs	5,465	.0096312

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.23.6 ,A.29. 6.2,K. 6.24,A .25.17	Laying of Optical Fibre Cable	Mtrs	19,030	.0085332
A.25.1 8,A.23 .7,A.2 9.6.4, K.6.25	Splicing of Optical Fibre Cable	Nos	476	.0028303
J.2.6	16PX0.5SQMM	Mtrs	10,000	.005967
J.2.7	24PX0.5SQMM	Mtrs	6,000	.0050742
K.6.8, K.6.9	Digital LHS Cables	Mtrs	25,200	.0066558
A.25.1 4	PVC telephone cable	Mtrs	18,000	.0054632
A.25.1 5	Jelly filled cable	Mtrs	25,000	.0131666
A.25.1 3	PVC conduits and casing	Mtrs	16,000	.0099241
XVIII	ERECTION OF CABLE TRAYS WITH/WITHOUT COVER	--		

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.30.1 ,A.30.3,B.8.1,E.8.2	PERFORATED CABLE TRAYS 50 MM WIDE	Mtrs	2,980	.0071527
A.30.2 ,A.30.4,B.8.2	PERFORATED CABLE TRAYS 100 MM WIDE	Mtrs	4,100	.0124915
B.8.3, E.8.3	PERFORATED CABLE TRAYS 150 MM WIDE	Mtrs	1,795	.0062508
A.41.2	Duct Tray - 60x60x1000 mm	Mtrs	210	.0005624
A.41.3	Duct Tray - 180x100x1000 mm	Mtrs	110	.0005237
A.41.4	Duct Tray - 250x100x1000 mm	Mtrs	110	.0008807
XIX	FABRICATION AND INSTALLATION OF STRUCTURAL STEEL	--		
A.41.1 ,B.12.1,E.7.1,E.7.2,G.10.3	STRUCTURAL STEEL (ISMC/ISMB/ANGLE etc)	MT	30.2	.0146204
XX	ASSEMBLY AND ERECTION OF MOUNTING FRAMES	--		

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.41.5	Assembly and Installation of Mounting frames with loose supplied prefabricated materials like slotted angles, channels, etc.	MT	2.5	.0003954
XXI	ERECTION AND TESTING OF IMPULSE PIPES CS/AS/SS , CPVC PIPES, CU TUBES	--		
A.32.4 ,B.11.2.3,B.11.2.6 ,C.1.8, C.1.9, C.1.10 ,G.9.5, G.9.6, G.9.7, G.9.8, G.9.9	AS tubes upto 1 inch	Mtrs	3,910	.0215548

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.32.1 ,A.32.2,A.32.3,B.11.2.1,2.1,2.4,B.11.2.5,C.1.5,C.1.6,C.1.7,E.7.3,E.7.8,G.9.1,G.9.3,G.9.4	CS tubes upto 1 inch, 16X2.6mm, 13.5 X 2.6	Mtrs	22,070	.0983847
A.22.2 ,E.7.4,G.9.2	CS pipes 2 inch and above	Mtrs	410	.0055595

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
A.22.5 ,A.32.5,A.32.6,A.32.7,B.11.1.4,B.11.1.5,B.11.1.6,B.11.1.7,B.11.1.8,B.11.2.7,C.1.4,E.7.5,E.7.6,E.7.7	SS upto 1 inch, 12.7x2.1, 6x1.5, Cr. Al. Pipe 21.3 x 3.73mm	Mtrs	13,245	.0200833
A.22.4 ,A.22.3	SS pipes above 1 inch upto 2 inch	Mtrs	40	.0001108
A.33.0	CPVC Pipes	Mtrs	800	.0004962
XXII	ERECTION AND TESTING OF HOSES, TUBES & GI PIPES	--		

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
B.11.1 .9,B.1 1.1.10 ,B.11. 1.11	1/4,1/2,1 INCH TEFLON HOSE 1MTR/2MTR/3MTR LONG	Nos	160	.0004199
B.12.2	1/2 inch GI Pipe	Mtrs	1,300	.0031723
XXIII	CHECKING & COMMISSIONING OF THE FOLLOWING ERECTED BY MECHANICAL AGENCY	--		
B.13.8	Burner Tilt Shear Pin Failure Indication JB with accessories	Nos	8	.0009248
C.2.1, E.9.5, E.9.11 ,E.9.1 2,G.12 .17,G. 14.0,J. 4.1	Control Valves with Smart positioner/AFR/Air Lock valves etc	SET	138	.0032852
D.4.6	Field Instruments (Level Gauges/Pressure/DP/Temperature Gauges)	Nos	18	.0003335
B.13.1 ,B.13. 6,D.3. 15,G.1 2.5	Limit Switches/Level Switches	Nos	68	.0006125

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
B.13.5 ,D.4.2	Pneumatic Actuators for Dampers	Nos	80	.0149995
H.1.1, D.4.7	RTDs/Thermowells of various drives	Nos	427	.0030362
B.13.7 ,D.4.3, G.12.6	Solenoid Valves for different applications like Corner Station valves, Regulating valves, etc.	Nos	324	.0035479
XXIV	REMOVAL, CALIBRATION & RE-FIXING OF INSTRUMENTS ERECTED BY OTHER AGENCIES	--		
G.12.4	Field Instruments (Transmitters)	Nos	24	.0004976
E.5.2, H.1.2	Field Instruments (Temperature Gauges/Indicators)	Nos	63	.0011096
XXV	LOOP CHECKING OF THE INSTRUMENTS OF THE FOLLOWING EQUIPMENTS/ACTUATORS/DAMPERS	--		
G.3.1	Loop checking of instruments of Generator, Turbine	Set	1	.0010666

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
B.13.3 ,B.13.4,C.2.2,D.4.1,E.9.7,G.12.7,G.12.8,G.12.15,G.15.0,H.1.3,J.4.2	Electrical Actuators for Valves/ Dampers, including loop checking	Nos	254	.0046804
XXVI	REMOVAL, CALIBRATION AND REFIXING OF INSTRUMENTS, CHECKING SOLENOID VALVES, DRIVES, INCLUDING WIRING ON THE RACK ETC	--		
D.4.5, D.4.8, D.4.9, D.4.10 ,E.9.1, E.9.3, G.12.1 0	Lub Oil System/Oil Centrifuge Unit/Lub Oil skid/Main Oil Tank	SET	20	.0024548
G.12.3	Oil Centrifuge Unit	SET	1	.0001737

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
J.4.3,J.4.4,J.4.5,J.4.6	Dosing Skid (Oxygen, Ammonia, NaOH,Hydrazine)	SET	5	.0005691
E.9.8	Hydraulic Coupling of MDBFP	SET	1	.0003181
G.12.1	Condenser Vacuum Pump	SET	4	.0007085
B.13.9	Gravimetric Feeder comprising of Feeder mounted C&I equipment	SET	7	.0010746
G.12.9	HPSU Skid for Governing Control	SET	1	.0003103
E.9.9	Governing Console Board	SET	2	.0005089
B.10.5 .B.10.6,G.12.11	HP/LP Bypass/HWL-1&2/MEFCV control valve skid instrumentation	SET	3	.0007116
G.12.1 2,G.12.13	Seal Oil Unit / Stator water Unit	SET	2	.000498
G.12.1 4	H2 Dryer Unit	SET	2	.0003418
A.44.1	Transducers-Voltage/Current/Frequency output 4-20 mA	Nos	25	.0007023

Part C : Bill of Quantities

Tender Specification for Package 2 for Erection, Testing & Commissioning of Control and Instrumentation (C&I) works including Handling of materials at site BHEL stores / storage yard, transporting to site of erection and supply & application of final painting, for Unit-2 and identified BOP areas at 2X660MW Udangudi Thermal Power Project, Kallamoli, Tiruchendur Taluk, Tuticorin District, Tamil Nadu
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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
XXVI I	REMOVAL, CALIBRATION & RE-FIXING OF INSTRUMENTS FOR ACID CLEANING	--		
J.5.1	Temp. Gauges	Nos	3	.000048
J.5.2	Pressure Gauges	Nos	2	.0000328
J.5.3	Thermocouple Stem type and MTM	Nos	8	.0000369
J.5.4	Junction Boxes	Nos	3	.0000776
XXVI II	ELECTRONIC EARTH PITS	--		
L	Electronic Earth Pits: Treated Earth pit of Galvanised MS pipe of 65 mm Dia, 3000 mm long perforated with clamp, funnel and accessories including all civil works, filling of earth pit of size min 400x400x3000 mm with alternate layer of charcoal & salt as per IE specification and making of brick chamber, with both side plastering, supply and fixing of manhole with CI cover plate/RCC Slab etc. complete as per IS 3043 (only 3000 mm long, 65 NB Galvanized MS pipe shall be supplied by BHEL; All other accessories as mentioned above are in vendor's scope). If desired resistivity is not achieved then Bentonite mix to be used by the contractor. Supply of Bentonite mix is in the scope of bidder.	Nos	15	.0032678
TOTAL Weightage				0.9999979