

BHARAT HEAVY ELECTRICALS LIMITED
HEEP: HARDWAR-249 403 (UA)
Fax: 01334-223948/226462, Phone: 285291 / 281980
E-mail: asanyal@bhelhwr.co.in

No. Cap/OT/07

Date: 23-07-2007

Subject: Open tender as detailed below:

OPEN TENDER (EXPRESSION OF INTEREST)

1. Sealed tenders (expression of interest) with the Tender No. and opening date clearly super scribed on the cover are invited from the manufacturers for the supply of the following items:-
2. Last date for taking tender documents and opening of tenders is indicated against each tender. Tenders will be received up to 1.45 P.M. on opening date and opened on the same day at 2.00 P.M. in the Tender Room.
3. Intending vendors must remit the tender fee of Rs. 2,000.00 for indigenous supplies (equivalent foreign currency \$ 50.00 / € 40.00) from foreign vendors against each tender along with the requisite EMD in the form of bank draft while submitting the tender documents as detailed in "Instruction to Bidders", after down loading from this web site.
4. BHEL will not be responsible for any type of postal delay / incomplete information from vendor.
5. Other terms and conditions will be as per tender documents.

Sl. No.	Tender No.	Description of Equipment	Qty. (Nos.)	Last date to get from BHEL	Opening date
1.	C/6420/7/2780T	CNC Hydraulic Press 1000T (as per enclosed specification)	01	07.09.2007	08.09.2007

- Pre-dispatch inspection at vendor's works
- Erection, commissioning & job proving at BHEL works required

(A. Sanyal)
DGM (Capital Purchase)



BHARAT HEAVY ELECTRICALS LIMITED
HEEP HARIDWAR INDIA-PIN 249403
FAX NO: 0091 1334 226462/223948
PHONE NO: 0091 1334 285291

Enq. No.:C6420/7/2780T

Date of issue : 23-07-2007

Due Date : 08-09-2007

M/S.....

.....

Sub: Tender Enquiry No. C/6420/7/2780T

Dear Sir,

We are pleased to invite Expression of Interest., strictly as per enclosed terms and conditions and instruction to bidders, in sealed covers for the under mentioned equipment / systems.

Sl. No.	Description of Equipment	Qty. (Nos.)	Delivery Required	EMD (Earnest Money Deposit)
1.	CNC Hydraulic Press 1000T (as per enclosed specification)	01	By 25.02.2009	Rs.100000.00 (Rupees One lac only or equivalent foreign currency)

Please submit your Techno-Commercial offer only for the above requirement subject to our terms and conditions. Your offer should reach us on or before the due date by 1.45 PM.

Bids shall be opened of those vendors **ONLY AFTER ENSURING PROOF OF EMD AND TENDER FEE (PLEASE SUBMIT SEPARATE DRAFTS FOR EMD AND TENDER FEE {drawn in favour of BHEL Hardwar} IN ANOTHER ENVELOPE SUPERSCRIBED WITH BOLD LETTERS "EMD & TENDER FEE")** at 2 PM on the due date in the presence of authorized representatives of the bidders who may like to be present. The authorized representative should bring authority letter from their parent company (Manufacturer) for attending the bid opening. All Govt. of India / PSU / State Govt. entities are exempted from submission of EMD. Purchase preference will be given to CPSE s as per GOI notification no. DPE/13(12) 2003-Fin. Dated 26th Oct'04.

KINDLY READ "INSTRUCTIONS TO BIDDERS" QUOTATION NOT IN ACCORDANCE WITH THE ABOVE INSTRUCTIONS ARE LIABLE TO BE DISQUALIFIED AND IGNORED.

Thanking You,
Yours Faithfully,
For & ON BEHALF OF BHEL, HARDWAR

(A. Sanyal)
DGM (Capital Purchase)

INSTRUCTIONS TO BIDDERS FOR OPEN TENDER

(Expression of Interest)

Only those bids will be opened which has been submitted with requisite EMD & tender fee.

1.0 The tenders shall be submitted as Techno -Commercial Bid along with vendor evaluation form as described below on or before the due date.

- **The Quotation should be from the Principal / Original Manufacturer, failing which the quotation is likely to be ignored.**
- Any corrections / amendments shall be properly & fully authenticated with signature.

1.1 TECHNO-COMMERCIAL BID shall comprise of following documents:

- a) Complete Technical offer in TWO sets (one original + one copy).
- b) Catalogue of the Equipment,
Complete reference of the past supply of equipment for the same or similar specification giving details of customer with Name of the contact person, Fax no, phone no, E-mail if available.
- c) General Terms & Conditions as per **Annexure-I**
- d) Acceptance of commercial terms by vendor as per **Annexure II**.
- e) Deviation with reference to specification to be laid down on separate sheet.
- f) Validity of offer should be at least 180 days from tender opening.
- g) Quality plan to be submitted on the prescribed format as per BHEL Quality requirements for approval, Quality plan should enclose vendor's own standard, test procedures, list of sub vendors for Bought out items cross-referred, if any.
- h) Acceptance to submit Security Deposit and Performance Bank Guarantee as per enclosed format **Annexure-III**.
- i) Warranty 24 months from commissioning of the equipment unless other wise specified in the technical specifications.
- j) The rating of the company quoting for this tender from a third party (independent agency) preferably by M/S Dun and Bradstreet should be submitted. (DUN NUMBER), however this is not mandatory.
- k) Any additional documents (please specify).
- l) Consortium Bank List is at **Annexure-IV**. Bank Guarantees necessarily to be submitted through any of them.

The VREF duly filled up will be assessed for manufacturing capability, quality systems being followed, organizational soundness and financial worthiness.

2.2 The techno-commercial part and part containing vendor Registration/ evaluation form will be opened on the date and time specified in the covering letter, in the presence of those tenderers who wish to attend.

2.3 BHEL reserves the right to open the price bid (part-II) along with the opening of techno-commercial offer at its option and in that case vendor will be informed accordingly.

The decision to go for reverse auctioning or processing through supplementary bid will be solely at the discretion of BHEL management

3.0 MARKING OF ENVELOPE:

3.1 The following shall be subscribed on the envelopes:

1. EMD AND TENDER FEE. : is enclosed
2.
 1. TENDER NO. AND ITEMS DESCRIPTION.
 2. DUE DATE FOR OPENING.
 3. "TECHNO-COMMERCIAL BID"

Note: No price bid to be submitted along with this offer.

- 3.2 Envelopes not marked as above are liable to be ignored and will not be opened.
- 4.1 Tenders when finalized shall be in the name of the bidder only and change of name during tender evaluation (without certificate from registrar of company) and after submission of the tender is liable to make the offer ineligible for participation.
- 4.2 All test certificates / Guarantee certificates to be submitted in TRIPLICATE prior to despatch of materials for review and acceptance by BHEL.

IN CASE YOU ARE NOT MAKING AN OFFER AGAINST THIS ENQUIRY, THEN PLEASE ARRANGE TO SEND A LETTER OF REGRET IF YOU HAVE COLLECTED THE TENDER DOCUMENTS FROM BHEL / HAVE RECEIVED NIT AGAINST THIS TENDER.

Thanking You,

Yours faithfully,
For & on behalf of BHEL, Hardwar.

(A. Sanyal)
DGM (Capital Purchase)

GENERAL TERMS AND CONDITIONS OF REVERSE AUCTIONING

Against this enquiry for the subject item /system with detailed scope of supply as per enquiry specifications, BHEL may resort to “REVERSE AUCTION PROCEDURE” i.e., ON LINE BIDDING ON INTERNET.

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
3. BHEL will inform the vendor in writing in case of reverse auction, the details of Service Provider to enable them to contact & get trained.
4. Business rules like event date, time, start price, bid decrement, extensions etc. also will be communicated through service provider for compliance.
5. Vendors have to fax the Compliance form in the prescribed format (provided by Service provider) before start of Reverse auction. Without this, the vendor will not be eligible to participate in the event.
6. BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at “Total Cost to BHEL” like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the vendor to enable them to fill-in the price and keep it ready for keying in during the Auction.
7. Reverse auction will be conducted on scheduled date & time.
8. At the end of Reverse Auction event, the lowest bidder value will be known on the network.
9. The lowest bidder has to Fax the duly signed Filled-in prescribed format as provided on case-to-case basis to BHEL through Service provider within 24 hours of Auction without fail.
10. Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of vendor to conduct business with BHEL as per prevailing procedure.
11. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL’s standard practice.

ACCEPTANCE OF COMMERCIAL TERMS BY VENDOR

TENDER NO. SL. NO. DESCRIPTION	VENDOR'S CONFIRMATION
<p>1 Payment terms: 80% of the material cost to be paid against delivery / dispatch documents. Balance 20% of material cost and E&C and proving charges will be paid after satisfactory erection & Commissioning. (Through Bank for Indigenous & L/C in case of Import).</p> <p>Note :</p> <p>a) As per payment terms, minimum 20% will be released by BHEL after successful erection, commissioning and job proving.</p> <p>b) Further this 20% will be released against submission of performance bank guarantee valid for entire warrantee period from the date of commissioning.</p> <p>c) The security deposit is to be as per the tender condition.</p> <p>Loading on payment terms if not agreed by vendor will be as follows:</p> <p>Loading: Advance amount, if any (Amount – X)</p> <p>1.5% per month for the quoted delivery period for the amount 'X'</p> <p>Payment at the time of dispatch against shipping/dispatch documents (Amount Y):</p> <p>"1.5% per month for the amount X+Y exceeding 80% of contract value i.e. 1.5% of (X+Y-0.8Z) where Z is the contract value. As such loading of 6% will be done for imported and 3% for indigenous items."</p> <p>In case any bidder does not accept any of the condition at (a) to (c) above then, their offer is likely to be rejected by BHEL and technical bid will not be processed, and no correspondence in this regards will be entertained</p>	
<p>1.2 P.B.G. TERMS:</p> <p>Performance Bank Guarantee to be submitted on the prescribed format equal to the value of 10% of the total order value valid WARRANTY / GUARANTEE agreed period. This bank guarantee in the format to be prescribed by BHEL shall have to be submitted before release of last balance payment.</p>	
<p>1.3 CURRENCY OF PAYMENT: (Euro / Dollar / CHF etc.)</p>	

<p>1.4 For indigenous supply the currency shall be Indian Rupees.</p>	
<p>1.5 SUPERVISION CHARGES :</p> <p>For Indian Suppliers: It should be quoted in Rupees.</p> <p>For Foreign suppliers: If supervision is being carried out by persons residing in India, it should be quoted in Indian Rupees.</p>	
<p>1.6 TAXES : All statutory taxes, if any, will be deducted at source & to be borne by the beneficiary. Tax deduction certificate shall be issued at the end of financial year if required.</p>	
<p>2. Security Deposit : Vendor has to submit security equal to the amount of 5% of the total order value in the currency of order within one month of receipt of order in the form of Bank Guarantee in BHEL format valid for two months beyond shipment.</p>	
<p>2.1 Submission of Bank Guarantee : All bank guarantee for security deposit as well as performance bank guarantee should be from one of the BHEL consortium banks and the bank guarantee should be in the proforma as prescribed by BHEL. The performance bank guarantee as well as the list of consortium banks is displayed at BHEL web-site www.bhelhwr.co.in however, in case the bank guarantee is not from BHEL consortium banks, then the vendor has to confirm bank guarantee on consortium bank and the bank charges are to be borne by the bidder.</p>	
<p>3. Liquidated damages: L.D. shall be applicable for delayed delivery @ 0.5% per week and part thereof subject to a maximum of 10% for total P.O. value. If any vendor does not accept the LD @ of 0.5% per week and part thereof subject to a maximum of 5% of total PO value, their offer will be ignored. Vendors accepting LD terms different from the proposed terms of 0.5% maximum 10% will be loaded @ %age deviation from the range of 10% on their prices (FOB for imported and ex-factory for indigenous). If the vendor does not accept as above their offer is likely to be ignored and technical bid will not be processed.</p>	

<p>4. Delivery of the equipment:</p> <ul style="list-style-type: none"> • Categorically indicate time period required for delivery of the equipment. • Firm delivery period for the equipment to be stated w.e.f. date of LOI/ Order. • Commissioning & handing over of complete system in weeks. 	
<p>5. Settlement of Disputes:</p> <ul style="list-style-type: none"> • Settlement of disputes through arbitration shall be in accordance with Arbitration Rules of Conciliation and Arbitration of the ICC, Paris. The venue of arbitration shall be Delhi. The courts of Delhi shall have exclusive jurisdiction. • For Indigenous Source. The venue of arbitration shall be Haridwar Courts, which will have exclusive jurisdiction. 	
<p>6. Authorization for pre-inspection: BHEL is authorized to pre inspect the material at your works. The material will be despatched only after getting clearance from BHEL.</p>	
<p>7. Drawing / data approval : Any drawing / data approval required from BHEL after placement of order Shall be the responsibility of the vendor and any delay on account of the same shall be the responsibility of the vendor and have no bearing on the penalty applicable.</p>	
<p>8. Drawing / design / information use: The vendor will have to give an undertaking that the drawing / design / information enclosed with the enquiry / proposed order will not be parted to any other agency and will also not be used for manufacturing for any other customer.</p>	
<p>9. Time period for Foundation /Erection & Commission: Vendor will have to ensure deputation of their people for erection & commissioning or for attending to any complaint during guarantee period within 7 days of intimation. In case of delay BHEL will be within their rights to get the job completed at the risk and cost of the supplier.</p>	

<p>10. 5 Sets of O&M Manual: 5 Sets of Operation & Maintenance Manual shall have to be supplied along with the equipment. Final payment will be released only after receipt of the required documentation.</p>	
<p>11. Training: Vendor shall provide required training to BHEL personnel free of cost.</p>	
<p>12. Purchasing of BOI items: Vendor shall purchase the BOUGHT OUT ITEMS only from vendors of repute and indicate the same to BHEL at the time of approval of GA drawing. BHEL reserves the right to visit / inspect the works of supplier and that of their sub contractors before or after placement of order.</p>	
<p>13. Spares, tooling, jigs and fixtures: The equipment being new, above items shall be needed in bulk at a later stage. However two separate lists of spares, tooling, jigs and fixtures should be sent along with quotation.</p> <ol style="list-style-type: none"> 1. Items which you recommend very necessary to be available along with the equipment. 2. Items which may be required at a later stage. (The price validity of these items should be for a minimum period of two years from the date of commissioning of the equipment). 	
<p>14. Warranty/ Guarantee: Guarantee for complete machine and all supplied accessories / attachment / equipments / items for 24 months from the date of acceptance of the machine.</p>	
<p>15. Details of Contact person Name, Designation, Department complete postal, E-mail address & Fax no, phone, Mobile no. to be mentioned.</p>	
<p>16. Phyto sanitary Certificate essential for packages (Wooden).</p>	
<p>17. Validity: Validity of the offer should be 180 days from tender opening.</p>	
<p>18. Bank Charges: Bank Charges to be borne by Vendor.</p>	
<p>Note: Attach separate sheet for additional information if necessary. The above terms & condition supersedes the terms & conditions found contradictory written elsewhere in the tender enquiry.</p>	

NOTE :

- 1.0 Total weight -- /Gross / Net in Kg. Also package size essentially should be indicated if not exact then approximate.
- 2.0 Following details shall be provided in separate Annexure.
 - A) Unit prices for variable items.
 - B) Prices for any other OPTIONAL items.
- 3.0 **Excise duty:** Concession forms requirements etc. to be stated wherever applicable.
- 4.0 BHEL will evaluate the technical bids against essential criteria/requirements. BHEL may seek clarifications, if required, from the qualified bidders only. These clarifications will be communicated to the eligible vendors and they will be asked to attend techno-commercial discussions on specified dates. The bidders will be given 15 days notice to come prepared with the required documents/ clarifications. No extension will be given. **The offers of those bidders, who are unable to respond in this time frame, are likely to be ignored.**
- 5.0 The vendors found technically acceptable against their original technical offer and subsequent technical discussion BHEL will communicate equivalent scope of supply to the qualified bidders who will be required to submit their final bid in two parts. Un-priced technical part-I & price bid part-II **OR** vendor will be furnished a common scope and will be made to participate in the process of reverse auction if required.

It is clarified that no correspondence – technical or commercial – other than the above bids is permissible. In case any uncalled for correspondence – technical or commercial – is received, the same will be ignored and entire bid also may be ignored. It is also clarified that no commercial discount will be acceptable.
- 6.0 All the bidders whose offers have been accepted by BHEL will be given one-week notice for opening price bid.

Date :

Signature :

Name :

Designation :

Department :

M/s

LIST OF CONSORTIUM BANK

- | | |
|---|--|
| <p>1. State Bank of India
CAG Branch,
10-th Floor, Vijaya Building,
Barakhamba Road,
New-Delhi-110001</p> | <p>10. HDFC Bank Ltd
5th Floor, HT House,
K G Marg,
New-Delhi-110001</p> |
| <p>2. Canara Bank
74, Janpath,
New-Delhi-110001</p> | <p>11. CITI Bank N A
Jeevan Vihar Building,
Sansad Marg,
New-Delhi-110001</p> |
| <p>3. Punjab National Bank
74, Janpath,
place,
New-delhi-110001</p> | <p>12. Standard Chartered Bank
H2 Block, Connaught

New-Delhi-110001</p> |
| <p>4. Bank of Baroda
Corporate Banking Branch,
11th Floor, BOB Building,
Sansad Marg,
New-Delhi-110001</p> | <p>13. ICIC Bank Ltd.
ICIC Tower,
Bisham Pitamah Marg,
Pragati Vihar,
New Delhi 110003</p> |
| <p>5. Deutsche Bank
Tolstoy Marg,
New-Delhi-110001</p> | <p>14. IDBI Bank Ltd.
19, K G Marg,
Surya Kiran Building,
New-Delhi-110001</p> |
| <p>6. State Bank of Hyderabad
Surya Kiran Building,
K. G. Marg,
New-Delhi-110001</p> | <p>15. HSBC Ltd.
ECE House,
28 KG Marg,
New-Delhi-110001</p> |
| <p>7. State Bank of Mysore
Antriksh Bhawan,
K. G. Marg,
New-Delhi-110001</p> | |
| <p>8. State Bank of Mysore
Industrial Finance Branch,
Ramanashree Arcade,
MG Road,
Bangalore-560001</p> | |
| <p>9. State Bank of Travancore
Travancore House,
IF Branch, K G Marg,
New-Delhi-110001</p> | |



ANNEXURE-IV

WAM-28

Proforma for Bank Guarantee

In consideration of the Bharat Heavy Electrical Limited Siri fort N. Delhi through Division HEEP Hardwar (hereinafter called the Company') having agreed to exempt- ----- (hereinafter called 'the said Contractor' which term includes 'Suppliers' for the purpose of this Bond) from the demand under the terms and conditions of an Agreement date. ----- Made between ----- and ----- for (hereinafter called 'the said Agreement') of Security Deposit for the due fulfillment by the said Contractor of the terms and conditions contained in the said Agreement, on production of a Bank Guarantee for Rs. ----- (Rupees-----only).

1. We, _____ (Indicate the name of the Bank) _____ (hereinafter referred to as 'the Bank') at the request _____ (Contractor (s) do hereby undertake to pay to the Company an amount not exceeding Rs. _____ against any loss or damage caused to or suffered or would be caused to or suffered by the Company by reason of any breach by the said Contractor (s) of any of the terms and conditions contained in the said Agreement.
2. We, _____ (indicate the name of the Bank) _____ do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Company stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Company by reason of breach by the said Contractor(s), of any of the terms of conditions contained in the said Agreement or by reason of the contractor(s), failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.
3. We undertake to pay to the Company any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.

4. We, _____ (indicate the name of the Bank) _____
further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Company under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till _____ Office / Department / Division of Bharat Heavy Electrical Limited certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said contractor(s) and accordingly discharged this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the _____ we shall be discharged from all the liability under this guarantee thereafter.
5. We, _____ (indicate the name of the Bank) _____
further agree with the Company that the Company shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the power exercisable by the company against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by any reason of any such variation or extension being granted to the said contractor(s) or for any forbearance, act or omission on the part of the company or any indulgence by the company to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.
6. This guarantee will not be discharged due to the change in the constitution of the Bank or the contractor(s).
7. We, _____ (indicate the name of the bank) _____
lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Company in writing.

Dated the _____ day of _____

For _____ (indicate the name of the bank) _____

TECHNICAL SPECIFICATIONS FOR 1000 MT CNC HYDRAULIC PRESS

NOTE :-					
1. Vendor(OEM) must submit complete information against clause at SL.No.. 20.0 The offer, complying this clause, would only be considered.					
2. The vendor(OEM) should fill the "Offered" Column in compliance to specified requirements and also "Deviations" C					
ADDRESS OF THE SUPPLIER :			ADDRESS OF THE INDIAN AGENTS :		
TELEPHONE NOS.:			TELEPHONE NOS.:		
FAX NOS.:			FAX NOS.:		
E-MAIL ADDRESS :			E-MAIL ADDRESS :		
SCOPE:	SUPPLY, ERECTION & COMMISSIONING OF 1000 MT CNC HYDRAULIC PRESS				
SL. NO.	DESCRIPTION OF BHEL REQUIREMENT	REQUIRED	OFFERED	DEVIATION	REMARKS
1.0	PURPOSE				
1.1	Purpose: Cold & hot bending of carbon steel /alloysteel material of varying thickness & size in the shape of cylindrical /conical/contour bending by cold & hot forming with the help of punch & dies.	Vendor to note			
2.0	SPECIFICATIONS:	Vendor to confirm			
2.1	Frame Structure: "C" Type rigid frame to facilitate maximum access to tool area for tool clamping & component feeding . -The frame should be fabricated by ultrasonically tested quality plates of suitable thickness to withstand load & longer working life of the press. -The frame should be stress relieved after welding & then machined to get required accuracies like parallelism & Perpendicularity between pillar, bed, moving plane /etc. -The frame should be designed to achieve maximum rigidity to retain dimensional accuracy & long working life in continuous rated duty . -Precision machine d & hardened guides to offer exceptional accuracy & alignment which further reduces wear .				
2.2	Technical specification :-	Vendor to offer			
	i) "C" Type Frame . ii) Pressing Capacity - 1000MT iii) No.of main hydraulic cylinder - 2 nos iv) Slide Stroke - 1200 mm v) Slide Size (LRxFB) -3700x2800 mm vi) Bolster Size (LRxFB) -3700x2800mm vii) Working Pressure (Approx) -250kg/cm2 viii) Speeds +/-10% a) Fast Approach - 200mm/s b) Pressing - 10mm/s c) Fast Return speed - 120mm/s ix) Bolster type - fixed 1 no. x) Height of bolster top face from the floor level (Approx) -750mm				
2.3	Motor:- (Motor details like make ,type,rating) Main motor capacity (type,kw &rpm) -1 no. Anxiling motor capacity (Type ,KW &rpm) Make of main motor Make of Aux. motor	Vendor to inform			
2.4	Pump:- 1 no.fixed flow main pump. Capacity of pump Make of pump	Vendor to inform			
2.5	Accuracy:-				
2.5.1	Permissible defection of slide/ bolster.	0.17mm/m			
2.5.2	Press accuracies for perpendicularity, parallelism & flatness	Vendor to inform			
2.6	OPERATION AND CONTROL SYSTEM				
2.6.1	OPERATOR'S PANEL	Vendor to offer			
	Swiveling type operator's panel having complete CNC and machine control system with all displays of required configuration shall be provided and suitably located for convenient, efficient & safe operation of the machine.				

SL. NO.	DESCRIPTION OF BHEL REQUIREMENT	REQUIRED	OFFERED	DEVIATION	REMARKS
2.6.2	CNC/PLC SYSTEM & FEATURES Details/Requirements mentioned below are as per Siemens make system. In case of Fanuc make system, equivalent features/requirements are to be offered.	Vendor to confirm the type or model of CNC/PLC system & drives Vendor should provide the details of drive system for controlling the proportionals valves.			
2.6.2.1	Make				
2.6.2.2	Type	Window based latest version			
2.6.2.3	Model (Latest version, as available at the time of ordering, should be supplied with consent from BHEL).				
2.6.2.4	Details of Standard features	Vendor to submit			
2.6.2.5	Details of optional features, recommended by vendor for proveout components for specified turning operations or foreseen as required keeping in view of offered accessories/systems/special features etc..	Vendor to submit			
2.6.2.6	Details of other optional features (which may be selected by BHEL, if required)	Vendor to submit			
2.6.2.7	Operating panel of the CNC/ PLC system should have full alphanumeric keyboard, TFT color display (15" or more), USB Port, RS232C serial interfaces, parallel interface for printer, network ready with LAN, electronic hand wheels for easy operations.	Vendor to offer If applicable			
2.6.2.8	Fast & user-friendly <u>Graphic Simulation</u> for checking of program prior to actual running in the CNC/PLC system in addition to all other required/recommended features.	Vendor to offer			
2.7.	UPS & STABILISER FOR CNC SYSTEM:				
2.7.1	UPS unit including Siemens UPS module SITOP with rechargeable battery of sufficient time and having provision for unattended automatic shutdown feature for Windows operating system, incase of Fanuc equivalent compatible UPS to be offered.	Vendor to offer If applicable			
2.7.2	Stabiliser of Suitable rating .	Vendor to offer			
2.8.	MACHINE LIGHTS				
2.8.1	Machine Lights for sufficient illumination of complete working area including operator's panel should be provided for clear visibility.	Vendor to offer			
2.8.2	Any lights required in the foundation/ pit area shall also be foreseen and supplied by the vendor.	Vendor to offer			
2.8.3	All light fittings, consumables, adapters/receptacles should have compatibility with Indian equivalents	Vendor to offer			
2.9.	AIR CONDITIONERS				
2.9.1	Independent air conditioners with Dehumidifiers of suitable & sufficient capacity to be provided for each Electrical / Electronic Panels / Cabinets including Operator's Panel considering specified ambient conditions. Detailed specifications of the same are	Vendor to offer			
2.10	HYDRAULIC SYSTEM -(details to be submitted by vendor)				
2.10.1	The System should be centralised & re-circulating type. Hydraulic tank should be placed at shop floor. Max. Hydraulic Pressure should not exceed 250 kg/sq.cm.	Vendor to offer			
2.10.2	Tank capacity	Vendor to inform			
2.10.3	System's make Rexroth / Vickers/Bosch (Details to be submitted)	Vendor to inform/ submit			
2.10.4	Filtration System, Details should be submitted, like drain filter , pressure side filter ,Filter should have replaceable filter elements and filter clogging indication and alarm.	Vendor to submit			
2.10.5	Failure indication -For all operations.	Vendor to offer			
2.10.6	Automatic shut off provision for safety (Details should be submitted).	Vendor to offer			
2.10.7	Refrigerated type cooling and of sufficient capacity for Hydraulic System to ensure oil temperature not exceeding 40 degree Celsius irrespective of ambient at continuous operation of press.	Vendor to offer			
2.10.8	Hydraulic pump detail's flow / pressure, make, Type.	Vendor to inform			

SL. NO.	DESCRIPTION OF BHEL REQUIREMENT	REQUIRED	OFFERED	DEVIATION	REMARKS
2.10.9	Complete hydraulic system should be designed to avoid any leakage or spillage.	Vendor to confirm			
2.10.10	Sufficient stages/nos. of filters should be used to avoid frequent clogging of the filters and other maintenance related problems.	Vendor to offer/ confirm			
2.10.11	Hydraulic oil(Type,make and equivalent oils).	Vendor to offer			
2.10.12	All hydraulic components should be Rexroth / Vickers / Bosch make.	Vendor to confirm			
2.11	FIRST FILLING OF OILS				
	First filling of all required Oils & Grease etc. for the machine to be supplied by vendor. Indigenous (Indian) source or Indian equivalent and specifications of oils/ greases are also to be provided.	Vendor to offer			
2.12	Lifting Device:-	Vendor to offer			
	2 nos slewing cranes				
	Lifting capacity of each crane -3 MT				
	Radius of crane -8000mm				
	Lifting height -3400mm (max)				
2.13	Electric System:-				
2.13.1	Power supply- 415V \pm 10%,50Hz \pm 3% 3 phase AC supply.	Vendor to confirm			
2.13.2	REQUIREMENT FOR ELECTRICAL EQUIPMENT				
	Power Supply will be provided by BHEL at a single point near the machine, as per layout recommended by Vendor. All types of switches, cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the machine.	Vendor to accept & offer			
2.13.3	Tropicalisation: All electrical / electronic equipment shall be tropicalized.	Vendor to offer/ confirm			
2.13.4	All electrical & electronic control cabinets & panels should be dust and vermin proof.	Vendor to offer/ confirm			
2.13.5	All electrical components in the cabinets should be mounted on DIN Rail.	Vendor to offer/ confirm			
2.13.6	All electrical / electronic panels to be provided with adequate door locks. All electrical & electronic panels including operator's panel should have sufficient illumination and power receptacles/plug points of 220Volts, 5/15 Amp AC with on/off switch.	Vendor to offer/ confirm			
2.13.7	All motors shall conform to IEC or Indian Standards	Vendor to confirm			
2.13.8	All the cable trays required for laying of cables should be included in the offer.	Vendor to offer			
2.13.9	Vendor should ensure the proper earthing for the machine and its peripherals/accessories. Any material requirement for the same should be informed with foundation design/drawings. The vendor can take earthing connection from the nearest column of the prod	Vendor to offer/ confirm			
2.14.	SAFETY ARRANGEMENTS	Vendor to offer			
	Following safety features in addition to other standard safety features should be provided on the machine:				
2.14.1	Machine should have adequate and reliable safety interlocks / devices to avoid damage to the machine, workpiece and the operator due to the malfunctioning or mistakes. Machine functions should be continuously monitored and alarm / warning indications should be generated.	Vendor to offer			
2.14.2	A detailed list of all alarms / indications provided on machine should be submitted by the supplier.	Vendor to submit			
2.14.3	All the pipes, cables etc. on the machine should be well supported and protected. These should not create any hindrance to machine operator's movement for effective use of machine and for maintenance personnels .	Vendor to offer			
2.14.4	Emergency Switches at suitable locations as per International Norms should be provided.	Vendor to offer			
2.14.5	Oil pipe lines should not run with electrical cable in the same trench.	Vendor to offer			

SL. NO.	DESCRIPTION OF BHEL REQUIREMENT	REQUIRED	OFFERED	DEVIATION	REMARKS
2.15	ENVIRONMENTAL PERFORMANCE The press should conform to following factors related to environment :	Vendor to offer			
2.15.1	Maximum noise level shall be 85 dB(A) at normal load condition, 1 meter away from the machine with correction factor for back ground noise, if necessary. This will be measured as per international standards like DIN 45635-16, if required.	Vendor to confirm			
2.15.2	No hazardous chemicals shall be required to be used in the machine.	Vendor to confirm			
2.15.3	If any safety / environmental protection enclosure is required it should be built in by the vendor.	Vendor to confirm			
2.15.4	Paint of the press should be oil resistant and should not get peeled off.	Vendor to confirm			
2.16	Portable Data Input Output Device /Interface: Provision /facility to load the operating system/back up to restore the CNC system in case of failure.	Vendor to offer			
3.0	ULTRA ISOLATION TRANSFORMER				
3.1	Ultra Isolation Transformer (of reputed Indian make) suitable for complete machine , its drives, controls, PLC etc. for unbalanced load & supply conditions considering specified power supply & ambient conditions.	Vendor to offer			
3.2	Make	Vendor to inform			
3.3	Model, Rating & Input/Output Voltage etc.	Vendor to inform			
3.4	Monitoring device with cutoff facility for under/over output voltage, Devices for load current measurement, MCCB at input for overload/short circuit protection. (Details to be submitted)	Vendor to offer			
3.5	Spares Package for Isolation Transformer, with item-wise breakup, are to be recommended and offered by the vendor in sufficient quantity for 2 years of trouble free operation considering three shifts continuous running of the machine. Detailed list is to	Vendor to offer			
4.0	TOOLINGS	Vendor to offer			
	3-sets of universal die and punch required(Refer Annexure -I)				
	a) V-block Punch- Height-845 mm Width-750 mm Length-980 mm Die- Height -200 mm Width-400 mm Length-1025 mm				
	b) V-block Punch- Height-845 mm Width-750 mm Length-980 mm Die- Height -372 mm Width-780 mm Length-1015 mm				
	c) Radial block Punch- Height-855 mm Width-750 mm Length-2320 mm Die- Height -345 mm Width-2015 mm Base plate Length-2550 mm Width-2015 mm		4		
5.0	FAULT DIAGNOSTIC SYSTEM :				
5.1	Supplier's own diagnostic system with required Software and Hardware installed on the CNC/PLC system, which shows detailed cause and remedy for the fault on the CNC /PLC system display with full diagnostics indicating the element /device causing the fault.	Vendor to offer & submit			

SL. NO.	DESCRIPTION OF BHEL REQUIREMENT	REQUIRED	OFFERED	DEVIATION	REMARKS
6.0	LEVELING & ANCHORING SYSTEM				
	Complete set of anchoring materials including foundation bolts, nuts, washers, fixators, leveling shoes etc for alignment of table/ram and to fix the press to the foundation should be supplied. Details to be submitted.	Vendor to offer			
7.0	TOOLS FOR ERECTION, OPERATION & MAINTENANCE				
7.1	Tools and Equipment required for erection of the press shall be brought by the vendor. Necessary tools like Torque Wrench, Spanners, Keys, grease guns etc. for operation and maintenance of the press should be supplied by the vendor. List of such tool	Vendor to offer			
7.2	Set of Test Mandrels/Cylindrical Bars for checking table run-out & alignment of ram etc. should be supplied with protection boxes.	Vendor to offer			
8.0	SPARES :				
8.1	Itemised breakup of mechanical, hydraulic, electrical and electronic spares in sufficient quantity as per recommendation of Vendor for 2 years of trouble free operation on continuous running basis.	Vendor to offer			
8.2	Mechanical & Hydraulic Spares : Following Spares are to be offered.	Vendor to offer			
8.2.1	Pump used on press i.e. Hydraulic, lubrication, and oil cooling pumps (1 no. each type)	Vendor to offer			
8.2.2	Control Valves (1 no. each type)	Vendor to offer			
8.2.3	All types of flow control, pressure regulators, pressure reducer valves, proportional control valves (1 no. each type)and pressure gauges.	Vendor to offer			
8.2.4	All types of pressure switches, flow switches and float/level switches (1 no. each type)	Vendor to offer			
8.2.5	All types of filter inserts of regenerative type (20 nos. of each type)	Vendor to offer			
8.2.6	All types of filter inserts of disposal type (20 nos. each type)	Vendor to offer			
8.2.7	Accumulators with charging kits (1 no each type) if used.	Vendor to offer			
8.2.8	All types of O-rings & Hydraulic Hoses (1 set of each type) set of oil seals for main & . return cylinders.(1 set for each cylinder)	Vendor to offer			
8.3.	Electrical /Electronic / CNC Spares : Following Spares are to be offered.	Vendor to offer			
8.3.1	Relays (2 Nos each type)				
8.3.2	Contactors (2 Nos each type)				
8.3.3	Proximity Switches (5 Nos each type)if used.				
8.3.4	Push Buttons (5 Nos each type)				
8.3.5	Indicating Lamps (10 Nos each type)				
8.3.6	Semiconductor Fuses (5 Nos each type)				
8.3.7	Special Fuses (5 Nos each type)				
8.3.8	Circuit Breakers (1 No each type)				
8.3.9	Main Power Switch (1 No each type)				
8.3.10	Encoders (1 No each type) if used.				
8.3.11	Scanning Heads for Linear Scales (1 No each type)if used				
8.3.12	Software 's back up on CD/hard disc (if used).				
8.3.13	NCU module (If used)				
8.3.14	Operator's panel with Display Unit(If used)				
8.3.15	I/O Cards for PLC (1 No each type)				
8.3.16	One each of the following items : CNC /PLC Power Supply, Control Panel, Any other auxiliary drive , if used, Complete Proportional Valve Controller, if used.				
8.4.	All types of spares for total machine and accessories should be available for at least ten years after supply of the machine. If machine or control is likely to become obsolete in this period, the vendor should inform BHEL sufficiently in advance and provide spares.	Vendor to confirm			
8.5	Complete list of spares for machine and accessories, with proper identification No./Code. Complete list of all Bought out items along with specification /Type , rating ,model, make & address of supplier. Details / technical leaflets ,literature for all bought out item, accssories etc. of the supplier. All the details given on the drawing and manual should be in English .Address of the spare supplier shall be furnished along with documentation to be supplied with the machine	Vendor to offer/ confirm			
8.6	Repair service contract with supplier of offered CNC / PLC system for service & spares for CNC /PLC Unit etc.	Vendor to offer/ confirm			

SL. NO.	DESCRIPTION OF BHEL REQUIREMENT	REQUIRED	OFFERED	DEVIATION	REMARKS
9.0.	DOCUMENTATION : Three sets of following documents (Hard copies) in English language should be supplied along with the machine	Vendor to offer			
9.1	Operating manuals of Machine & CNC/PLC system				
9.2	Programming Manuals of Machine & CNC/PLC system				
9.3	Detailed Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts including Electrical / Hydraulic circuit diagrams. All Assembly/ Sub Assembly Drawings shall be supplied with the part list also in English. Detailed description of hydraulic circuit to understand complete working of press, function and actual operating setting of all hydraulic components like pumps pressure Switches, flow Switches ,pressure reducing /relief valves, safety valves ,accumulator etc. should be given on the hydraulic circuit diagram & in manual Separately . All the metallic and rubber hoses should be properly identified with unique number and should match with the Nos given in hydraulic ckt. diagram & maint manual.	Vendor to offer/ confirm			
9.4	Interface & commissioning manuals, PLC programming manual for CNC system .P.L.C.ladder diagram with crose reference list.				
9.5	Catalogues, Operation & Maintenance Manuals of all bought out items including drawings, wherever applicable.				
9.6	Detailed specification of all rubber items and hydraulic/lube fittings				
9.7	Operating Manuals, Maintenance Manuals & Catalogues for supplied accessories.				
9.8	PLC program print-outs (hard copy) with comments in English including PLC program for any other auxiliary system if used.				
9.9	PLC program, NC data & PLC data on CD.				
9.10	Operating system & PLC back up on CD.				
9.11	Details of drives controlling the valves.				
9.12	Complete list of parts/items(Bill of materials) used in the machine in English language.				
9.13	One additional set of all the above documentation on CD ROM, wherever possible.				
10.0	FOUNDATION				
10.1	Vendor shall submit the foundations layout drawings for getting BHEL's approval within one month from the date of Letter of Intent (LOI) or Purchase Order, whichever is earlier. Complete Foundation Design including details viz. static / dynamic load details. Foundation bolts ,clamps, washers etc. to be offered.	Vendor to accept & offer			
10.2	Soil condition at BHEL, Haridwar is mentioned below : (a) Soil strata : Silty sand up to 2.5 meter depth (b) Average density of soil = 1.8 T/cubic m (c) Angle of internal friction = 35° (up to 3.0 m depth) (d) Coefficient of elastic uniform compression "C"	For vendor's information.			
11.0	ERECTION & COMMISSIONING				
11.1	Erection & Commissioning of Voltage stabilizer, Isolation Transformer , Hydraulic system and other accessories/attachments with all electrical & mechanical connections shall also be responsibility of the vendor.	Vendor to offer			
11.2	Successful proving of BHEL components by the supplier shall be considered as part of commissioning for the machine . All tests, as mentioned at Sl. No. 22.0 (Machine Acceptance) and testing/demonstration of tele-diagnostic service etc. shall also be part of erection /commissioning .	Vendor to offer			
11.3	Tools, Tackels, instruments and other necessary equipment tools required to carry out all erection & commissioning activities should be arranged and brought by the supplier.	Vendor to accept			
11.4	Commissioning spares, required for commissioning of the machine within stipulated time, shall be brought by the supplier on returnable basis.	Vendor to accept			
11.5	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to submit			
11.6	Terms & conditions for Erection & Commissioning should be furnished in detail separately by vendor along with offer.	Vendor to submit			
11.7	Portion, if any, of the machine, accessories/attachments and other supplied items where paint got rubbed or peeled off during transit or erection should be repainted and matched with the original adjoining paint by the vendor. For this purpose, the vendor	Vendor to offer			
12.0	PROVEOUT				

SL. NO.	DESCRIPTION OF BHEL REQUIREMENT	REQUIRED	OFFERED	DEVIATION	REMARKS
12.1	Complete and successful bending of components (3 nos.)cylindrical /conical and contour bending , to the specified design accuracy and surface finish, shall be done by the vendor after erection & startup of the machine at BHEL works using tools, equipment and CNC programs etc. supplied by vendor.	Vendor to accept & offer			
13.0	TRAINING				
13.1	Four BHEL Persons should be trained at vendor's works:- (a) Operation of the machine. (b) CNC Programming for the machine. © Maintenance of the machine.	Vendor to offer			
13.2	Air-fare, boarding & lodging for the trainees shall be borne by BHEL.	For vendor's information.			
13.3	Competent, English speaking experts shall be arranged by the vendor for satisfactory & effective training of BHEL personnel.	Vendor to accept & confirm			
14.0	AMBIENT CONDITIONS & THERMAL STABILITY				
14.1	Total machine including all supplied items should work trouble free and should give specified accuracies under existing power supply and ambient operating conditions, as mentioned below at Sl. Nos. 21.2	Vendor to accept & confirm			
14.2	Power Supply (AC): Voltage = 415V +10% / -10% of fluctuations , Frequency= 50Hz +3 / -3 , No. of phases = 3 phase with neutral.	Vendor to accept & confirm			
14.3	Ambient Operating Conditions: Temperature = 5 to 45 degree Celsius , Relative Humidity = 95% max.	Vendor to confirm			
14.4	The machine should be suitable for continuous operation to its full capacity for 24 hours a day and 7 days a week throughout year. Vendor to ensure and confirm the same.	Vendor to offer & confirm			
15.0	MACHINE ACCEPTANCE (Tests/Activities to be performed & demonstrated by Vendor)	Vendor to accept & confirm			
15.1	Tests/Activities to be carried out at vendor's works on the machine before dispatch :				
15.1.2	Demonstration of specified/offered Geometrical accuracies as per test chart/standard and specified values.				
15.1.3	Demonstration of all features of the machine, control system & accessories				
15.2	Tests/Activities to be carried out at BHEL works while commissioning the machine :				
15.2.1	Demonstration of specified/offered Geometrical accuracies as per test chart/standard and specified values.	Vendor to accept & confirm			
15.2.2	Full load test to demonstrate the maximum power & bending capacity of the machine.				
15.2.3	The machine should be tested for continuous running of 48 hrs. If any break down occurs during this test, the test should be repeated for 48 hrs from that time.				
15.2.4	Demonstration of all features of the machine, control system & accessories to the satisfaction of BHEL for efficient and effective use of the machine.				
15.2.5	Demonstration by actual use of all supplied accessories to their full capacity for required applications.				
15.2.6	Training of BHEL machine operators in operation of complete machine & accessories etc by the supplier's experts / engineers during their stay at BHEL works.				
16.0	PACKING				
	Sea worthy & rigid packing for all items of complete machine, CNC System, all Accessories and other supplied items to avoid any damage/loss in transit. When machine is dispatched in containers, all small loose items shall be suitably packed in boxes. In c	Vendor to offer & confirm			

SL. NO.	DESCRIPTION OF BHEL REQUIREMENT	REQUIRED	OFFERED	DEVIATION	REMARKS
17.0	GUARANTEE				
	Guarantee for complete machine and all supplied accessories/attachments/equipments/items for 24 months from the date of acceptance of the machine.	Vendor to offer			
18.0	GENERAL				
18.1	Machine Model No.	Vendor to inform			
18.2	Total connected load (KVA)	Vendor to inform			
18.3	Total Space required (Length, Width, Height) for complete machine, accessories/attachments and other supplied items like Voltage Stabilizer, Isolation Transformer.	Vendor to inform			
18.4	Painting of Press / Electrical Panels : RAL 6011 Apple Green (Polyurethane Paint)	Vendor to offer			
18.5	Total weight of the machine	Vendor to inform			
18.6	Weight of heaviest part of machine	Vendor to inform			
18.7	Weight of the heaviest assembly of the Machine	Vendor to inform			
18.8	Dimensions of largest part of the machine	Vendor to inform			
18.9	Vendor to submit reference list of customers where similar machines have been supplied mentioning broad specifications of the supplied machine i.e. Model, CNC System, capacity etc.	Vendor to submit			
18.10.	Detailed catalogues, sketches/drawings/photographs pertaining to the offered machines and accessories/attachments/items should be submitted with the offer.	Vendor to submit			
18.11	Hydraulic & Oil pipings should be preferably metallic except places where flexible pipings are essential. All the pipes required for the same shall be supplied by the vendor. All the pipes should be property indentified with Nos. and should match with the pipe nos given in hydraulic diagrams.	Vendor to confirm			
18.12	All Cables and Hoses etc. should be well supported & protected in trays/brackets/drag chains etc.				
19.00	SPECIAL REQUIREMENT :-				
	Leakage test of all Hydraulic pipe lines at 1.5 times of maximum working pressure to be witnessed by BHEL representative at supplier work.	Vendor to confirm			
20.0	QUALIFYING CONDITIONS				
	Only those vendors, who have supplied and commissioned at least one CNC Hydraulic Press of same or higher sizes for similar applications.	Vendor to comply & submit with the offer			
20.1	Name of the customer / company where similar press is installed.	Vendor to inform			
20.2	Complete postal address of the customer.	Vendor to inform			
20.3	Month & Year of commissioning.	Vendor to inform			
20.4	Name and designation of the contact person of the customer.	Vendor to inform			
20.5	Phone, FAX no. and e-mail address of the contact person of the customer.	Vendor to inform			
20.6	Performance certificate from the customers regarding satisfactory performance of machine supplied to them (Original Certificate or Through E-mail directly from the customer). The original performance certificate may be returned after verification by BHEL.	Vendor to submit			
20.7	BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false/incorrect, the offer shall be rejected.	Vendor to accept & confirm			

QUALITY PLAN FOR CAPITAL MACHINE TOOLS

BHEL QC-178			NAME OF SUPPLIER-----NAME OF EQUIPMENT----- - Q.P NO.-----REV NO.-----INDENT NO----- SPECIFICATION NO.-----REV NO.-----						SHEET-----OF----- * P-PERFORMANCE 1.BHEL REP W-WITNESSED BY 2.VENDOR V-VERIFIED BY 3.SUB - VENDOR FINALLY TO BE REVIEWED BY BHEL HARDWAR			
SL. NO.	MAJOR COMPONENTS / SUB ASSEMBLIES	DETAILS OF COMPONENTS GOING IN THE ASSLY 'COL-2'	CLASSIFICATION MATERIAL GRADES	TYPE OF CHECKS (SEE DETAILS AT ANNEX-I)	QUANTUM OF TEST REFERENCE DOCUMENT FOR TESTING	REFERENCE DOCUMENT FOR TESTING	ACCEPTENCE NORMS	FORMAT OF RECORDS	AGENCY FOR TESTING (TO BE PROPOSED BY VENDOR)*			REMARKS
1	2	3	4	5	6	7	8	9	10	11	12	13

Prepared by:
 (Signature and seal of the Head of
 Quality Management Of Supplier's works)
NOTE: Annexure-I is enclosed herewith

Approved by:
BHEL Hardwar
 (Signature & Seal of Approving Authority)

TYPE OF CHECK FOR COL. NO. 5

Code	Description	Code	Description
1.	Visual	17.	No Load / Free running Test
2.	Dimensional	18.	Load / Over Load Test
3.	Fitment and alignment	19.	Measurement of speed / RPM
4.	Physical Test (Sample)	20.	Surface Finishing
5.	Chemical Test (Sample)	21.	Manufacturing Test Certificate for Bought
6.	Ultrasonic Test (UT)		Out Items (BOIs)
7.	Magnetic Particle Test (MPI)	22.	Internal Inspection Report by Contractor
8.	Radiography Test (RT)	23.	Hardness Test
9.	Dye Penetration Test (DPT)	24.	Acoustical Test
10.	Welder's Qualification Test	25.	High Voltage (HV) Test
11.	Heat Treatment	26.	Megger Test
12.	Pressure Test Leakage Test Balancing	27.	Circuit / Continuity Check
13.	Leakage	28.	Simulation Checking
14.	balancing	29.	Any other relevant tests to Assure the
15.	Vibration Test		performance of the Equipment
16.	Performance	30.	Proof Testing at BHEL Hardwar