

# **2X800 MW YERAMARUS TPP**


## **VOLUME II B**

### **TECHNICAL SPECIFICATION FOR ELECTRICAL LAB EQUIPMENT**

**SPECIFICATION NO. : PE-TS-362-556-E001A  
REV. 00**



**BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR PROJECT ENGINEERING MANAGEMENT  
NOIDA, 201301**


	2X800 MW YERAMARUS TPP	Doc. No. PE-TS-362-556-E001A	
		Volume	Section
		IIB	
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<b>TOTAL NO. OF SHEETS</b>		<b>= 22</b>
<b>(INCLUDING COVER/ SEPARATOR SHEETS)</b>		

**IT IS CONFIRMED THAT OUR TECHNICAL OFFER COMPLIES WITH THE SPECIFICATION IN TOTO, & THAT THERE ARE NO TECHNICAL DEVIATIONS.**


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 BIDDER'S STAMP & SIGNATURE  
 (REFER INSTRUCTION NO. 1 OF 'INSTRUCTIONS TO BIDDERS')

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### **INSTRUCTIONS TO BIDDERS FOR PREPARING TECHNICAL OFFERS**

1. Two signed and stamped copies of the following shall be furnished by all bidders as technical offer :
  - a) Unpriced Price Schedule (Annexure-A as enclosed with the specification) with bidder's signature and company stamp.
  - b) Datasheet-B.
  - c) A copy of the sheet "Instructions to Bidders for Preparing Technical Offer" with bidder's signature and company stamp.
  - d) A copy of sheet "List of Contents" with bidder's signature and company stamp.
  - e) Deviation schedule sheet
  - f) General arrangement drawing showing constructional features, accessories, connections, range and rating, mounting arrangement, space requirement etc.
  - g) Technical leaflets/ Catalogues on following
    - i) Testing of equipment
    - i) Instruments
    - ii) Misc. Equipment
2. Confirmations/ comments (if any) regarding delivery schedules shall be furnished as part of the commercial offer. Any reference elsewhere/ covering letter of technical offer shall not be considered by BHEL.
3. Any comments/ clarifications on technical/ inspection requirements furnished as part of bidder's covering letter shall not be considered by BHEL, and bidder's offer shall be construed to be in conformance with the specification.
4. Any changes made by the bidder in the price schedule with respect to the item description/ quantities, notes etc. from those given in Annexure-A to Section-C of specification [Bill Of Quantities] shall not be considered (i.e., technical description, quantities, notes etc. as per specification shall prevail).
5. Bidder to furnish "No deviation" against each item quoted by them unless specifically indicated in Deviation Schedule sheet.

-----  
 BIDDER'S STAMP & SIGNATURE  
 (REFER INSTRUCTION NO. 1 OF ABOVE)

	TITLE  <b>PREAMBLE</b>	SPECIFICATION NO. PE-TS-362-556-E001A	
		VOLUME IIB & III	
		SECTION -	
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		SHEET 1 OF 1	

1.0 The Tender document contains three (3) volumes. The bidder shall meet the requirements of all three volumes.

1.1 **VOLUME - I**                      **CONDITIONS OF CONTRACT**

This consists of four parts as below:-

<b>Volume – IA</b>	This part contains Instructions to bidders for making bids to BHEL.
<b>Volume – IB</b>	This part contains General Commercial Conditions of the Tender & includes provision that vender shall be responsible for the quality of item supplied by their sub-vendors.
<b>Volume – IC</b>	This part contains Special Conditions of Contract.
<b>Volume – ID</b>	This part contains Commercial conditions for Erection & Commissioning site work, as applicable.

1.2 **VOLUME – II**                      **TECHNICAL SPECIFICATIONS**

Technical requirements are stipulated in Volume – II, which comprises of:-

<b>Volume – IIA</b>	General Technical Conditions.
<b>Volume – IIB</b>	Technical Specification including Drawings, if any.


1.2.1 **VOLUME – IIB**

This volume is sub-divided in to following sections:-

<b>Section – A</b>	This section outlines the Intent of Specification
<b>Section – B</b>	This section provides “Projection Information”.
<b>Section – C</b>	This section indicates Technical Requirements specific to Contract, not covered in Section - D
<b>Section – D</b>	This section comprises of Technical Specifications of Equipments Complete with Data Sheets A , B , C.


<b><u>Data sheet - A :-</u></b>	Specific data and other requirements pertaining to the equipments.
<b><u>Data sheet - B :</u></b>	Specific Data to be filled by bidder (Data Sheet - B is Contained in Volume - III).
<b><u>Data sheet – C :-</u></b>	Indicates data / documents to be furnished after the award of Contract as per agreed schedule by the vendor (as applicable).

2.0 This requirements mentioned in Section – C / Data Sheet – A of Section – D shall prevail and govern in case of conflict between the same and the corresponding requirements mentioned in the descriptive portion in Section – D.

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**SECTION- A**  
**SCOPE OF ENQUIRY**

1. This specification covers the design, manufacture, inspection and testing at manufacturer's work, proper packing and delivery to site of ELECTRICAL LABORATORY EQUIPMENTS as mentioned in different sections of this specification for 2X800MW YERAMARUS TPP.
2. It is not intent to specify herein all the details of design and manufacture. However the equipment shall confirm in all respect to high standards of design engineering and workmanship and shall be capable of performing in continuous commercial operation up to vendors guarantee.
3. The general terms and condition, instruction to tenderer and other attachment referred to elsewhere are hereby made part of the tender specification.
4. The tenderer shall be responsible for and governed by all requirements stipulated herein after.
5. The offer should be complete with technical data, catalogue, brochures and drawings, as applicable.
6. The bid shall be in English language and MKS system of unit.
7. Deviation, if any should be brought out very clearly on deviation sheet enclosed with specification only. Otherwise it is presumed that the tender offer is in line with what has been stated/asked for in this specification.
8. Qualification data: in order to be able to present to the client the provision of the equipment offered, he bidder is requested to elaborate details of experience, capabilities reference list etc. in this offer.

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**SECTION-B**  
**PROJECT INFORMATION**


RAICHUR POWER CORPORATION LTD		SHEET 1
TITLE		
PROJECT INFORMATION		
1.0	Owner	: Raichur Power Corporation Ltd 22/23, Sudarshan Complex, IInd floor, Sheshadri Road, Bangalore-560 009 Karnataka, India
2.0	Consultant	: M/s Evonik Energy Services (I) Pvt. Ltd.,A-29, Sector 16 Noida-201301(UP), India
3.0	Project Title	: 2x800 MW Yermarus Thermal Power Station
4.0	Location	: Yermarus Raichur Dist Karnataka State, INDIA It is situated at about 8 Kms from Raichur on the Raichur-Hyderabad State Highway-13 and 12 kms away from Bank of river Krishna and about 5 kms from Raichur Thermal Power Station
5.0	Nearest Railway	: Chicksugur Railway Station which is about 2 kms from site.
6.0	Nearest Airport	: Hyderabad around 200 kms
7.0	Nearest Port	Chennai around at about 470 kms from site.
8.0	Latitude and Longitude	: Latitude – 16° 16' 55.9"N Longitude – 77° 20' 38.6"E
9.0	Elevation above mean sea level	: 350-375 meters
10.0	<u>Climatic Conditions</u>	
	(a) <u>Ambient Temperature</u>	
	i. maximum temperature	: 45° C
	ii. minimum temperature	: 6° C

	RAICHUR POWER CORPORATION LTD		SHEET 2
	TITLE		
PROJECT INFORMATION			
	iii. Design Temperature : 50° C Ambient for all Electrical/ Mechanical Equipment		
	(b) Relative Humidity		
	i. Maximum during monsoon : 85%		
	ii. Minimum : 20%		
	iii. Average : 65%		
	(c) <u>Rainfall</u>		
	Annual average rain : 720 mm		
	Max. for one day : 115 mm		
	Max. intensity : 38 mm/hr		
	Period : June to September		
	(d) <u>Wind Speed</u>		
	i. Prevailing wind : West, South-East, North-West, direction South-West		
	ii. Maximum mean wind : 15.9 Kms / hr speed (4.42 m/s)		
	iii. Average : 9.61 Km/hr (2.67 m/s)		
11.0	Wind Load		
	Calculations for wind effect shall be in accordance with IS:875- (Part-3) latest revision taking into account the following :		
	(a) Basic wind speed of 39 m/sec as given in Fig.1 of the code.		
	(b) Factor K1 shall be taken as 1.06		
	(c) Terrain category shall be 2 and corresponding values shall be taken for K2		
	(d) Factor K3 shall be taken as 1.0		
12.0	Wind Loading for Stack		
	(a) For wind pressure as per clause 11.0 above		
	(b) For RC stacks as per IS: 4998		




	RAICHUR POWER CORPORATION LTD		SHEET 3
	TITLE  PROJECT INFORMATION		
13.0	Seismic data (as per IS:1893 latest issue)		
	(a)	Zone	: Zone III (as per IS:1893- latest )
	(b)	Importance factor (I)	: 1.75
14.0	Auxiliary power supply : Auxiliary electrical equipment to be supplied against this specification shall be suitable for operation on the following supply system.		
	(a)	For motors rated above 1500 kW	: 11000V, 3 phase, 3 wire, 50Hz medium earthed AC
	(b)	For motors rated 175KW and above and below 1499KW.	: 3300V, 3 phase, 3 wire, 50Hz medium earthed AC
	(c)	For motor rated 174 kW and below	: 415, 3 phase, 3 wire solidly earthed AC
	(d)	For motor control centre	: 415V, 3 phase, 3 wire solidly earthed AC
	(e)	DC. motor starters, DC solenoids, DC alarm, control and protections	: 220 V DC, 2 wire, unearthed DC
	(f)	AC control & protective devices	: 110 V 1 phase, 50Hz, 2 wire AC supply. The single-phase 110V AC supply shall be derived by Contractor by providing 415V/110V control transformers of adequate rating with MCCB /MCB on both the primary and secondary sides.
	(g)	Uninterrupted power supply	: 240 V, 1 phase, 50Hz, 2 wire AC supply from UPS system for I&C (including indicator recorders) and UCMS only

	<b>RAICHUR POWER CORPORATION LTD</b>	SHEET 4
	TITLE  <b>PROJECT INFORMATION</b>	
	<p>(h) AC solenoids, indicators/recorders, space heaters (for motors rated 30KW and above) : 240V 1 phase, 2 wire, 50Hz AC system with effectively earthed neutral. The power supply shall be derived by CONTRACTOR by providing 415V/ 240V transformer of adequate rating with MCCB/MCB on primary/secondary sides.</p> <p>(i) Winding heating of motors below 30kW : 24 V 1 phase, 50Hz, AC with one point earthed. This shall be derived by CONTRACTOR by providing 415V 3 phase, 3 wire, AC supply through an adequately rated step-down transformer of adequate rating with MCCB / MCB on primary/secondary sides.</p> <p>(j) Solid state controls (including solenoid valves) : 24 V DC, 2 wire, supply from Battery chargers for instrumentation system only.</p> <p>(k) Lighting fixtures : 240 V, 1 phase, 2 wire, 50Hz system.</p> <p>(l) Lighting fixtures and space heaters in panels : 240 V, 1 phase, 2 wire, 50Hz system.</p> <p>(m) Construction supply : 415 V, 3 phase, 4 wire, 50 Hz AC supply with neutral lead solidly earthed.</p> <p>(n) The above voltages may vary as follows :</p> <p>All devices shall be suitable for continuous operation over the entire range of voltage and frequency indicated below without any change in their performance.</p> <p>i. AC supply : Voltage variation <math>\pm 10\%</math> Frequency variation <math>\pm 5\%</math> Combined voltage &amp; frequency variation <math>\pm 10\%</math></p> <p>ii. DC supply : Voltage variation +10% -20%</p>	

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## SECTION-C

### SPECIFIC REQUIREMENTS

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## 1.0 SCOPE OF SUPPLY

Electrical Laboratory Equipment mentioned in this section along with all essential accessories required for the successful operation of the equipment.

The bill of quantities shall be as per enclosed Annexure – A with technical specification.

Technical requirements of Electrical Laboratory Equipment shall be as per Annexure – II of Section-C with technical specification.

## 2.0 CODES AND STANDARDS

Some of the standards, which shall generally be followed, are listed below. Other applicable Indian standards for any component part, even if not covered in listed standards shall be followed.


- i) IS – 6103 Method of test for specific resistance (resistivity) of electrical insulating fluid.
- ii) IS – 6700 Requirements of general purpose Cathode Ray Oscilloscope.
- iii) IS – 722 Specification for AC electricity meters.
- iv) IS – 8143 Specification for plugs & keys for resistance boxes.
- v) IS – 6104 Method of test for interfacial tension of oil against water.
- vi) IEC-51 Direct acting indicating analogue electrical measuring instruments and their accessories.
- vii) Any other relevant National/ International standards as mentioned in the Annexure – II of Section-C with technical specification.

## 3.0 DESIGN CRITERIA:

- 3.1 Electrical Laboratory Equipment shall be used for testing various electrical equipment/ devices during Commissioning, Operation and Maintenance of power plant.
- 3.2 The Equipment will be kept in a clean but hot, humid and tropical atmosphere when not in use. Equipment will be placed in dust laden, hot, humid atmosphere during its use.
- 3.3 For continuous operation at specified rating, temperature rise of various equipment/ components shall be limited to the permissible value stipulated in the relevant standards and this specification.

## 4.0 SPECIFIC REQUIREMENTS & RATINGS:

- 4.1 The Bidder may note that the equipment range, rating, quantities as detailed herein, are the minimum requirement only. All accessories for the equipment not covered here, if necessary for satisfactory and trouble free operation of the equipment, shall be quoted by the Bidder.
- 4.2 The instrument shall be suitable for satisfactory operation at an ambient temp. from 0°C to 50°C.
- 4.3 The Analog instruments shall be provided with knife-edge pointer and anti – parallax mirror.
- 4.4 Instrument/ meters suitable for DC supply should be provided with re-chargeable batteries, chargers and low battery charge indication.
- 4.5 All bidders to be advised to quote only ‘one’ make/model against each equipment best to suit specification requirement.
- 4.6 The instrument shall be suitable for hand held operation, rugged in construction and suitable for field use.

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- 4.7 Bidder to note that "In case any recommended make / model become obsolete or is stopped manufacturing by manufacturer, next higher make / model of the same company may be considered for ordering / supply at contract stage and no additional cost shall be paid by BHEL to supplier. Bidder is required to furnish confirmation that "next higher make / model is technical equivalent or better" in case of above condition.

#### 5.0 **TESTS:**

- 5.1 All acceptance and routine tests as per relevant standards and specification shall be carried out by the manufacturer. Charges for all these routine and acceptance tests for all the material shall be deemed to be included in the bid price.
- 5.2 Equipment shall be completely assembled, wired, adjusted and tested in factory as per the latest edition of relevant standards.
- 5.3 Bidder shall follow his standard procedure for quality control. However the said procedure/ quality checks shall be submitted for purchaser's approval.

#### 6.0 **DRAWING DATA & MANUAL:**


- 6.1 To be submitted with the bid
- Compliance to Technical requirement of various equipments as specified in technical specification. Also, bidder to furnish Data Sheet – B.
  - General arrangement drawing showing constructional features, accessories, connections, range and rating, mounting arrangement, space requirement etc.
  - Technical leaflets/ Catalogues on following
    - Testing of equipment
    - Instruments
    - Misc. Equipment
  - Deviation sheet (if any)

The Bidder may note that the drawing, data and manual listed herein are minimum requirement only. The Bidder shall ensure that the other necessary write-ups, curves and information required to fully describe the equipment are submitted with the bid.

- 6.2 To be submitted after award of contract for BHEL/customer approval:
- General arrangement drawing showing constructional features, accessories, connections, range and rating, mounting arrangement, space requirement etc.
  - Detail instructions for application, assembly & testing of equipments.
  - Wiring and schematic diagrams.
  - Tests Reports and calibration curve
  - Technical Catalogues & leaflets.
  - Instruction manual of individual equipment
  - Data sheet-C soft copy in excel format and hard copy.

Technical documentation such as Technical Particulars, GA sectional drawings, Technical leaflets, Catalogues etc. are required to be submitted within 2 weeks of LOI by the successful bidder for BHEL approval.

- 6.3 Instruction manual of individual equipment

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The manual shall clearly indicate in English the installation and connection method, check list of the tests to be carried out before commissioning of equipment. Maintenance and Calibration method shall also be provided in the manual.

- 6.4 Number of copies of document/data to be submitted by the successful bidder shall be as per enclosed ANNEXURE – I.
- 6.5 Bidder to furnish all user instruction manuals, maintenance, handling, installation manuals & all test reports complete in all respect in bound volumes & soft copies to BHEL / BHEL's customer at the time of handing over the same to BHEL / BHEL's Customer.
- 6.6 Bidder to note that quoted item cost shall include cost of main item, cost of all accessories required for successful operation of equipment and testing cost of all acceptance & routine test as per relevant standard. Test certificates/ Test reports shall be furnished by bidder to BHEL at contract stage for review/acceptance. No additional cost for the same shall be payable by BHEL.

#### **7.0 DELIVERY:**

The delivery of Equipment shall be completed as per NIT (Notice Inviting Tender)

- 8.0 Bidder shall furnish unit rate for each item in the "Schedule of prices for Electrical Lab Equipment" enclosed in Technical Specification as Annexure –A. Purchaser reserves the right to add/ delete any item during detailed engineering as finally required for the project. Unit rate quoted shall be applicable for price adjustment in such cases.
- 9.0 All the equipment components shall be procured from reputed manufacturers and make of equipment shall be subject to the approval of BHEL/ BHEL's Customer.
- 10.0 The modality of approval of technical documentation & priority of supply shall be mutually discussed & agreed upon with successful bidder in kick – off meeting after placement of LOI.
- 11.0 **Demonstration & Handing over to BHEL / BHEL's Customer**

The bidder shall be responsible for demonstration of the supplied equipment at site to BHEL / BHEL's customer and ensure handing over the same to the satisfaction of BHEL / BHEL's Customer.

Bidders to identify the equipment requiring commissioning by expert(s) from vendor.

The charges for the same has been fixed as per "Annexure- B".

#### **12.0 Performance Guarantee**

The bidder shall guarantee that the equipment offered shall meet the requirement as stipulated in this specification and as confirmed by them in Technical Data Sheet. In case the performance of equipment is not as per performance guarantee, the bidder will have to replace the equipment at site free of cost.

<b>CONTRACT COORDINATION PROCEDURE</b>	<b>Rev 03</b>
<b>PROJECT: 2 X 800 MW YERMARUS THERMAL POWER STATION</b>	<b>30/07/10</b>

## Annexure I

S no	Description	KPCL			Contractor (BHEL)				
		Bangalore (Thermal Design)	YTPS (site)	Consulting Engineer M/s EESI	PS- Marketing	Units/ PEM	Site	PMG	PSSR
<b>A</b>	<b>Correspondence - soft copy (email) &amp; Hard copy as per requirement</b>								
1	Post Contract	1	Nil	Nil	S	1*	1*	1	1*
		1	Nil	S	Nil	Nil	Nil	Nil	Nil
		1	S	Nil	Nil	1*	1	1	1
		S	1	1	Nil	1	1*	1	1*
		1*	1*	Nil	Nil	1*	1*	1	S
		1	1	Nil	1*	1*	1*	S	1*
<b>B (a)</b>	<b>Contractor Drawings</b>								
1	Preliminary/ resubmission	PDF + 1 hard copy	Nil	PDF	Nil	S	Nil	P	Nil
2	Return preliminary with comments	PDF	Nil	S	Nil	PDF	Nil	P	Nil
3	Final approved drawings for stamping (Hard copy)	Nil	Nil	4	Nil	S	Nil	P	Nil
4	Return of stamped copies by EESI (Hard copy)	1	Nil	S	Nil	2	Nil	P	Nil
5	Distribution by contractor (Hard Copy)	4	4	Nil	Nil	S	4	P	Nil
6	As-Built drawings/ Erection Drawings	1CD + 1hard copy	1 CD + 4 hard copies	Nil	Nil	S	1	P	Nil
<b>B (b)</b>	<b>All design calculations/ design memorandum/ data sheet/ MQP</b>								
1	Preliminary/ resubmission	1	Nil	1	Nil	S	Nil	P	Nil
2	Return preliminary with comments	1	Nil	S	Nil	1	Nil	P	Nil
3	Final approved documents for stamping (Hard Copy)	Nil	Nil	4	Nil	S	Nil	P	Nil
4	Stamped copies	1	Nil	S	Nil	2	Nil	P	Nil
5	Distribution	2CD	Nil	Nil	Nil	S	1*	P	1*
<b>C</b>	<b>Progress Reports (Monthly)</b>								
1	Contractor	3	Nil	Nil	Nil	Nil	Nil	S	Nil
2	Consultant	3	Nil	S	Nil	Nil	Nil	1	Nil
<b>D</b>	<b>Manuals</b>								
1	Erection & Commissioning	3	5	Nil	Nil	Nil	3	P	S
2	Operation & Maintenance	3	5	Nil	Nil	S	3	P	P

### Abbreviations:


RPCL: Raichur Power Corporation Limited

Consultant: M/s Evonik Energy Services (India) Pvt. Ltd. (EESI)

S: Source, T: Transparency, CD: Compact Disc, 1\*: One copy case to case basis,


P: Only transmittal / covering letter, PDF: Soft copy in pdf format



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Annexure-II of SECTION-C  
TECHNICAL REQUIREMENTS



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## 1. HV TESTING KITS

1.1 325 kVA (AC) High Voltage testing Kit: 1 No

1.2 40 kVA (AC) High Voltage testing Kit: 1 No.


S. NO.	EQUIPMENT PARAMETER	EQUIPMENT SPECIFICATION
1	Brief Description	The HV transformer shall be either dry type or hermetically sealed liquid filled type. The equipment shall be portable roller / trolley mounted shall be protected against short-circuits and overloads. A control desk incorporating all necessary indication, annunciation, protection and control equipment shall be provided. It shall be possible to switch on the high voltage only when the control setting is at the minimum. The instrument shall be provided with accurate indications of high voltage and the leakage current. Discharge rods and supplied along with the instrument.
2	Input voltage	220V/230V, 50 Hz, single phase
3	Duty cycle	15 Min ON & 15 Min OFF
4	Output:	For 325 KVA (AC) High Voltage Testing Kit: 0-55KV AC (Current rating up-to 6 Amps) For 40 KVA (AC) High Voltage Testing Kit: 0-25 KV AC (Current Rating Up-to 1.6 Amps)

## 2. WATTMETER (POWER ANALYSER)

S. NO.	EQUIPMENT PARAMETER	EQUIPMENT SPECIFICATION
1	Purpose	Measurement of Instantaneous Power in Single and three phase Circuits. Separate clamps are to be provided for simultaneous measurements on 3 phases (2 CT and 3 CT method) and should also be able to measure power on CT secondary for a range of 0-1 amp and 0-5 amps using detachable CT probes of a smaller jaw size. 4 no. leads & clamps to be provided for measuring instantaneous 3 phase power (Separate set of leads with clamps for primary and secondary of CT). No. of Inputs: 4 Voltage and Current (3 phase+ Neutral)
2	Input Voltage	upto 600 V, AC/DC
3	Current	upto 2000 A 0-1 A and 0-5 A range shall be provided for measuring power from CT Secondary
4	Frequency range	45-55 HZ
5	Accuracy	±1.5%
6	Accessories	The instrument shall be supplied with Rugged carrying case, Probes, Manuals, warranty certificate etc.

**2X800 MW YERAMARUS TPP****ANNEXURE-A****PRICE SCHEDULE FOR ELECTRICAL LAB EQUIPMENT**

S. NO	<u>BOQ</u>	ITEM DESCRIPTION	QUANTITY	UNIT	TOTAL PRICE EX-WORKS
	ITEM CODE			PRICE EX- WORKS	
1		High Voltage Testing Kit			
1.1	556-11274-A	High Voltage Testing Kit 325KVA (AC)	1		
1.1	556-11273-A	High Voltage Testing Kit 40KVA (AC)	1		
2	556-11151-A	Clamp-on Wattmeter	1		

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### **ANNEXURE – B**

#### **SCHEDULE OF PRICES FOR DEMONSTRATION & HANDING OVER TO BHEL / BHEL'S CUSTOMER**

SL. NO.	DETAILS	ACTIVITY	UNIT CHARGES
1	LUMP SUM ALL INCLUSIVE CHARGES PER VISIT FOR EXPERIENCED / CAPABLE ENGINEER (EXCEPT DAILY CHARGES)	1 VISIT	20000/-
2	LUMP SUM ALL INCLUSIVE CHARGES FOR EXPERIENCED / CAPABLE ENGINEER PER DAY	1 DAY	5000/-


**Note:**

1. TOTAL CHARGES = (Charges as per S.No.1) + [No. of Days(\*) x Unit Charges as per Sl. No. 2]
- \*: To be certified by BHEL site
2. Bidder to note that provision of maximum 3 visits amounting to 3 man days is envisaged for the complete package.


	2X800 MW YERAMARUS TPP		Doc. No. PE-TS-362-556-E001A
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	TECHNICAL SPECIFICATION FOR ELECTRICAL LABORATORY EQUIPMENTS		SECTION
			Rev. : 00

**DATA SHEET-B**

SL. NO.	ITEM DESCRIPTION	QTY.	Description (Detailed Specification)	MAKE	MODEL NO	COUNTRY OF MANUFACTURE	EQUIPMENT & ACCESSORIES CONFIRMS TO ALL TECHNICAL REQUIREMENTS IN TOTALITY (YES/NO)	REMARKS
1	High Voltage Testing Kits		Applicable for all HV testing kits as mentioned in 1.1, 1.2: Duty cycle of all the High Voltage Kits shall be 15 Min ON & 15 Min OFF. Input voltage 220V/230V, 50 Hz, single phase Brief Description: The HV transformer shall be either dry type or hermetically sealed liquid filled type. The equipment shall be portable roller / trolley mounted shall be protected against short-circuits and overloads. A control desk incorporating all necessary indication, annunciation, protection and control equipment shall be provided. It shall be possible to switch on the high voltage only when the control setting is at the minimum. The instrument shall be provided with accurate indications of high voltage and the leakage current. Discharge rods and supplied along with the instrument.					
1.1	High Voltage Testing Kit 325KVA (AC)	1	Output: For 325 KVA (AC) High Voltage Testing Kit: 0-55KV AC (Current rating up-to 6 Amps)					
1.2	High Voltage Testing Kit 40KVA (AC)	1	Output For 40 KVA (AC) High Voltage Testing Kit: 0-25 KV AC (Current Rating Up-to 1.6 Amps)					
2	Clamp-on Wattmeter	1	Purpose: Measurement of Instantaneous Power in Single and three phase Circuits. Separate clamps are to be provided for simultaneous measurements on 3 phases (2 CT and 3 CT method) and should also be able to measure power on CT secondary for a range of 0-1 amp and 0-5 amps using detachable CT probes of a smaller jaw size. 4 no. leads & clamps to be provided for measuring instantaneous 3 phase power (Separate set of leads with clamps for primary and secondary of CT). Number of Inputs: 4 Voltage and Current (3 Phase + Neutral) Input Voltage: upto 600 V, AC/DC Current: upto 2000 A, 0-1 A and 0-5 A range shall be provided for measuring power from CT Secondary Frequency range: 45-55 HZ Accuracy: $\pm 1.5\%$ Accessories: The instrument shall be supplied with Rugged carrying case, Probes, Manuals, warranty certificate etc.					

	<p>DOCUMENT TITLE</p> <p>TECHNICAL SPECIFICATION FOR ELECTRICAL LABORATORY EQUIPMENTS</p>	<p>SPECIFICATION NO. PE-TS- 362-556-E001A</p> <p>VOLUME II B</p> <p>SECTION :</p> <p>REVISION 00 SHEET : 1 of 2</p>
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# SCHEDULE OF DEVIATIONS

	DOCUMENT TITLE	SPECIFICATION NO. PE-TS- 362-556-E001A
	TECHNICAL SPECIFICATION FOR ELECTRICAL LABORATORY EQUIPMENTS	VOLUME II B
		SECTION :
		REVISION 00 SHEET : 1 of 2

Sl. No	Specification Clause Ref.	Technical Deviation	Reason for Deviation
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**We the undersigned hereby certify that the above mentioned are the only Technical deviations w.r.t the Technical Specification.**

Particulars of bidder/Authorised representative				COMPANY SEAL
NAME	Designation	Signature	Date	