
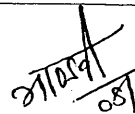


 <b>BHEL-EMRP</b> <b>MUMBAI</b>	<b>TECHNICAL SPECIFICATION  FOR  MECHANICAL WORKSHOP ITEMS</b>	<b>SPECIFICATION NO.  EM-NHPC-PBTII-MWS-28</b>	
		<b>Rev. No</b>	<b>00</b>
<b>(4 X 200 MW) PARBATI -II – HEP</b>		<b>Rev. Date</b>	

### SECTION 1 – SCOPE OF ENQUIRY

1. This Specification covers the design, manufacture, inspection and testing at vendors work, proper packing and delivery as per NIT for MECHANICAL WORKSHOP EQUIPMENTS of :  
  
4 X 200 MW PARBATI-II 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-IV) 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.

 Vimlanshu Prawal Horo Engineer	 08/08/14 Mandvi Gupta Manager
PREPARED BY	CHECKED & APPROVED BY

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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 Equipment's) along with all essential accessories required for the successful operation of the equipment's.

### 2. CODES AND STANDARDS

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

### 3. DESIGN CRITERIA

- 3.a. Mechanical 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:  
PARBATI-II: (-) 4°C to 46°C.
- 4.c. The portable instruments shall be suitable for hand held operation, rugged in construction and suitable for field use.
- 4.d. Power supply for AC operation Instrument shall be 240 V AC, 50 Hz single phase.
- 4.e. All mechanical instruments shall be dust and moisture proof.
- 4.f. Calibration tests shall be done on all instruments, wherever applicable and calibration certificates are to be furnished with instruments.
- 4.g. Equipments shall be of shock proof.
- 4.h. Instruments shall meet National or International relevant safety standards.

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4.i. 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.j. 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 Model Quality Assurance Plan (QAP) is attached as per Annex. VI. This QAP shall be applicable for testing & inspection requirement.
- 5.b The manufacturer shall carry out all acceptance and routine tests as per relevant standards, specification and QAP. Charges for all these routine and acceptance tests for all the equipments shall deem to be included in the bid price.
- 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 QAP. Based on approved Test Certificates/ Reports, the BHEL will give the dispatch Clearance. Only after Clearance 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 and QAP along with the equipment as per TABLE-2, Annexure - II.

**6. DOCUMENTATIONS**

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.

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**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.

**10. 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 – III, (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.

**11. DEVIATION**

The Bidder shall indicate the deviation, if any, in Schedule of Technical Deviation as per Annexure – IV, along with the justification for the deviation. Deviations mentioned anywhere else shall not be entertained.

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## 12. PACKAGE & CONSIGNMENT DATA

The Bidder shall pack all the equipment, their accessories and spares in road -worthy package to avoid in-transit damage. 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:

**Applicable for PARBATI-II Project:**

MECHANICAL WORKSHOP EQUIPEMENTS for 4 X 200 MW

**PARBATI-II HEP**

BHEL Purchase Order No:

Job No: 3864-12

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. 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, fastners/washers/nuts/anchoring bolts/etc required for erection and commisioning and any other accessories required for completing the equipment.

Sl. No	Item specification	Qty	Details of Equipment offered by the Bidder	
			Make & Model No	Catalogue No
<del>1</del>	<del>Double ended grinding machine</del> Double ended grinding machine , pedestal type Grinding discs of max. diameter 300 mm. <ul style="list-style-type: none"> <li>• Drill Grinding Device</li> <li>• Ten (10 Nos) Zircon grinding discs</li> <li>• Four (4 Nos) Rotary wire brushed eye protection device/shield</li> </ul>	<del>1</del> No	<del>HMT/ ATLAS/ EIFCO/ BATLIBOI</del>	
2 ✓	<b>Power Hacksaw</b> ✓ <ul style="list-style-type: none"> <li>• Cutting capacity:-Round Section (mm) 300 (min.)</li> <li>• Rectangular section (mm) 254x254 (min.)</li> <li>• Stroke per minute = 85 to 100</li> <li>• Emergency stop</li> <li>• Working voltage 415 V / 3-ph / 50 Hz AC,</li> <li>• 1 No Coolant tank (with chips separator) electrically driven coolant</li> <li>• Pump with motor &amp; coolant piping &amp; nozzle-1 Set.</li> </ul>	1 No	HMT/ ATLAS/ EIFCO/ BATLIBOI	

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	<b>Special accessories</b> <ul style="list-style-type: none"> <li>• Power Saw Blades – 50Nos,</li> <li>• Adjustable Bar Rest – 1No</li> <li>• V-Shape vice jaws -1 No to cut materials in bundle</li> </ul>			
3X	<del> <b>Shaper Machine-</b>  Shaper machine shall be suitable for minimum table size of 1500 x 650 mm (min.) with vices, tools and tackles, accessories etc.  <b>Special accessories</b> <ul style="list-style-type: none"> <li>• Tool &amp; Tackles-1 Set.</li> <li>• Universal vice-1 No,</li> <li>• T- Bolts with clamps 1 Set.</li> <li>• Stop pins, Toe dogs, Angle plate-V-block HSS tipped tools-2 Set.</li> <li>• Carbide tipped tools (for planning) 2 Set.</li> <li>• Vertical shaping</li> <li>• Dovetail cutting &amp; parting along with other accessories.</li> </ul> </del>	1 No	HMT/ATLAS/ SAGAR. <u>BATLIBOI</u>	

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Annexure -II

**Table 1**

**LIST OF DOCUMENTS TO BE SUBMITTED ALONG WITH BID**

Sl.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
4	Signed and Stamped copy of Model QAP (Annexure – VI)	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**

Sl.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	Test Certificates of all acceptance and routine tests as per QAP.	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 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)
6	OGA diagram, Line diagram, Foundation diagram, any relevant document/diagram, necessary for Erection and commissioning at site	7 copies (6 for NHPC + 1 for BHEL)

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Annexure -III


**SCHEDULE OF GUARANTEED TECHNICAL PARTICULAR**

(Bids are liable to be rejected if the bidder does not furnish the technical data)

SL.NO	Description	To be filled by the Bidders
	<del>1.0 Double Ended Grinding Machine</del>	
1.	Name of manufacturer	
2.	Over all Dimension	
3.	Standard to which conforms.	
4.	Wheel Size	
5.	Material of grinding wheel no.-1	
6.	Material of grinding wheel no.-2	
7.	Type of safety guard	
8.	Speed of grinding wheels	
9.	Distance between center of wheels	
10.	Main motor Rating & Type	
11.	Class of insulation of motor.	
12.	Overall Dimension	
13.	Gross Weight	
	<b>2.0 Power Hacksaw</b> ✓	
1.	Name of manufacturer	
2.	Type, Model	
3.	Standard to which conforms.	
4.	Voltage & frequency rating	
5.	Cutting capacity (in round & Rectangular sec.)	
6.	Strokes per minute	
7.	Length of stroke	
8.	Main motor rating & Type	
9.	RPM	
10.	Cooling Equipment type	
11.	Class of insulation of motor	
12.	Overall Dimension	
13.	Gross Weight	

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SL.NO	Description	To be filled by the Bidders
	<del>3.0 Shaper Machine</del>	
1.	Name of manufacturer	
2.	<del>Over all Dimension</del>	
3.	<del>Type Model</del>	
4.	Standard to which conforms.	
5.	Size of the Table	
6.	Length of ram	
7.	Length of Ram Stroke	
8.	Strokes per minute	
9.	Max. & Min. distance from table of ram	
10.	Table traverse - Horizontal	
11.	Table traverse - Vertical	
12.	Vertical travel of tool slide	
13.	<del>Type of cooling</del>	
14.	Main motor rating & Type	
15.	Class of insulation of motor	
16.	<del>Overall Dimension</del>	
17.	<del>Gross Weight</del>	

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Annexure - IV

List of Spare Parts to be supplied by vendor whichever applicable along with each item

SL. NO.	DESCRIPTION	QUANTITY
1	Indicating Lamps of each type	5 nos
2	Fuses of each type	10 nos
3	Plugs and Sockets of each type	4 nos
4	Cards of each type	1 no

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Annexure - V

**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.

**EM-PABII-MWS-QAP-R0**

**MODEL QUALITY ASSURANCE PLAN**

PROJECT:PARBATI || H. E. PROJECT  
 NAME OF  
 EQUIPMENT:Workshop Equipment (Major items)

CLIENT:NHPC Ltd.  
 CONTRACTOR:BHARAT HEAVY ELECTRICALS LTD.  
 VENDOR:NHPC APPROVED VENDOR  
 CONTRACT NO: NH/EP/PB/22-480/C-0612/2003/I

SR.NO	ITEM /COMPONENTS/ CHARACTERISTICS	NATURE OF CHECKS	QUANTUM OF CHECKS	REFERENCE DOCUMENTS /ACCEPTANCE NORMS	RECORD FORMAT	INSP. AGENCY			REMARKS
						Perform	Witness	Verify	
1	<u>Shaper Machine</u> a) Routine Test./Functional test b) Checking of Rating, Make & Model c)Dimensional Check <u>Double ended grinding machine</u>	Measurement /Visual	100%	Tech.Spec./Appd.Design memorandum/relevant standards	JIR	3	1	-	CHP
2	a) Routine Test./Functional test b) Checking of Rating, Make & Model c)Dimensional Check <u>Power Hacksaw</u>	Measurement /Visual	100%	Tech.Spec./Appd.Design memorandum/relevant standards	JIR	3	1	-	CHP
3	a) Routine Test./Functional test b) Checking of Rating, Make & Model c)Dimensional Check	Measurement /Visual	100%	Tech.Spec./Appd.Design memorandum/relevant standards	JIR	3	1	-	CHP

Note

- a) Legends:1- "NHPC", 2- "Supplier"- BHEL, 3- "Sub supplier"- BHEL vendor
- b) T.C-Test Certificate of Vendor,C.C-Compliance Certificate of BHEL.
- c) Major routine test, Raw material, bought out items etc., T.C are required (as applicable) at the time of inspection

Signature  
 NHPC (QA & I dept.)

Signature & seal  
 BHEL

Signature & seal  
 Vendor