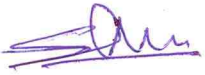



	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKSHOP EQUIPMENTS TESTING DEVICES</b>	<b>SPECIFICATION NO.</b> <del>EM-KGN-1314</del> EM-NHP-KSN-14 <i>slu</i>	
		<b>Rev. No</b>	<b>00</b>
<b>3 x 110 MW KISHANGANAGA HEP</b>		<b>Date</b>	<b>20.11.2013</b>

### SECTION 1 – SCOPE OF ENQUIRY

1. This Specification covers the design, manufacture, inspection and testing at vendors work, if required, proper packing and delivery to site of ELECTRICAL WORKSHOP EQUIPMENTS as mentioned in different SECTION of this specification for 3 X 110 MW Kishanganga HEP
2. It is not intent to specify herein all the details of design and manufacture. However the equipment shall conform 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 conditions, instructions to tender and other attachment referred to elsewhere be hereby made part of the tender specification.
4. The tenderer shall be responsible for and governed by all requirements stipulated herein after.
5. **Deviation**, if any should be brought out very clearly on deviation sheet (ANNEXURE-III) of the specification. Otherwise it would be presumed that the tender offer is in line with what has been stated/asked for in this specification.
6. The offer should be complete with technical data, catalogue, brochures and drawings, as applicable.
7. The bid shall be in English language and MKS system of unit.

 Sumit dhiman Engineer BOP	 Mandvi Gupta Dy. Manager BOP
PREPARED BY	APPROVED BY

	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKSHOP EQUIPMENTS TESTING DEVICES</b>	<b>SPECIFICATION NO.</b> <b>EM-KGN-1-14</b> NHP-KSN <i>slu</i>	
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## SECTION 2 – General Conditions

### 1. SCOPE OF SUPPLY

The scope of supply indicating technical specification & Bill of quantity shall be as per Annexure –I (Details of Equipments) along with all essential accessories required for the successful operation of the equipments.

### 2. CODES AND STANDARDS

All relevant National and International standards shall be specified and followed.

### 3. DESIGN CRITERIA

- 3.a. Electrical Workshop Equipment shall be used for testing various electrical equipment/ devices during Commissioning, Operation and Maintenance of plant.
- 3.b. 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.c. 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.
- 3.d. The equipment and component thereof shall be capable of withstanding the mechanical forces and thermal stresses of the short circuit current without any damage and deterioration of material.

### 4. SPECIFIC REQUIREMENTS & RATINGS

- 4.a. The bidder may note that the equipment ranges, ratings, quantities as detailed herein, are the minimum requirement only. The equipment shall be furnished in strict accordance with the same. All accessories for the equipment not covered here, but are necessary for satisfactory and trouble free operation of the equipment, shall be supplied by the Bidder. Bidder may also quote for optional accessories.
- 4.b. The instrument shall be designed suitably for satisfactory operation and storage in wide range of temperature variations prevailing at projects sites:

Kishanganga: **(-) 4°C to 46°C.**

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## SECTION 2 – General Conditions ---Contd.

- 4.c. Analog instruments shall be provided with knife-edge pointer and anti-parallax mirror.
- 4.d. Instrument/meters suitable for DC supply should be provided with rechargeable batteries, charger and low battery charge indication.
- 4.e. The portable instruments shall be suitable for hand held operation, rugged in construction and suitable for field use.
- 4.f. Power supply for AC operation Instrument shall be 240 V AC, 50 Hz single phase.
- 4.g. All electrical instruments shall be dust and moisture proof.
- 4.h. Calibration tests shall be done on all instruments, wherever applicable and calibration certificates are to be furnished with instruments.
- 4.i. Equipments shall be of shock proof.
- 4.j. Instruments shall meet National or International relevant safety standards.
- 4.k. Manufacturers name plate:  
The following data shall be shown in accordance with the relevant standard
- Manufacturers name and address
  - Works serial number and date of manufacture
  - Main technical data
- 4.l. Warning Plates:  
Warning plates / caution for the safety of instrument & human beings with Dos and Don'ts to be inscribed on the instruments / Recorders / all electrical equipment in English.

### 5. TESTING & INSPECTION

- 5.a. The tentative Quality Assurance Plan (QAP) is attached as per Annex. IV for the reference purpose only. This QAP shall be finally approved by BHEL / end customer (NHPC) and the same shall be applicable for testing & inspection requirement.
- 5.b. The manufacturer shall carry out all acceptance and routine tests as per relevant standards and specification in line with BHEL / end customer (NHPC) approved QAP. Charges for all these routine and acceptance tests for all the equipments shall deem to be included in the bid price.

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## SECTION 2 – General Conditions ---Contd.

- 5.c Equipment shall be completely assembled, wired, adjusted and tested in factory as per the latest edition of relevant standards.
- 5.d The Bidder shall submit the Test Certificates/Reports for all the acceptance and routine tests as per relevant standards, specifications and in line with QAP for BHEL / end customer (NHPC) approval. Based on approved Test Certificates/ Reports, the end customer (NHPC) will issue the Material Dispatch Clearance Certificates (MDCCs). Only after receipt of MDCC vendor can dispatch the material.
- 5.e Bidder shall also submit the Test Certificates for all the acceptance and routine tests as per relevant standards, specifications along with the equipment as per TABLE-2, Annexure - II.

### 6. Documentation

- 6.a. To be submitted with bid:

The Bidder shall submit all documents as per TABLE-1, Annexure - II along with the bid.

The Bidder shall ensure that the all-necessary information required to fully describe the equipment are submitted with the bid.

- 6.b. To be submitted after award of order:

The Bidder shall submit all documents as per TABLE-2, Annexure - II.

After award of contract for BHEL and/ or end customer approval (NHPC) and also along with equipment

### 7. DELIVERY

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

8. While quoting Bidder shall have to furnish unit rate for each item. Purchaser reserves the rights to add/delete quantity of any item during detailed engineering as finally required for the project. Unit rate quoted shall be applicable for price adjustment in such cases.
9. All the equipment shall be procured from reputed manufacturers and make of equipment shall be subjected to the approval of BHEL/ BHEL's Customer.

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## SECTION 2 – General Conditions ---Contd.

### 10. **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.

### 11. **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 annexure – I, (Duly filled in). 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.

### 12. **Deviation**

The Bidder shall indicate the deviation, if any, in Schedule of Technical Deviation as per Annexure – III, along with the justification for the deviation.

### 13. **Package & Consignment Data**

The Bidder shall pack all the equipment, their accessories and spares in road - worthy package. Bidder to indicate the number of packages of consignment together with the size (L x W x H) and weight for transporting the equipment along with their bid.

Each package shall be legibly marked with the following information:

ELECTRICAL WORKSHOP EQUIPEMENTS for 3 X 110 MW **Kishanganga** HEP

BHEL Purchase Order No:

Job No: **9876-11**

Supplier's Name:

Manufacturer's Name:

Name of the Equipment:

Item Code of the equipment: (As per ANNEXURE – I)

Quantity:

Weight:

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## Annexure – I

### Details of Equipments

**Bidder must quote the material code number, material description & quantity offered in their quotation /bid, as specified below project wise. Bidder's alternate description can also be given in separate column.**

#### Completeness of Equipment

Each of the equipment listed shall be complete with applicable accessories like power supply main leads, screened guard leads, screened line test leads, earth leads, connectors and clips, leather carrying case and any other accessories required for completing the equipment.

Sl.No	Item specification	Qty	Item Code	Details of Equipment offered by the Bidder	
				Make & Model No	Catalogue No
1	<u>UNIVERSAL LABORATORY WORKBENCH.</u> As per attached Specifications	1 No.	MR4598767146		

 <b>BHEL-EMRP</b> <b>MUMBAI</b>	<b>TECHNICAL SPECIFICATION FOR ELECTRICAL WORKSHOP EQUIPMENTS TESTING DEVICES</b>	<b>SPECIFICATION NO.</b> <b>EM-<del>KSN</del>-1-14</b> <b>NHP-KSN</b>	
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Annexure -II

Table 1

LIST OF DOCUMENTS TO BE SUBMITTED ALONG WITH BID

SI.No	Documents	No of copies
1	Annexure – I Details of Equipments (Duly Filled)	2 copies
2	Product Catalogue for all equipments/ instruments referred in Annexure – I	2 copies
3	Schedule of Deviation (Annexure – III)	2 copies

**NOTE:** All above documents to be submitted strictly, failing which the offer may likely be rejected.

Table 2

LIST OF DOCUMENTS TO BE SUBMITTED AFTER AWARD OF ORDER FOR BHEL / END CUSTOMER APPROVAL and ALONG WITH EQUIPMENT

SI.No	Documents	No of copies
1	Product catalog with complete specifications, model nos. physical dimensions etc.	3 copies (2 for NHPC + 1 for BHEL)
2	Quality Assurance Plan along with test certificates and calibration certificates for MDCCs	4 copies (3 for NHPC + 1 for BHEL)
2	Test Certificates of all acceptance and routine tests as applicable.	3 copies (2 for NHPC + 1 for BHEL)
3	Calibration certificates as applicable.	3 copies (2 for NHPC + 1 for BHEL)
4	Guarantee certificate valid for 12 months from the date of delivery.	2 copies (1 for NHPC + 1 for BHEL)
5	Instruction manual of individual equipment shall clearly indicate in English the installation and connection method. Operating, Maintenance and Calibration methods shall be provided in the manual.	7 copies (6 for NHPC + 1 for BHEL)

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Annexure - III

**Deviation Statement (Technical)**

Sr No.	Item	Deviation	Justification for Deviation

**Use extra sheet if required.**

**Note:** Bidder has to indicate clearly the deviations if any w.r.t. specification. Bidder has to indicate all the deviations on this annexure - III only, deviations mentioned elsewhere in Bidder's offer will not be considered.

### 22.3.1.6. Workbenches, lockers and instruments

ANNEXURE IV

A sufficient number of workbenches, tool lockers, racks, shelves and dust proof instrument boards shall be delivered and installed, to allow executing all work in the electrical and electronic workshop and to store the tools, the measuring and testing devices. As a minimum the following equipments shall be provided:

i) One (1) Universal laboratory workbench.

The universal laboratory steel workbench with a stainless steel table top and four drawers (lockable) shall be equipped with a top mounted instrument and current supplying board. The metal enclosure of the instrument board shall be composed of sheet- steel with a minimum thickness of 2.5 mm. The board shall be dust and vermin proof. It shall be completely equipped, wired and painted and shall have a rated insulation level in accordance with the applicable IEC/VDE standards.

- ◆ 415/240 V bushings for banana plugs with transparent protective covers,
- ◆ Instruments with anti-glare glass,
- ◆ Instrument size: 48 x 48 mm,
- ◆ Measuring range: 1.24 x rated value to be indicated,
- ◆ Accuracy class: 1.5.

The power supply units shall be provided with:

- ◆ Four (4) double sockets, 230 V, 50 Hz, each equipped with miniature circuit breaker and signal lamp,
- ◆ One (1) power socket, 3 x 415/240 V, 50 Hz, with miniature circuit breaker and signal lamp,
- ◆ One (1) bushing connection, 3 x 415/240 V, 50 Hz (L1/L2/L3/N) with three (3) signal lamps, three (3) voltmeters and three (3) ammeters and miniature circuit breaker,
- ◆ One (1) bushing connection, 24 V, 50 Hz, 5 A, with voltmeter, ammeter, signal lamp and miniature circuit breaker,
- ◆ One (1) bushing connection +24 V/0V/-24 V DC, 2 A, with two (2) voltmeters, two (2) ammeters, two (2) signal lamps and miniature circuit breaker,
- ◆ One (1) bushing connection, 0 ... 30 V DC, 0 ... 1.5 A, voltage and current controlled, with voltmeter, ammeter, signal lamp and miniature circuit breaker,
- ◆ One (1) bushing connection, 0...240 V, 50 Hz, steep less adjustable by means of a handle with scale, with voltmeter, ammeter signal lamp and miniature circuit breaker,
- ◆ One (1) main power MCCB; three-pole, hand operated, 100A.

TENTATIVE QUALITY ASSURANCE PLAN FORMAT											
MANUFACTURER'S NAME & ADDRESS					Electrical Workshop Equipments						
PACKAGE		ITEM			WORKBENCHES						
Ref.No.		Ref.No.			CUSTOMER						
QAP NO.		PROJECT			KISHANGANGA HEP						
Rev. No./Date		CUSTOMER			NHPC						
Sl. No.	Components Assembly Operation/Characteristics	Class	Type of Check	Quantum of Check	Ref.Document	Acceptance Norms	Format of Records	Inspection Agency			Remarks
								Perform	Review	Verify	
1	Visual Inspection (Make, Model No)	Minor	Visual	100%	Product data sheet	BHEL's PO	TC	3	2	1	
2	Visual Inspection (Metering, Protection Arrangement, Battery)	Minor	Visual	100%	Product data sheet	Product data sheet	TC	3	2	1	
3	Visual Inspection of Standard accessories	Minor	Visual	100%	Product data sheet	Product data sheet	TC	3	2	1	
4	Functional Test (Measurement of various parameters and ranges)	Major	Test	100%	Product data sheet	BHEL Specifications	TC	3	2	1	
5	Calibration & confirmation of accuracy of measurement ranges	Major	Test	100%	Product data sheet	BHEL Specifications	TC	3	2	2	

Note: Legends:1- "NHPC", 2- "Supplier"- BHEL, 3- "Sub supplier"- BHEL vendor

Signature  
NHPC (QA & I dept.)

Signature & Seal  
Contractor: HCC limited

Signature & seal  
Vendor: BHEL