



Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

MATERIALS MANAGEMENT / CAPITAL EQUIPMENT

An ISO 9001
Company

ENQUIRY NOTICE INVITING TENDER	Phone: +91 431 257 7653 Fax : +91 431 252 0719 Email : skaruna@bheltry.co.in Web : www.bhel.com
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TWO PART BID	Enquiry Number:	Enquiry Date:	Due date for submission of quotation :
Tender to be submitted in Two Parts	2711200010	06.06.2012	09.07.2012

You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order.

Please note that under any circumstances both delayed offer and late offers will not be considered. Hence vendors are requested to ensure that the offer is reaching physically our office before 14.00 Hrs on the date of tender opening.

Item No.	Item Description	Quantity
10	Pinion Assembly for Push Bench of SSTP Hot Mill as per the technical Specification, & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	01 No.

Important Points to be taken care during the submission of offer:-

The following List of drawings mentioned in the technical specification is available with Material Management / Capital Equipment:-

- 1) 0-7-1127-03-11126/00
- 2) 2-7-1127-03-00950/00
- 3) 0-7-1127-03-11097/00
- 4) 1-7-1127-03-00617/00

Interested vendors may collect the drawings from the above said Department by sending a request letter with a declaration stating that "the drawings will be returned along with the offer and shall not be copied in any form whatsoever since these drawings are property of BHEL". The letter can be sent vide e-mail to the ids skaruna@bheltry.co.in , saranyac@bheltry.co.in followed by a hard copy of the letter. The letter shall clearly mention postal address of the vendors with contact details.

BHEL's General guidelines /instructions including bank guarantee formats and list of consortium banks, commercial terms checklist can be downloaded from BHEL web site <http://www.bhel.com> or from the government tender website <http://tenders.gov.in> (public sector units > Bharat Heavy Electricals Limited page) Tender Enquiry reference "2711200010".

Tenders should reach us before 14:00 hours on the due date Tenders will be opened at 14:30 hours on the due date Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present	Yours faithfully, For BHARAT HEAVY ELECTRICALS LIMITED Manager / MM / Capital Equipment
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Pinion assembly for Push Bench of STTP Hot mill.

MOD/SSTP/2011:01/01

May 5, 2012

1. **GENERAL:**

- 1.1 This document deals with requirements for submitting offers and executing the order on placement of Purchase order / Contract for the subject item. The equipment under this specification is required for Hot rolling Mill in Seamless Steel Plant in BHEL, Tiruchirappalli, for driving the Hot billet and mandrel through the push bench for hot rolling of tubes from hollow billets.
- 1.2 Bidders have to submit the offers as below by filling in the "Vendor's response" column with relevant information against each point in the respective sections below by providing information on model no, parameters etc. The technical requirements shall also be confirmed for each clause.
- 1.3 Note: A just 'CONFIRMED' or 'COMPLIED' or 'YES' or 'NO-DEVIATION' or similar words in the "Vendor's response" column is not acceptable and may lead to disqualification of the Technical Offer.
- 1.4 The offer shall Consist of Sections:
- 1.4.1 Part A:
- a. General Requirements
 - b. Technical offer with comparison statement of this specification requirement and offer
 - c. Commercial terms and conditions
 - d. Un-priced Price bid as per Part B (i.e. Price bid as per list shown in Part B of this Specification with the price value blanked)

1.4.2 Part B: Price bid for all items with split of major components:

Sl.No	Particulars	Qty	Rate
01			
02			
03			
04			
05			
06			

2. **QUALIFYING CRITERIA FOR THE SUPPLY**

- 2.1. The VENDOR has to necessarily provide the following details, for making an assessment of the firm's capability and competency: [The VENDOR is expected to give complete details against each clause in the table given below and wherever necessary an additional sheet may be attached (giving clear reference number) to cover the required details]

Sl. No.	PARTICULARS	Vendor's response with ref. cl. No. of detailed offer.
1.0	Number of Years of Experience of the VENDOR in the field of design, manufacture and supply of the subject equipment for similar applications.	



Pinion assembly for Push Bench of STTP Hot mill.

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2.0	Details of Design Set-Up and Technology Back-Up if any for the PRINCIPAL Equipment Maker	
3.0	Details on National / International Standards followed in Design of the Equipment.	
4.0	Confirmation to testing requirement of the equipment indicated in the technical part of this document prior to dispatch from supplier's end	
5.0	Details of Quality System followed (Kindly furnish the salient aspects of the QA system followed)	
6.0	Details on SERVICE-after-SALES set-up in India including the addresses of Agents/Service Centers in India and Asia	
7.0	Any Additional Data to supplement the manufacturing capability of the VENDOR	

- 2.2. The VENDOR has to compulsorily meet the following requirements to get qualified for submitting an offer for this test system. Confirmation against each clause is to be indicated in the space provided.

Sl. No.	REQUIREMENTS	Vendor's confirmation and ref. to detail enclosed
8.0	The VENDOR shall have a minimum of <u>2 Years</u> of Continuous Experience in the Manufacture & Supply of components and systems for similar industry	
9.0	The VENDOR shall have supplied at least 2 number of the equipment/component similar to the tendered component, involving hearing bone gear without gap at the joining edge of the helix at middle of the gear within the last five years.	
10.0	Proof of supply by way of final inspection record along with drawing for at least 1 supply shall be submitted with the offer.	

- 2.3. The VENDOR has to comply with the following, for accepting the Technical Offer for scrutiny by the Purchaser. Confirmation against each clause is to be indicated in the space provided.

Sl. No.	REQUIREMENTS	Vendor's confirmation and ref. to detail enclosed
11.0	The Commercial Offer (given with the Technical Offer – Part A) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid(Part-B), for confirmation of Scope of Supply.	
12.0	The points confirmed by the supplier based on the clarifications sought for the original offer shall be incorporated in the revised final offer wherever applicable. Pl. confirm	
13.0	The Vendor shall provide a complete list of out sourced / Bought-Out-Items with Source name, Model no., Specification, catalog and drawings. Pl. confirm.	
14.0	Break up cost for major items shall be furnished in the price Bid. Pl. confirm.	



Pinion assembly for Push Bench of STTP Hot mill.

MOD/SSTP/2011:01/01

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3.0 Technical requirements

Item name :	Pinion assembly for Push bench
Drawing No:	1) 0-7-1127-03-11126 / 00 2) 2-7-1127-03-00950 / 00 3) 0-7-1127-03-11097 / 00 4) 1-7-1127-03-00617 / 00
Material of : pinion,:	50 Cr Mo 4 as per Technical Delivery Condition(TDC): MOD:SSTP:HM:0107
Quantity	1 assembly of Pinion and pinion side coupling.
Description:	The item consists of a Herringbone gear and a long drive shaft integrated in a single forging. 2 sets of bearings are assembled on either side of the gear. These bearings are assembled with a set of bearing housing. Necessary end cover, lubrication conduit and accessories are to be provided. A coupling for connecting to the motor will be provided by BHEL which shall be shrink fitted to the Pinion assembly.
Application.	This assembly is used for driving a moving rack connected to a mandrel pushing arrangement. The mandrel pushes hot billets through a set of roll stands for forming shells for further processing in to seamless steel tubes. Enormous force and repeated shock load are involved.
Manufacturing Process:	The pinion, shall be of forged construction as per TDC indicated above. The other components and bearing shall be of high quality to take care of the severity indicated above. The required dimensional tolerances and fits shall be ensured. The Pinion and coupling shall be static and dynamically balanced as components and as assembly. A Quality control plan shall be submitted along with the offer, tabulating, the process / product characteristics, Ref. standards, Acceptance norms, extent of inspection and inspecting agency.
Testing requirements:	The material of the Pinion and other components shall be test for chemical, mechanical and metallurgical properties. The materials shall be non destructive tested after heat treatment and finishing by Ultrasonic test for internal soundness and LPI for surface defects. Test standard and acceptance norms shall be indicated in the Quality control plan.
Final Inspection, packing :	The Products shall be inspected at various stages after critical processes like forging, Heat treatment, Finish machining, balancing, final dimensions of assembly and performance test of assembly. The products shall be certified for all the above processes and verification. The certificate shall be supported by necessary process and inspection records and sent along with the product. The finished and assembled product shall be applied with preservative and packed for safe handling and shipment.

Reviewed and Approved

R.Sasikumar
DGM/SSTP/CIC

BHEL, Tiruchirapalli-620 014	SSTP / Hot Mill MMO	Technical Delivery Conditions	
Product : Pinion Shaft			
Document No.	Revision No.	Effective Date	Page No.
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1. Product :

Pinion Shaft as per drawing No. 0-7-1127-03-11097

2. Application :

Pinion Shaft to transmit power from Push Bench motor to push the Push Bench Mandrel bars used for Production of Seamless Steel Tubes at SSTP. These bars will be pushing the elongated shell into Push Bench comprising of roller cages with diminishing diameters.

3. Raw Material :

50 Cr Mo 4 of DIN No. 1.7228

Chemical Composition :

C	Mn	Si	S	P	Cr	Mo
0.46	0.50	0.15	0.035	0.035	0.90	0.15
0.54	0.80	0.40	max.	max.	1.20	0.30

4. Condition of supply:

Each shaft shall be individually Forged, Hardened and Tempered. To ensure uniformity of structure & strength forging shall be done to min. forging ratio of 1:4 from ingot to final forging, close to final size & shape. Flow lines to be parallel to axis of the pinion.

5. Dimension:

Dimensional inspection shall be carried out by the supplier as per the given drawing and the Dimension report shall be sent along with the supplies.

6. Heat Treatment :

Hardened and tempered to have the properties as given in the drawing. Heat treatment procedure and Heat treatment chart shall be furnished to BHEL

7. Non Destructive Test

7.1 Ultrasonic Testing:

Ultrasonic testing shall be done on all the forged blanks after proof machining and before heat treatment in accordance with **SA 388**. Acceptance Standard in accordance with **AM 203.2(c), ASME Sec VIII Div.2**. Shall be certified by NDT Level II qualified personnel. The forged blanks must be free from internal defects such as pores, cracks, blow holes etc., that could have a significant effect on workability and usability.

7.2. LPI:

The Shaft shall be free from surface marks, dents, laps and cracks. This shall be ensured by LPI after finish machining as per **ASTM E165** and shall be certified by **NDT Level II qualified personnel as per SNT-TC-1A**.

BHEL, Tiruchirapalli-620 014	SSTP / Hot Mill MMO	Technical Delivery Conditions	
Product : Pinion Shaft			
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8. Test Certificate

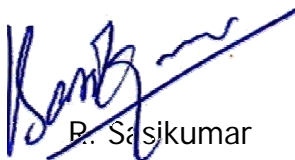
The Shafts shall be supplied with Test Certificate from the manufacturer indicating the heat number, ladle analysis, method of manufacture, heat treatment condition and test results of Tensile strength and ultrasonic testing. In case, raw material is procured from outside by the supplier, the original Test Certificate of raw material manufacturer shall be furnished.

9. Inspection and Supplier's Works :

The Shafts may be subjected to inspection at supplier's works, by inspectors authorized by BHEL/SSTP. This requirement will be indicated in the purchase order. The Inspector shall be provided with all reasonable facilities to ensure that the material is furnished in accordance with this TDC.

10. Preservation & Packing:

Supply with rust preventive coating which shall be dry after application and removable by common solvents. Pack suitably to avoid transit & handling damages.

Reviewed and Approved By
 R. Sasikumar DGM/SSTP/CIC