# Bharat Heavy Electricals Limited

**(**High Pressure Boiler Plant**)**
Tiruchirappalli – 620014, TAMIL NADU, INDIA
An ISO 9001 Company
CAPITAL PURCHASE / MATERIALS MANAGEMENT / MANUFACTURING


| **ENQUIRY** | Phone: +91 431 257 79 38<br>Fax : +91 431 252 07 19<br>Email : tvenkat@bheltry.co.in<br>Web : www.bhel.com |
|---|---|

| | **Enquiry Number:** | **Enquiry Date:** | **Due date for submission of quotation:** |
|---|---|---|---|
| | **2620700071** | **10.08.2007** | **26.09.2007** |
| 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 | | | |

| **Item** | **Description** | **Quantity** | **Delivery (Item required at BHEL on)** |
|---|---|---|---|
| 10 | 600 Ton Goose Neck Press for Bow Correction (600 Ton goose neck hydraulic press) as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in) | 1 No. | 30.07.2008 |

**BHEL commercial terms & conditions with Price Bid and Bank Guarantee formats along with technical specifications 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) under Enquiry reference "2620700071".**

| | |
|---|---|
| Tenders should reach us before 14:00 hours on the due date<br>Tenders will be opened at 14:30 hours on the due date<br>Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present | Yours faithfully,<br>For BHARAT HEAVY ELECTRICALS LIMITED<br><br>Manager / Capital Purchase / MM / Manufacturing |

# PART A.

## SECTION – I : QUALIFYING CRITERIA

The BIDDER has to meet the following requirements to get qualified for submitting an offer for 600 Ton GOOSE NECK ('C' Frame) HYDRAULIC PRESS : [Additional Sheets shall be attached with the OFFER, to provide requisite details]

| S.No. | REQUIREMENTS | VENDOR's RESPONSE |
|---|---|---|
| **1.0** | Only those vendors (OEMs), who have supplied and commissioned at least five Down-Stroking type Hydraulic Press of 500 Ton or above capacity, for cold or hot working in a Heavy Fabrication / Forging Shop. The press should presently be working satisfactorily for more than one year after commissioning. However, if such press (s) has/had been supplied to BHEL, then such machine should be presently working satisfactorily for more than six months after its commissioning and acceptance in BHEL. The following information should be submitted by the vendor about the companies where similar presses have been supplied. | |
| **2.0** | Name of the Customers / Companies where the Press is installed. | |
| **3.0** | Complete Postal Address of the Customer. | |
| **4.0** | Year of Commissioning. | |
| **5.0** | Parameters of Machine(s) supplied (parameters as mentioned in Clause **1.0** above) and application for which the machine is supplied. | |
| **6.0** | Name and designation of the contact person of the Customer. | |
| **7.0** | Phone No., FAX No. and E-mail address of the contact person of the Customer. | |
| **8.0** | Performance certificate from two customers regarding satisfactory performance of press supplied to them (Original Certificate or through E-mail directly from the customer). The original performance certificate may be returned after verification by BHEL, if required by vendor. A model format of the Performance Certificate is given on Page 3. | |

## SECTION – II : COMPANY PROFILE

The BIDDER is requested to provide details listed in the table given below :

| S.No. | PARTICULARS | VENDOR's RESPONSE |
|---|---|---|
| **9.0** | Number of Years of Experience of the BIDDER / VENDOR in the field of Design, Manufacture, Supply and Commissioning of Hydraulic Presses. | |
| **10.0** | Number of Hydraulic Presses supplied and installed till date in the following category (Classification based on CAPACITY) with details on customers :<br>a) Above 500 Tons<br>b) Upto 500 Tons | |
| **11.0** | Details on International Standards or Codes followed in the Design of Presses | [Elaborate Details are to be compulsorily provided] |
| **12.0** | Details of Manufacturing Facilities :<br>a) Fabrication Facilities<br>b) Heat Treatment Facilities<br>c) Heavy Machining Facilities<br>d) Assembly & Load Testing Facilities | |
| **13.0** | Details of Quality System (with Stages of Internal Inspection) followed for the Fabrication and Non-Destructive Testing (NDT) of Weldments | |
| **14.0** | Details on AFTER-SALES-SERVICE Set-Up in INDIA for providing timely service support to BHEL | |

## SECTION – III : BID / OFFER FORMAT

The BIDDER / VENDOR has to note the following :

| S.No. | REQUIREMENTS |
|---|---|
| **15.0** | The BIDDER shall submit the offer in TWO PARTS - Technical [with PART A & PART B] & Commercial and Price Bid. |
| **16.0** | The OFFER shall contain a comparative statement of Technical Specifications given by BHEL and the Offer Details submitted by the Bidder, against each Clause. A just 'YES' or 'CONFIRMED' or 'NO-DEVIATION' or 'COMPLIES' or 'ACCEPTED' or similar words in the technical comparative statement may lead to disqualification of the Technical Offer. |
| **17.0** | The Technical Offer shall be supported by Product Catalogue and Data Sheets in ORIGINAL and complete technical details of 'Bought-Out-Items' with copies of Product Catalogue and Selection Criteria |
| **18.0** | The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation of the inclusion of all the accessories, tooling, attachments, auxiliary parts, spares, consumables, etc. with the main and basic equipment, to meet the technical specification requirements. |

# PERFORMANCE CERTIFICATE – [SAMPLE FORMAT]

(On Customer's Letter Head)

1. Supplier of the Equipment / Press :

2. Make & Model of the Equipment :

3. Month & Year of Commissioning :

4. Application for which the Press is used :

5. a. Equipment Serial Number :
   b. Basic Specifications of the Hydraulic Press :
   [Pressing Capacity, Day Light, Shut Height, etc.]

6. Performance of the Machine : Best in the market /
   (with reasons for recommendation) Satisfactory /
   Good /
   Average /
   Not Satisfactory

7. Any other Remarks :

Date:

Signature & Seal of the Authority
Issuing the Performance Certificate

# TECHNICAL SPECIFICATIONS for GOOSE-NECK type 600 Ton CAPACITY HYDRAULIC PRESS

## 1.0 PURPOSE / APPLICATION :

The down-stroking and vertical hydraulic press is intended to correct the two-plane bend (bow) introduced due to the deformation caused by heavy welding of tubular parts and other attachments to seamless steel pipes (forming the main part of the boiler component – called as HEADER) or that developed during heat treatment operation of these fabricated boiler components. Invariably, the job subjected to straightening (bow correction by pressing) process is stress relieved after welding operation.

The sketch of a typical job is given in the **ANNEXURE-1,** attached for reference. The straightening is done by inverting the header and positioning on two vertical supports, such that the job becomes simply supported at two points and inserted within the "C" Frame of the Press. For bow correction, the force is applied through the ram of the press with controlled downward movement. A line sketch for this arrangement is given in **ANNEXURE – 2.**

## 2.0 MACHINE SPECIFICATIONS :

| Sl.No. | SPECIFICATION | PARAMETER | OFFER |
|---|---|---|---|
| **2.1.0** | **HYDRAULIC PRESS** | | |
| 2.1.1 | Type of Press | Vertical, Single - point Hydraulic-Gap Frame type, Down-stroking Press. | |
| 2.1.2 | Capacity | 600 Tons (minimum) | |
| 2.1.3 | Working Pressure | 250 kg./sq.cm. (maximum) | |
| 2.1.4 | Return Capacity | Around 15 Tons | |
| 2.1.5 | Frame | Goose-Neck type | |
| 2.1.6 | Stroke of Piston | 500 mm | |
| **2.2.0** | **DIE SPACE** | | |
| 2.2.1 | Shut Height (stroke down adjustment up to top of the bolster and to bottom of ram) | 2500 mm | |
| 2.2.2 | Daylight | 3000 mm | |
| 2.2.3 | Gap (distance between ram centre-line and face of press column) | 1700 mm | |
| 2.2.4 | Bolster Size (F-B x R-L) | 2000 x 1500 mm | |
| 2.2.5 | Slide Area (Ram Diameter) | 480 mm dia. | |
| 2.2.6 | Thickness of bolster | 200 mm | |

| Sl.No. | SPECIFICATION | PARAMETER | OFFER |
|---|---|---|---|
| **2.3.0** | **FRAME** | | |
| 2.3.1 | Type | Welded steel gap | |
| 2.3.2 | Floor to top of Bolster | 800 mm | |
| 2.3.3 | Overall Height of Press above Floor Level<br>(height shall be limited to 7200 mm above floor level, to facilitate EOT crane travel) | Supplier to specify | |
| **2.4.0** | **SPEEDS** | | |
| 2.4.1 | Pressing speed | 6 mm / sec. | |
| 2.4.2 | Fast advance | 15 mm / sec. | |
| 2.4.3 | Fast return | 40 mm / sec. | |
| 2.4.4 | Speed shall be decelerated before the end of return stroke to avoid jerk and vibration. | Supplier to Confirm | |
| **2.5.0** | **FLOOR PLATES :** | | |
| 2.5.1 | Width | 1000 mm | |
| 2.5.2 | Length<br>(to quote in segments of 1000 mm) | 4000 mm on either side of the Press | |
| 2.5.3 | T Slots (Pitch / Size) | (160 mm / 22 H7) | |
| 2.5.4 | Load Bearing Capacity | 5 Tons per sq. mtr. | |
| | | | |
| **3.0.0** | **DESIGN & CONSTRUCTIONAL FEATURES :** | | |
| 3.1.0 | Press construction shall be such that it consists of a single extra heavy inner plate and reinforcing members to ensure adequate strength (fully stress relieved prior to machining) | | |
| 3.2.0 | All structures are to be built with high quality rolled steel plates, cut to shape, interlocked and welded into strong rigid box sections. | | |
| 3.3.0 | Hydraulic unit shall consist of suitable reservoir (drip proof oil reservoir with strainer and air-breather) with sight gauge glass filtered breather system, heat exchanger ( REFRIGERANT type) , temperature gauge, motor-pump sets, filters and filtering arrangement, manifolds, test points and piping, valves and solenoids, suitable interconnecting hoses. | | |
| 3.4.0 | High pressure hydraulic main cylinder shall be of double acting type, accurately finished with out external score marks on piston RAM and leak proof. | | |
| 3.5.0 | Hydraulic unit will be located on the frame compactly arranged and piped using manifold blocks. | | |
| 3.6.0 | Hydraulic circuit is to be designed with minimum number of control valves and to suit oil of ISO VG 46 or 68 only. All the pumps and suction lines to be provided with dust seals at the point of entry to the oil reservoir. | | |

| Sl.No. | SPECIFICATION | OFFER |
|---|---|---|
| 3.7.0 | Hydraulic power to be supplied by positive displacement hydraulic pump. | |
| 3.8.0 | Full tonnage to be available through out the stroke. | |
| 3.10.0 | Stroke length and change over positions of press speeds are to be controlled by adjustable top and bottom and slow down limit switches. The limit switches to positioned suitably avoiding damage by chain hooks during job handling. | |
| 3.11.0 | Press reversal is to be initiated either by top limit switch or pressure switch | |
| 3.13.0 | Pressure gauge at the working level of the operator on the press side wall is to be provided for indicating working pressure | |
| 3.14.0 | All solenoids should have indications (LED). | |
| | All The sequence of operation of the press shall be through PLC control. Press shall be able to operated through auto and manual cycles. | |
| 3.15.0 | The press is to be equipped with an inter-cooler (REFRIGERANT type ) and temperature indicator to keep the oil temperature within the allowable temperature 50°C.. | |
| 3.16.0 | Control of operation through operation panel (movable trolley type) to be located in front and away from the press with a minimum 3 mtr. long control cable. | |
| 3.18.0 | Safety devices for hydraulic circuit, emergency stop buttons to be provided in the operation panel as well as in the press frame and suitable interlock safety systems. | |
| 3.19.0 | DRO for ram movement and pre-selectable operation for various settings. | |
| 3.20.0 | The Press function shall be smooth and vibration free during press operating cycles. | |
| 3.22.0 | Indications at operator working level to display the Pressing Tonnage Developed and the Operating Hydraulic Pressure | |
| 3.23.0 | Anchoring Material and Foundation Design shall be so rigid to withstand the pressing load and not to get detached in long run. | |
| 3.24.0 | Seals for the Hydraulic Cylinder shall be of imported make (preferred brand MERKAL / HUNGER / JAMES-WALKER) and shall withstand an over-loading of 125 % | |
| 3.25.0 | The pressing cycle (under set load) will extend for a period of two minutes as holding time | |
| 3.26.0 | The Floor-Plates size are intended for positioning the “V” Blocks (2 Nos.) which support the Header Pipe (Job) under the Ram, and subjected to compressive load. | |

| Sl.No. | SPECIFICATION | OFFER |
|---|---|---|
| **4.0.0** | **GENERAL POINTS :** | |
| 4.1.0 | The offer shall clearly indicate the list of standard accessories that will be supplied along with the machine | |
| 4.2.0 | Other special accessories shall be quoted separately as optional items | |
| | The PLC controls shall be from Messung / Seimens / Allen Bradley / ABB. | |
| 4.3.0 | All controls and other operating systems shall be located in a centralised convenient place for easy operation. | |
| 4.4.0 | All hydraulic elements shall be of Vickers/Rexroth make or any other reputed make acceptable to BHEL. | |
| 4.5.0 | All motors shall be from M/s Siemens / NGEF / KEC / ABB. If outside INDIA, make shall confirm to IEC standard. | |
| 4.6.0 | All electrical devices like contactors, relays and limit switches, push buttons etc. shall be from Siemens / L&T / Alstom / Cuttler Hammer / Telemechanique. | |
| 4.7.0 | All components/devices/terminals are to be incorporated with ferrules. ( Numbered ) | |
| 4.8.0 | Control panel shall have built in 230 V, 5 Amps., 3 Pin Plug. | |
| | | |
| **5.0.0** | **MACHINE LIGHTS:** | |
| 5.1.0 | Fluorescent Machine Light to be provided as built in with “C” Frame of the Press for sufficient illumination of complete working area for clear visibility. | |
| 5.2.0 | A magnetic base 24-volt portable spotlight with sufficiently long cable should also be provided. | |
| | | |
| **6.0.0** | **ELECTRICAL SYSTEM:** | |
| 6.1.0 | 415V + 10% / -10%, 50HZ +/-1.5 HZ, 3 Phase AC<br>(3 wire system with out neutral) Power Supply Source will be provided by BHEL at a single point near the machine, as per layout recommended by Vendor.<br>All types of cables, connections, circuit breakers etc. required for connecting BHEL’s power supply point to different parts of the machine/control cabinets, shall be the responsibility of vendor. | |
| 6.2.0 | All electrical equipment shall be Tropicalized | |
| 6.3.0 | All electrical control cabinets & panels should be dust and vermin proof | |
| 6.4.0 | All electrical components in the cabinets should be mounted on DIN Rail | |
| 6.5.0 | All electrical panels should be provided with CFL lamps for sufficient illumination and power receptacles of 220Volts, 5/15 Amp AC. All adapters/receptacles should have compatibility with Indian equivalents. | |
| 6.6.0 | Vendor should ensure the proper earthing for the machine | |

| S.No. | PARTICULARS | VENDOR's OFFER |
|---|---|---|
| **7.0.0** | **SAFETY ARRANGEMENTS:** | |
| 7.1.0 | Machine should have adequate and reliable safety interlocks / devices to avoid damage to the machine, work piece and the operator due to the malfunctioning or mistakes. | |
| 7.2.0 | A detailed list of all alarms / indications provided on machine should be submitted by the Vendor. | |
| 7.3.0 | All the pipes, cables etc. on the machine should be well supported and protected. | |
| 7.4.0 | All the rotating parts (if any) used on machine should be statically & dynamically balanced to avoid undue vibrations and suitable covers to be provided. | |
| 7.5.0 | Emergency Switches at suitable locations as per International norms are to be provided. | |
| | | |
| **8.0.0** | **ENVIRONMENTAL PERFORMANCE OF MACHINE :** [The Machine shall conform to following factors related to environment] | |
| 8.1.0 | Maximum noise level shall be 85 dB (A) at normal load condition, 1 M 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. Vendor to demonstrate compliance to noise level, if so required. | |
| 8.2.0 | If any safety / environmental protection enclosure is required it should be built in the machine by the vendor. | |
| 8.3.0 | Paint of the machine should be oil / coolant resistant and should not peel off and mix up with coolant. | |
| | | |
| **9.0.0** | **LEVELING & ANCHORING SYSTEM :** | |
| 9.1.0 | Complete anchoring system including foundation bolts, anchoring materials, fixtures, leveling shoes etc shall be supplied for the Machine etc. | |
| | | |
| **10.0.0** | **TOOLS FOR ERECTION, OPERATION & MAINTENANCE** | |
| 10.1.0 | The vendor shall bring special tools and equipment required for erection of the machine. Necessary tools like Torque Wrench, Spanners, Keys, grease guns etc.for operation & maintenance of the machine should be supplied. List of such tools shall be submitted with offer | |
| | | |
| **11.0.0** | **MACHINE SPARES :** | |
| 11.1.0 | Item-wise break-up of mechanical, hydraulic, electrical spares used on the machine in sufficient quantity as per recommendation of Vendor for 2 years of trouble free operation on three shifts continuous running basis should be offered by vendor. The list to include following, in addition to other recommended spares:<br>(Unit Price of each item of spare should be offered) | |

| S.No. | PARTICULARS | VENDOR's OFFER |
|---|---|---|
| 11.2.0 | Mechanical & Hydraulic Spares: Bearings, clutches, gears and all types of pumps, Valves, pressure switches / transducers, filters, seals, O rings, Hydraulic Hoses, etc. | |
| 11.3.0 | Electrical: All types of Relays, Contactors, Proximity Switches, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers, Main Power Switch. | |
| 11.4.0 | 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 drawings of parts / details of spares & Vendors to enable BHEL to procure these in advance, if required. | |
| 11.5.0 | Vendor to confirm that complete list of spares for machine and accessories, along with specification / type / model, and name & address of the spare Vendor shall be furnished along with documentation to be supplied with the machine. | |
| | | |
| **12.0.0** | **DOCUMENTATION** | |
| 12.1.0 | THREE sets of following documents (Hard copies) in English language should be supplied along with the machine | |
| 12.2.0 | Detailed Operation and Maintenance manual of machine with all drawings of machine assemblies / sub-assemblies / parts including Electrical / Pneumatic/ Coolant / Hydraulic circuit diagrams. All Assembly/ Sub Assembly Drawings shall be supplied with the part list / Bill Of Materials also | |
| 12.3.0 | Catalogues, O&M Manuals and drawings of all bought out items, bearings wherever applicable. | |
| 12.4.0 | Electronic and electrical interconnecting drawings (i.e. between machine, control panel and drives). Hard Copy in Original: 3 Nos. | |
| 12.5.0 | Specification with drawings of clutch plates & brake plates. | |
| 12.6.0 | Hydraulic, coolant, lubrication and Electrical circuits with BOM | |
| 12.7.0 | Detailed specification of all rubber items and hydraulic/lube fittings | |
| 12.8.0 | The vendor shall submit complete Master List of parts used in the machine. | |
| 12.9.0 | One additional set of all the above documentation on CD ROM, wherever possible. | |

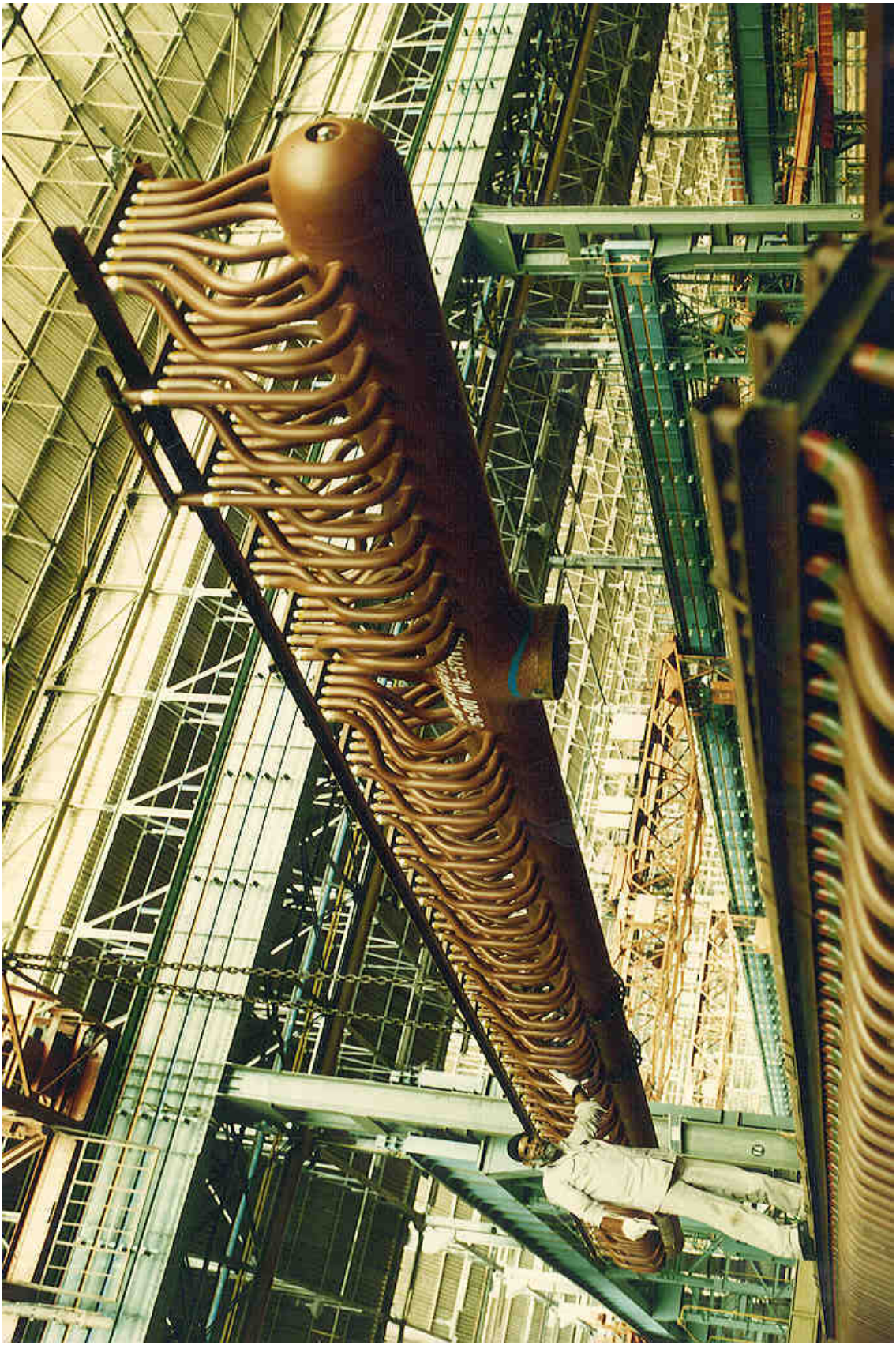
| S.No. | PARTICULARS | VENDOR's OFFER |
|---|---|---|
| **13.0.0** | **MACHINE FOUNDATION** | |
| 13.1.0 | BHEL shall construct complete foundation for the machine. Vendor shall furnish the foundation details. | |
| | | |
| **14.0.0** | **ERECTION & COMMISSIONING** | |
| 14.1.0 | Vendor to provide supervision for carrying out the erection, start up, testing of machine, it's control system & all associated equipment supplied. Service requirement like power, air & water shall be provided by BHEL at only one point to be indicated by Vendor in their foundation/layout drawings. | |
| 14.2.0 | Successful proving of BHEL components by the Vendor shall be considered as part of commissioning. All tests, as mentioned at Specification Clause No. 15.0.0 (Machine Acceptance) shall form part of the commissioning activity. | |
| 14.3.0 | Portion, if any, of the machine, accessories and other supplied items where paint has rubbed off or peeled during transit or erection should be repainted and merged with the original surrounding paint by the vendor. For this purpose, the vendor should supply sufficient quantity of touch-up paint of various colors of paint used. | |
| | | |
| **15.0.0** | **AMBIENT CONDITIONS & THERMAL STABILITY** | |
| 15.1.0 | Total machine and all supplied items should work trouble free and efficiently under following operating conditions and should give specified accuracies.<br>Ambient Conditions:<br>Temperature = 25 to 50 Degree Celsius<br>Relative Humidity = 95% maximum. | |
| 15.2.0 | Weather conditions are tropical, Atmosphere may be dust laden during some part of the year. Machine shall be kept in the normal shop floor condition. Max. Temperature variation is up to 25 deg Celsius in 24 hours. | |
| 15.3.0 | The machine, including attachments and accessories, should be suitable for 24 hrs. Continuous operation to its full capacity for 24 hour a day and 7 days a week throughout. Vendor to ensure and confirm the same. | |

| S.No. | PARTICULARS | OFFER |
|---|---|---|
| **16.0.0** | **MACHINE INSPECTION and ACCEPTANCE: (Tests/Activities to be performed at Vendor's Works)** | |
| 16.1.1 | Stage Inspection for Fabricated Parts prior to heat-treatment and machining, Physical Verification of Piston, Cylinder and Seals prior to assembly at Vendor's Works | |
| 16.1.2 | Physical Inspection and Design/Constructional Compliance. | |
| 16.1.3 | 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. | |
| 16.1.4 | Full load test to demonstrate the maximum capacity of the machine. | |
| **16.2.0** | **Tests to be carried out at BHEL Works** | |
| 16.2.1 | Physical Inspection and Design/Constructional Compliance. | |
| 16.2.2 | Full load test to demonstrate the maximum capacity and other operational requirements. | |
| 16.2.3 | 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. | |
| 16.2.4 | Training of BHEL machine operators in operation and maintenance of complete machine by the Vendor's experts/engineers during their stay at BHEL works | |
| | | |
| **17.0.0** | **PACKING** | |
| 17.1.0 | Sea worthy & rigid packing for all items of complete machine, 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 | |
| | | |
| **18.0.0** | **PERFORMANCE GUARANTEE** | |
| 18.1.0 | 24 months from the date of acceptance of the machine. | |
| | | |
| **19.0.0** | **SPECIAL NOTES :** The vendor should submit the following information: | |
| 19.1.0 | Machine Model | |
| 19.2.0 | Total connected load in kVA | |
| 19.3.0 | Floor area required (Length, Width, Height) for complete machine & accessories | |
| 19.4.0 | Painting of Machine/ Electrical Panels :<br>RAL 6011 Apple Green Colour | |
| 19.5.0 | Total weight of the machine | |
| 19.6.0 | Weight of heaviest part of machine | |
| 19.7.0 | Weight of the heaviest assembly/subassembly of Machine | |
| 19.8.0 | Dimensions of largest part/ subassembly/ assembly of the machine | |

**ENCLOSURES : ANNEXURE – 1 & 2**

**TYPICAL JOB AFTER STRAIGHTENING**

**ANNEXURE-1**



ANNEXURE-2