

BHEL- ISG, BANGALORE 	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) TECHNICAL ENQUIRY SPECIFICATION FOR COAL LAB EQUIPMENTS Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	DOCUMENT NUMBER IS-1-13-2000/200 Rev. no.: 0, Dtd: 07-01-2020
--	--	---

TECHNICAL ENQUIRY SPECIFICATIONS FOR COAL LAB EQUIPMENTS

	Prepared By	Checked By	Reviewed By	Approved by
Mechanical	 Lovekush Verma	 Ganesh Yadav	 RAJSHEKHAR S. PUJARI	S S VERMA
Electrical	 VENKATESHWAR RAO VANGALA			 SANGEETHA M A
PPMG	 ATHMANANDA Y K			NATARAJAN J

BHEL- ISG, BANGALORE 	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) TECHNICAL ENQUIRY SPECIFICATION FOR COAL LAB EQUIPMENTS	DOCUMENT NUMBER IS-1-13-2000/200
	Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	Rev. no.: 0, Dtd: 07-01-2020

CONTENTS

Sl. No.	DESCRIPTION	SHEET No.		
1.0	PROJECT INFORMATION	03	of	11
2.0	BROAD SCOPE OF THE PACKAGE BIDDERS	05	of	11
3.0	QUALITY ASSURANCE	08	of	11
4.0	INSPECTION & TESTING	09	of	11
5.0	GUARANTEED PARAMETERS, TRIAL OPERATION, TAKING OVER & PG TEST	09	of	11
6.0	LIST OF ENCLOSURES	10	of	11

BHEL- ISG, BANGALORE 	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) TECHNICAL ENQUIRY SPECIFICATION FOR COAL LAB EQUIPMENTS	DOCUMENT NUMBER IS-1-13-2000/200
	Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	Rev. no.: 0, Dtd: 07-01-2020

1.0 PROJECT INFORMATION:

Coal handling plant for 2X660 MW Suratgarh Thermal Power Station (Unit-7 & 8) of Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL) proposed plant as described in the NIT specs. Salient features of the Project site are,

1.0	Owner / Purchaser	Rajasthan Rajya Vidyut Utpadan Nigam Ltd. (RRVUNL)
2.0	Engineer/consultant	Tata Consulting Engineers Ltd (TCE) 73/1, St. Marks Road, Bangalore – 560 001
3.0	Project Title	2 x 660 MW, Super-Critical TPS, Stage-V, Unit # 7 & 8 at Suratgarh, Rajasthan
4.0	Project location	Prabat Nagar, Suratgarh Sriganganagar district, Rajasthan.
5.0	Elevation (above Sea level)	186 m (approximate)
6.0	Temperatures : Monthly basis	
	Mean of daily max.	32.8 deg.C (in the month of May)
	Mean of daily min.	17.6 deg.C (in the month of Jan)
7.0	Temperatures : Annual basis	
	Mean of daily max.	32.3 deg.C
	Mean of daily min.	19.6 deg.C
8.0	Highest temperature recorded	50 deg.C
9.0	Lowest temperature recorded	(-) 2.8 deg.C
10.0	Design temperature	50 deg. C
11.0	Relative humidity	Varies between 21% and 81%
12.0	Annual average rain fall	312 mm
13.0	Annual mean wind speed :	4 km/hr
	Calculations for wind effect shall be in accordance with IS:875-1987(Part-3) taking into account the following:	
	a) Basic wind speed = 47 m/sec	
	b) Factor K1 = 1.07	
	c) Category of terrain = Category 2	
	d) K3 – as per IS 875	
14.0	Seismic data (As per IS: 1893 latest issue)	
	a) Zone	Zone II
	Designs & design coefficients will be based on IS 1893:2002	

BHEL- ISG, BANGALORE 	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) TECHNICAL ENQUIRY SPECIFICATION FOR COAL LAB EQUIPMENTS Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	DOCUMENT NUMBER IS-1-13-2000/200 Rev. no.: 0, Dtd: 07-01-2020
--	--	--

15.0	POWER SUPPLY SYSTEMS		
15.1	11kV MV System		
	System Voltage	:	11 kV $\pm$ 10%, 3 Phase, 3 wire
	System Frequency	:	50 Hz $\pm$ 5%
	Combined Variation	:	+10% (absolute)
	System Fault level	:	44 kA for 3s
	System Earthing	:	Medium resistance earthed
15.2	6.6kV MV System (for motors 161kW-1500kW)		
	System Voltage	:	6.6 kV $\pm$ 10%, 3 Phase, 3 wire
	System Frequency	:	50 Hz $\pm$ 5%
	Combined Variation	:	10% (absolute)
	System Fault level	:	40 kA for 3s
	System Earthing	:	Medium resistance earthed
15.3	LV System		
	System A.C voltage	:	415 V $\pm$ 10%
	System Frequency	:	50 Hz $\pm$ 5%
	Combined Variation	:	10% (absolute)
	Phase	:	3 ph, 3- wire/4-wire
	System fault level	:	50 kA for 1s
	System Earthing	:	Solidly grounded
	Panel space heater, lighting, AC Control & Protection Supply	:	240V, Single phase
15.4	DC System		
	System Voltage	:	220V, +10% to -15%, 2-wire
	Fault level	:	20 kA
	System Earthing	:	Unearthed
15.5	Control Supply		
		:	
	Control supply for Space Heaters and Solenoids	:	240/110 V $\pm$ 10%, 1 phase, 2 wire, 50 Hz
		:	
	AC Control supply for Protective devices	:	110V $\pm$ 10%, 1 phase, 2 wire, 50 Hz
		:	
	DC Control supply for Protective devices	:	220 V $\pm$ 10%, DC, 2 wire,
		:	
	Uninterrupted power supply for DCS and MMI stations	:	230 V, 1-phase, 50 Hz, 2-wire, AC
		:	
	DCS Interrogation supply	:	24 V $\pm$ 10%, DC, 2 wire

BHEL- ISG, BANGALORE 	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) TECHNICAL ENQUIRY SPECIFICATION FOR COAL LAB EQUIPMENTS Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	DOCUMENT NUMBER IS-1-13-2000/200 Rev. no.: 0, Dtd: 07-01-2020
--	--	---

2.0 BROAD SCOPE OF THE PACKAGE BIDDERS:

The scope for the package bidder shall include, design, detailed engineering, submission of engineering & civil assignment drawings/ docs./ datasheets/ QAPs/ FQPs, PG test procedures and obtaining the approval from RRVUNL/ Consultant /BHEL, Manufacturing/ fabrication, inspection / shop floor testing, shop floor painting, supply of equipments including commissioning spares, packing & transportation to site including transit insurance, customs clearance / port clearance, unloading at site, storage, shifting to erection work place, security, erection & commissioning, initial trial operation at site after erection and satisfactory completion of Performance Guarantee Tests and handing over.

2.1 Scope of Work Mechanical:

Coal Lab equipment shall conform in all aspects to high standard of engineering, design and workmanship and be capable of performing satisfactorily during commercial operation in a manner acceptable to RRVUNL/ BHEL, who shall interpret the meaning of the specification, drawings and shall have the right to reject or accept any work or material which in their assessment is not conforming to this specification and/or to applicable Indian/International Standards.

The List of minimum equipment is mentioned below:

SL.NO.	ITEM DESCRIPTION (MAJOR EQPT.)	QTY.
1.	Muffle furnace (0 to 1700 deg.C) (Make- MEW/BTI/Eqvt.) along with electrical, C&I and other accessories.	1 Set
2.	Vacuum oven (Make- MEW/BTI/Eqvt.) along with electrical, C&I and other accessories.	1 Set
3.	Ordinary oven (Make- MEW/BTI/Eqvt.) along with electrical, C&I and other accessories.	1 Set
4.	Bomb calorimeter (Make- LECOAC-500WC/PARR-620) along with electrical, C&I and other accessories.	1 Set
5.	Sieve shaker (Make- MEW/Jayanth/Eqvt.) along with electrical, C&I and other accessories	1 Set
6.	Sieves, cover & receiver (Make- MEW/Jayanth/Eqvt.) along with electrical, C&I and other accessories	1 Set

BHEL- ISG, BANGALORE 	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) TECHNICAL ENQUIRY SPECIFICATION FOR COAL LAB EQUIPMENTS	DOCUMENT NUMBER IS-1-13-2000/200 Rev. no.: 0, Dtd: 07-01-2020
	Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	

SL.NO.	ITEM DESCRIPTION (MAJOR EQPT.)	QTY.
7.	Mechanical jaw crushers (Make- MEW/Jayanth/Eqvt.) along with electrical, C&I and other accessories.	1 Set
8.	Grinder (Make- MEW/Jayanth/Eqvt.) along with electrical, C&I and other accessories.	1 Set
9.	Jar ball mill (Make- MEW/Jayanth/Eqvt.) along with electrical, C&I and other accessories.	1 Set
10.	Electric oven for coal analysis (Make- MEW) along with electrical, C&I and other accessories.	1 Set
11.	Hardgrove grindability tester (Make- MEW) along with electrical, C&I and other accessories.	1 Set
12.	Thermo Gravity Analyser (Make- LECO/TGA 801) along with electrical, C&I and other accessories.	1 Set
13.	Apparatus for oxidation stability test along with electrical, C&I and other accessories.	1 Set
14.	Electrics required for Coal Lab Equipment's	1 Lot

Bidder to furnish required information of above equipments for approval from RRVUNL/BHEL during detail engineering. However, if any change in requirement during detailed engineering same shall be taken care by the bidder without any price implication to BHEL.

2.2 Integration of all equipment with complete accessories w. r. t systems / equipment, and final handing over to RRVUNL upon satisfactory completion and written confirmation from RRVUNL for complete system / machines shall be in bidders scope only.

2.3 For electrical scope of work ref. Annexure-01.

2.4 Unloading at site, storage and preservation, security, transportation to erection location and E&C.

2.5 Supply of Base frames, foundation bolts, if any, (For fixing frame and equipments over the frame) shall be in bidders scope.

2.6 Submission and approval of drawings, documents/datasheet from RRVUNL/TCE.

BHEL- ISG, BANGALORE 	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) TECHNICAL ENQUIRY SPECIFICATION FOR COAL LAB EQUIPMENTS	DOCUMENT NUMBER IS-1-13-2000/200
	Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	Rev. no.: 0, Dtd: 07-01-2020

- 2.7 Erection & commissioning and demonstration of PG test of the system with integration of other system.
- 2.8 Preparation of E&C protocols and getting signed from customer for all the equipments/system in bidder's scope.
- 2.9 Three days training to RRVUNL O&M personal will be in vendor scope.
- 2.10 Painting of all equipments / items supplied by bidder including free issued items as per painting scheme given by customer i.e., Annexure. – 2 / Vol-II/ Sec – C 13 / Sheet- 01 to 14 shall be in bidder's scope. Painting shall be done before dispatch .
- 2.11 Supply of initial filling of consumables Hydraulic oil, grease and lubricants and top up during trial run till successful demonstration of PG test / handing over.
- 2.12 Supply of startup & commissioning spares shall be as per requirement at site.
- 2.13 Inspection & testing shall be as per Vol-I/Sec-2 /CL / 5.0 & testing shall be done in-line with the approved MQP's & minimum owners requirements are mentioned for the same in the Vol-II/Sec-D. Bidder to include the same in his offer. Such tests shall be to bidder's account including for the expenses like to and fro journey, lodging and any other local conveyance of the inspector's for RRVUL / TCE / Third Party Inspector.
- 2.14 Bidder to furnish the detailed engineering schedule & submission of drgs/docs within two weeks from the date of order.
- 2.15 O&M Manual in English language giving complete technical information for operation and maintenance of the equipment shall be supplied.
- 2.16 Any major civil laboratory work required for Installation of the equipment shall not be in vendor scope. For execution of civil laboratory work by BHEL, Vendor shall submit foundation drawing of the equipment after placement of the purchase order. One copy of foundation drawing of the equipment shall be submitted by vendor during submission the documents for MDCC & another copy of same will be sent to respective project site along with the consignment.

BHEL- ISG, BANGALORE 	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) TECHNICAL ENQUIRY SPECIFICATION FOR COAL LAB EQUIPMENTS Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	DOCUMENT NUMBER IS-1-13-2000/200 Rev. no.: 0, Dtd: 07-01-2020
--	--	---

Note:

- a. Complete detail engineering description/ drawings/ documents, equipment load **data**, etc. shall be reviewed & subject to approval of BHEL engineers / RRVUL / TCE during detail engineering.
- b. Bidder to note that list above is not exhaustive and any work required for completing the system and ensuring its satisfactory running shall also be in the scope of this package bidder.
- c. Bidder shall submit a signed copy of BHEL's tender enquiry specification along with all enclosures as technical offer along with the bid without any deviations & with complete drive schedule including ratings of all equipments without which the bidders offer shall not be considered.

3.0 QUALITY ASSURANCE:

Quality Assurance Documents:

Bidder shall be required to submit in six (6) copies of following quality assurance documents before dispatch of the equipment, wherever applicable:

- (i). All non destructive examination procedures, stress relief and weld repair procedure actually used during fabrication.
- (ii). Welding procedures, welder's qualification certificates.
- (iii). Material mill test reports on components.
- (iv). The inspection plan with verification, inspection plan check points, verification sketches, if used and method used to verify that the inspection and testing points, in the inspection plan were performed satisfactorily.
- (v). Non destructive test reports including radiography interpretation reports.
- (vi). Stress relief time temperature charts.
- (vii). Factory tests results for testing required as per applicable codes and standards.
- (viii). Notification of conformity certifying that the equipment is in compliance with finalized specification requirement.

BHEL- ISG, BANGALORE 	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) TECHNICAL ENQUIRY SPECIFICATION FOR COAL LAB EQUIPMENTS Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	DOCUMENT NUMBER IS-1-13-2000/200 Rev. no.: 0, Dtd: 07-01-2020
--	--	---

4.0 INSPECTION & TESTING

- (i). Minimum Inspection & testing requirement mentioned in Volume –I, Section- 2. Bidder shall give 15 day's advance written notice of equipment being ready for testing. The customer / Inspector, unless the witnessing of the tests is virtually waived, will attend such tests within 15 days of the date on which the equipment is notified as being ready.
- (ii). Cost towards the inspection of indigenous/Offshore equipments by RRVUNL/TCE Engineer/Inspector will be to Bidders account, which includes to & fro Airfare/Railway/Road fare charges, Boarding and Lodging, local transportation and other related expenses. The cost shall be included in the price.
- (iii). All inspection, measuring and test equipment used by the contractor shall be calibrated periodically. Bidder shall maintain all relevant records of periodic calibration, instrument identification, and shall provide for inspection by bidder wherever asked specifically; bidder shall calibrate measuring / testing equipment in the presence of employer.
- (iv). The details of the checks to be carried out for various components (MQP) are to be submitted within one month from the date of Purchase order by bidder for customer approval.
- (v). Shaft forgings suspension bars to be checked for hardness, microstructure and ultrasonic testing in addition to check for chemical and mechanical properties.
- (vi). Following minimum NDT requirement to be ensured for welds:
 - a) Butt welds - 10% UT/RT and 100% MT.
 - b) Fillet welds - 10%MT.

5.0 GUARANTEED PARAMETERS, TRIAL OPERATION, TAKING OVER & PG TEST:

The bidder shall guarantee that the equipment offered shall meet the ratings and performance requirements stipulated for various equipments as per prevailing standard.

The guaranteed parameters shall be without any tolerance values as indicated in the table below. All the margins required for instrument inaccuracies and all other uncertainties shall be deemed to be included in the guaranteed figures. No tolerances or allowance on the test results will be permitted for instrument inaccuracies, the method of testing or any other cause when comparing the tested

BHEL- ISG, BANGALORE 	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) TECHNICAL ENQUIRY SPECIFICATION FOR COAL LAB EQUIPMENTS	DOCUMENT NUMBER IS-1-13-2000/200
	Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	Rev. no.: 0, Dtd: 07-01-2020

performance with the guaranteed value. All costs associated with the tests shall be included in the bid price.

The bidder shall demonstrate all the guarantees covered herein during guarantee test. In case during tests it is found that the equipment/system has failed to meet the guarantees, the bidder shall carry out all necessary modifications and/or replacements to make the equipment/system comply with the guaranteed requirements at no extra cost to the Employer.

Sl. No.	Equipment	Capacities / Ratings
1.	Noise level (other than crusher)	Noise level produced by any rotating equipment (other than crusher) individually and collectively should not exceed 85 dBA at a distance of 1.5 metre from it in any direction under any load condition.
2.	Vibration Levels	Limits will be as per VDI 2056/BS4675: (a) At the bearing of drive pulley, motor& gear box for the following: i) Boom conveyor of S/R-115 microns ii) All other equipment / conveyor / feeder - 75 microns (b) On the floors & columns of JTs crusher houses and conveyor, gallery walkways, drive house : 200 microns (c) Crusher: 160 microns for corresponding rated speed of 750 rpm. For any other lower speeds, the vibration limit will be calculated as per VDI 2056 / BS 4675
3.	Integral weigh bridge	Up to 150 tonnes capacity, accuracy: Static = $\pm 0.25\%$ & Dynamic = $\pm 0.5\%$

6.0. LIST OF ENCLOSURES:

Following enclosures (enclosed in soft form in CD) is an integral part of this technical enquiry and must be signed and stamped and submitted along with the offer:

Annexure-01-ELECTRICAL SCOPE OF WORK

Annexure-02-RRVUNL BID DOCUMENTS

Annexure-03-CLARIFICATIONS & AMENDMENT

BHEL- ISG, BANGALORE 	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) TECHNICAL ENQUIRY SPECIFICATION FOR COAL LAB EQUIPMENTS	DOCUMENT NUMBER IS-1-13-2000/200
	Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	Rev. no.: 0, Dtd: 07-01-2020

Annexure-04-GA DRAWING OF COAL TESTING LAB

Annexure-05-BHEL HSE MANUAL

Annexure-06-CONSTRUCTION POWER & WATER

Annexure-07- GENERAL SCOPE MATRIX



BHEL-ISG
BANGALORE

ELECTRICAL SCOPE FOR COAL LAB EQUIPMENTS
2X660MW SUPER CRITICAL THERMAL POWER STATION, STAGE-V, UNIT #7 AND 8 AT
SURATGARH, RAJASTHAN

ANNEXURE- 001
CONTRACT NUMBER:
IS-1-13-2000

Sl. No.	Equipment Description	BHEL Scope	BIDDER Scope
I.	Power Cum Control Panel (PDB) for Coal Lab Equipment's.	BHEL will arrange the required 415 V, 3 phase, 3-wire power supply up to PDB. Power and control/ instrumentation cabling up to PDB shall be by BHEL. Erection of PDB is in the scope of BHEL and balance items erection will be in the scope of bidder. Power Cable (2/3Cx 2.5 CU, 3CX6/10/16/25/35 AL) between PDB and Coal lab equipment's will be supplied by BHEL. Cabling between PDB and individual equipment will be in the scope of BHEL. Earth pit/grid/mat of Coal lab equipment is in the scope of BHEL. Air Conditioning of Coal Lab is in the scope of BHEL. Bidder has to submit the heat load details of the supplied equipment's.	Further distribution of required Power supply (including providing control transformer for 230V AC, 110V AC/DC, 24V AC/DC etc.) is in the scope of bidder. UPS power requirement (if any) for the system will be in the scope of bidder. Required rating of UPS along with batteries shall be supplied by bidder. Incoming power supply for UPS shall be considered from PDB. Local Power Socket required (if any) will be in the scope of bidder. Total Power requirement for system shall be informed by bidder. PC, Printer required for equipment's shall be in the scope of bidder. Local Push button stations (if required) shall be provided for all equipment's supplied by bidder. Any special cable required shall be in the scope of bidder. Bidder has to submit the Power/Control Cable schedule for system. Electrical and Electronic earthing requirement shall be informed by bidder. All Electrical items (including Spares) shall be supplied as per Annexure-01A.
			Inspection and Testing: All the offered electrical equipment's shall be Tested and Inspected at manufacturer works as per approved QAP. However, QAP shall be subjected to approval of RRVUNL/TCE. <u>Cost towards the inspection of indigenous / Offshore equipment's by RRVUNL / TCE Engineer/Inspector will be to Bidder's account, which includes to & fro</u>

ISSUED BY : PE-Electrical	REV	:	0	DATE	:	30-DEC-19	SHEET	:	Page 1 of 3
---------------------------	-----	---	---	------	---	-----------	-------	---	-------------



BHEL-IGS
BANGALORE

ELECTRICAL SCOPE FOR COAL LAB EQUIPMENTS
2X660MW SUPER CRITICAL THERMAL POWER STATION, STAGE-V, UNIT #7 AND 8 AT
SURATGARH , RAJASTHAN

ANNEXURE- 001
CONTRACT NUMBER:
IS-1-13-2000

Sl. No.	Equipment Description	BHEL Scope	BIDDER Scope
			Airfare /Railway/ Road fare charges, Boarding and Lodging, local transportation and other related expenses. The cost shall be included in the price.

ADDITIONAL NOTES

1. Makes of all electrical equipment shall be as per approved vendor list furnished by BHEL. If for any equipment, makes are not specified, prior BHEL/RRVUNL approval to be obtained for that sub-vendor.
2. Bidder should obtain prior customer approval for make, GA, OGA, schematics, data sheet, QAP for all sub vendor items.
3. Base frames, foundation bolts, both half couplings for all equipment shall be in the scope of bidder.
4. Training of Customer and BHEL personnel for operation and maintenance of bidder supplied equipment's is included in the bidder's scope.
5. All the instruments/equipment's including transmitters, transducers, temperature elements, switches which are required for system is in the scope of bidder.
6. bidder's cable schedule shall be prepared in BHEL format which will be furnished during detailed engineering stage.
7. Any festoon/trailing/flexible cables required for this package shall be by bidder.
8. Wherever power JB (PJB) is required for termination of cables for motors/drives/equipment, the same shall be in scope of the bidder.
9. Type test reports shall be submitted as per specification wherever applicable. In case of non-availability of type test reports for the similar rating/type, shall be conducted without any commercial implication. The Type test certificate shall have minimum 5 years validity from the date of PO.
10. **Erection (excluding PDB), Testing and Commissioning of bidder supplied equipment/systems is in bidder's scope.**
11. Bidder to submit Manuals and Catalogues supplied equipment/systems.
12. In case of any conflict & ambiguity, decision of BHEL/customer shall be final and binding.

ISSUED BY :	PE-Electrical	REV	:	0	DATE	:	30-DEC-19	SHEET	:	Page 2 of 3
-------------	---------------	-----	---	---	------	---	-----------	-------	---	-------------



BHEL-ISC
BANGALORE

ELECTRICAL SCOPE FOR COAL LAB EQUIPMENTS
2X660MW SUPER CRITICAL THERMAL POWER STATION, STAGE-V, UNIT #7 AND 8 AT
SURATGARH, RAJASTHAN

ANNEXURE- 001
CONTRACT NUMBER:
IS-1-13-2000

Vendor List:

Name of Item	Name of Vendor
Power Cum Control Panel (PDB)	L&T, Mumbai/ Siemens Ltd, Mumbai/ UNILEC/ GE/ C&S Electric Ltd, New Delhi/ ABB Ltd / Schneider Electric/ Control Switchgear Co New Delhi/ Areva/ RYB Switchgears Ltd.
Relays For Switchgears	Alstom T&D India Ltd/ Schneider Electric Infrastructure, France/ ABB Ltd/ Areva T&D
Selecter Switches & Control Switches	KAYCEE/ Siemens/ Alstom/ L&T/Salzer
Push Button	L&T Control And Automation/ Bharatiya Cutler Hammer, Mumbai/ Siemens Ltd/ Tele Mechanic/ Honeywell
MCCB/MPCB	C&S/ L&T
Control Transformer	Kappa/IndCoil/Precise/Southern Electrical
Current Transformer	Pragati/Prayog/Precise/G&M
Potential Transformer	Pragati/Prayog/Precise/G&M
Indicating lamps	L&T/ Siemens/Teknic/Binay/Rass controls
MCB	Siemens/ Havells/ Hager/ ABB Ltd/ L&T
Electrical Panel Meter (Ammeter, Voltmeter)	Automatic Electric/ MECO/ Rishabh Instruments
Cable Lugs & Glands	Dowels/ Comet
Terminal Blocks	Phoenix/ Weidmueller/ Wago/ Elmex/Connect well
Switch Socket	Schneider/Anchor/BCH/Best & Crompton