

**Bharat Heavy Electricals Limited**  
(High Pressure Boiler Plant) Tiruchirappalli – 620014,  
TAMIL NADU, INDIA

CAPITAL PURCHASE /MATERIALS MANAGEMENT / MFG

<b>Title:</b> DEVELOPMENT OF DRUM /SHELL NOZZLE WELDING USING SUBMERGED ARC WELDING TECHNOLOGY.	Phone: +91 431 257 7331 Fax : +91 431 252 07 19 Email : srchandran@bheltry.co.in, gvijay@bheltry.co.in Web : <a href="http://www.bhel.com">www.bhel.com</a> / <a href="http://www.tenders.gov.in">www.tenders.gov.in</a>
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	<b>Enquiry Number:</b> 2691200058/41	<b>Enquiry Date:</b> 02.06.12	<b>Due date for submission of quotation :</b> 17.06.12
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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: DEVELOPMENT OF DRUM /SHELL NOZZLE WELDING**

**Confirmation of acceptance for BHEL commercial terms & conditions and Price Bid formats have been posted in BHEL Corporate web site [www.bhel.com](http://www.bhel.com) and on the Government tender website <http://tenders.gov.in> (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference “2691200058/41”.**

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  
DGM / MM / Capital Purchase



ENQUIRY  
(INDIGENOUS)

# BHARAT HEAVY ELECTRICALS LIMITED

( A Government of India Undertaking )  
HIGH PRESSURE BOILER PLANT  
PURCHASE DEPARTMENT - FOSSIL BOILERS  
THIRUCHIRAPALLI - 620014  
TAMILNADU (INDIA)

Page  
1/1

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429-002/A

Enquiry No	Enquiry Date	Due Date for Quotation
2691200058 - 41	02.06.2012	17.06.2012

Please quote Enquiry No, Date and due date in all correspondences.  
This is only a request for quotation and not an order

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	DEVELOPMENT OF DRUM/SHELL NOZZLE WELDING USING SUBMERGED ARC WELDING TECHNOLOGY AS PER ANNEXURE Nozzle Welding Machine	NO	1.000	1.00	09.08.12

**General Note:**

PL QUOTE YR RATES FOR F.O.R-DESTINATION BHEL TRICHY-INDIA BASIS.  
PLEASE SUBMIT YOUR DETAILED OFFER IN TWO PART BID SYSTEM AS PER ANNEXURE ENCLOSED.  
WE MAY GO FOR R.A (REVERSE AUCTION ) - ON LINE BIDDING FOR THIS TENDER IF REQUIERD.

**Enclosures:**

"LD clause has to be confirmed without fail."  
"Payment to vendors will be made only thro E-Payment mode"

The offers should reach us 30 minutes before the time of opening of tenders.  
The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

Yours faithfully,  
For **BHARAT HEAVY ELECTRICALS LIMITED**

**MANAGER / PURCHASE**  
(FOSSIL BOILERS)  
Yours faithfully,

PART-A  
QUALIFYING CRITERIA FOR THE SUPPLY OF  
SPECIAL PURPOSE SUBMERGED ARC WELDING MACHINE  
SECTION I

The BIDDER / VENDOR has to compulsorily meet the following requirements to get Qualified for submitting an offer for SPECIAL PURPOSE SUBMERGED ARC WELDING MACHINE FOR WELDING OF FULL THROAT NOZZLES AND SET ON NOZZLES TO DRUM SHELLS.

S. No. Requirements

- 1 The VENDOR shall have a minimum of THREE Years of Continuous Experience in the field of Design, manufacture and supply special purpose submerged arc welding machine for welding of full throat nozzles and set on nozzles to drum shells.
- 2 Only those vendors, who have supplied, and commissioned at least one such welding system for similar applications in the past five years (on the date of opening of Tender) and such machine is presently working satisfactorily for more than one year after commissioning (on the date of opening of Tender), should quote. However, if such machine (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 (on the date of opening of Tender).
  - 2.1 The vendor should submit the following information where similar machines have been supplied, for qualification of their offer.
  - 2.2 Name and postal address of the customer / company where similar machine is installed.
  - 2.3 Name and designation of the contact person of the customer.
  - 2.4 Phone, FAX no. and email address of the contact person of the customer.
  - 2.5 Month and Year of commissioning
  - 2.6 Application for which the machine is supplied.
  - 2.7 One Performance certificate from the customers regarding satisfactory performance of machine supplied to them. The certificate should be current and on the letterhead of the Customer. It should contain information regarding model / Size of machine, year of commissioning and performance of M/c.

3.0 BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.

SECTION II

The BIDDER is expected to give complete details against each clause in the table given below, with additional sheets those may be attached (giving clear reference number) to furnish and cover the requisite details / documents.

S. No PARTICULARS

- 4 Profile of the Company bringing-out the years of Experience of the BIDDER in the field of design, manufacture, integration and supply of special purpose submerged arc welding machine for welding of full throat nozzles and set on nozzles to drum shells.
- 5 Number of special purpose submerged arc welding machine for welding of full throat nozzles and set on nozzles to drum shells supplied, installed and commissioned till date for Boiler Component welding applications (with details on machine type / model, configuration, customer and quantity)
- 6 YEAR of supply of latest, special purpose submerged arc welding machine for welding of full throat nozzles and set on nozzles to drum shells for welding applications and the Technical Specifications of the Machine supplied [Details to be furnished]
- 7 Details on the Firms Registration and the FINANCIAL STRENGTH of the COMPANY (Balance Sheet for the last 3 years) shall be submitted with the TECHNICAL OFFER
- 8 Details on International Standards / Design Process Codes followed in Design and Manufacture of the Equipment.
- 9 Details on SERVICE-AFTER-SALES Set-Up in India including the Addresses of Agents / Service Centers in India. Competency & Experience of the Local Service Agency are to be provided
- 10 Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.

SECTION III

The BIDDER has to comply with the following, for accepting the Technical Offer for Scrutiny by the Purchaser:

S. No. REQUIREMENTS

- 11 The BIDDER / VENDOR shall submit the offer in TWO PARTS-Technical [with PART A & PART B] & Commercial and Price Bid.



The nozzle diameter and thickness details for full throat nozzle welding are given below

Nozzle OD range	: 315mm to 1000mm
Nozzle ID range	: 179mm to 339mm
Nozzle Thickness range	: 50 to 125
Nozzle length	: 750-1600mm
Material	: Carbon Steel - SA 299 Grade B.

The special purpose machine should be suitable for welding over the entire range.

The machine should be suitable for use under preheated condition of 250 deg C. The preheat will be applied throughout the weld cycle.

#### 4.0 EQUIPMENT CONFIGURATION:

System Elements:

The offered equipment shall consist of the following:

- Welding Power source
- Saddle unit
- Submerged Arc Welding Head - with special torch
- Digital Control system
- Set of Inter-Connecting Power, Earth & Control Cables.
- Flux recovery system

#### 5.0 EQUIPMENT COMPONENTS AND DESCRIPTION

##### 5.1 Welding Power source

The welding power source shall digitally set and display the following welding parameters

- welding current (A),
- Welding voltage (V).

During the process of welding, the pre-set parameter values shall be increased or decreased in real time. When the welding stops, the recorded parameter values shall be deleted or reserved. The program shall make sure perfect arc starting and ending.

1.Current Range: 100 to 800 Amps.

2.Duty Cycle: Continuous - 100 % at 800 Amps OCV: Minimum 51 V DC

3.Welding Voltage: 21 to 45 Volts DC

4.Welding current: Maximum variation +/- 30 amps

5.Characteristics: Full Wave Constant Potential

6.Input Power Supply: 415 ±10% V, 50 ± Hz, 3-phase AC,

7.3 - wire system [4th Wire for PE/Earthing]

8.Protection class: IP22

9.Insulation: Class H

10.Transformer Windings: The transformer coils in the power and control transformers shall be of 100 % copper or superior quality aluminum windings (copper winding is preferable)

11.Parameter Reading Meters: Factory installed Ammeter and Voltmeter on front panel with easy removal and replacement from front-side for meter calibration purpose.

12.Welding process controller -Remote Control Unit:

13.A Remote control unit for pre setting of welding current and voltage to be provided.

14.Output Terminal shall be of Bolt and Nut type with Nickel Coating

15. Design to take care of protection (by tripping) due to electric short-circuit, single/two phase power input instead of three phases, thermal overload/overheating, etc.

16. Auxiliary Power: Two numbers of tapping sockets/plug points for connecting hand-lamps of rating 24 V/40W with MCBs for protection, to be provided

17. Cooling Fans: The power source shall be force air cooled with one/two fans of suitable rating, to withstand the continuous welding operation in the peak ambient conditions, especially in the tropical environment of 45 to 50 Deg. C.

18.Two numbers of lifting hook to be provided at suitable locations, for handling by EOT Crane

##### 5.2 Saddle Unit

The mainframe shall consist of a mechanism with saddle-shaped spatial curved movement and adjustment, drive unit, flow-collecting hub, cross beam, welding-torch, lifting and angle-adjusting mechanism, positioning and locking mechanism.

The saddle unit should be portable and easily mounted on the nozzle for quick setting.

1. The system shall meet the welding requirements for the saddle-shaped perpendicularly-intersecting joint seams between any nozzle (including any nozzle with a flange on it) and the cylindrical shell of boilers and pressure vessels.

2. The system shall have specially designed mechanism for moving along the saddle-shaped curve with ease in adjustment and reliable in operation.

3. The Saddle value shall be adjusted from 0 to the required range.

4. Rotary parts shall have static and dynamic balance. Rotary speed shall be regulated over wide range of welding speed (0.2 to 0.8 m/min) centrifugally.

5. The horizontal and vertical position of welding torch shall be regulated electrically (non-automatically) and the control shall be reliable.

6. The specially designed differential mechanism shall adjust the extent of saddle during welding.
7. The equipment shall possess the function of welding speed compensation, which keeps the welding torch in the same path with the saddle-shaped curve.
8. Continuous multi-layer and multi-pass welding shall be realized.
9. The equipment shall be provided with a rotary current-conducting device to avoid any inter twisting of conducting wires during continuous multi-layer and multi-pass welding.
10. In order to avoid too many electric-conduction joints, the control system shall mount on the main body of the equipment, which can rotate together with the equipment.
11. Double-wire and double-brush structure shall be applied to the rotary current-conducting device, so as to ensure good electric-conducting performance.
12. The equipment shall work for a long period when work pieces are preheated at a temperature =250 °C.
13. The system shall lift and hold the mainframe over the welding seam. Position and lock the mainframe at the end of pipe by a 3-jaw self-centering chuck.
14. In the course of welding, the upslope and down-slope gradients will directly affect the flow of molten bath and cause the unevenness of the height of weld leg. In order to reduce such difference as much as possible, generally, the moving speed at the valley shall be higher and the moving speed at the peak shall be lower. The speed compensation amount for saddle-shaped joint seams shall be selected as per welding variables and groove angles and gradients.

#### 15. MAIN TECHNICAL PARAMETER

Saddle value, mm	0 to 90
Lifting stroke of welding torch, mm	0 to 240
Preheating temp. of work pieces, °C	minimum 250
Max. thickness of cylinder, mm	200
Diameter of welding wire, mm	Ø3.2, Ø4
Tilt angle of welding torch	radial: ±30°; circumferential: ±5°
Synchronous compensation of speed	0 to 15%
Rotation speed, rpm	Fast 0.13 to 0.66 rpm Slow 0.07 to 0.41 rpm
Height of nozzle, mm	300 to 800
Width of groove: mm	minimum 20
Chuck diameter(ID):mm	200 to 460

#### 5.3 Construction of welding torch

A high-temperature durable ceramic coating has to be applied on the surface of the specially-designed bent welding torch, so as to ensure the good insulation between the welding torch in a narrow and deep groove (suitable for welding up to 300 mm depth) and the work piece.

#### 5.4 Control box

The System shall Control the lifting and rotating actions and speed compensation of the welding torch for saddle-shaped joint seams by means of connecting the welding torch with the control case of the submerged-arc welding machine.

The following features shall be present in control box

- i. Provision for Inching of wire forward & reverse.
- ii. Setting of burn back time
- iii. Manual over-ride of pre-set parameters
- iv. Digital tachometer set in cm/min

The control box is to be mounted inside a special aluminum case prepared for internal air cooling

5.5 Flux-recycling device (high-temperature durable materials required with a sieving device).

The negative pressure pump shall be driven by a motor. The remaining flux after welding will be sent back through a pipe to the welding flux drum for future use.

#### 5.6 Clamping fixture

Three-jaw chuck shall be provided along with the equipment, which can realize self-centering locking and are suitable for the outside welding of vessels.

#### 6.0 INTER-CONNECTING CABLES

6.1 The control cables, welding and earth cables of required length for connecting the power source to the welding head/control panel to be provided.

6.2 Protection: Suitable sheathing to be provided for the cables for withstanding the rough use in shop floor.

6.3 End-Connectors: All the cables shall be provided with suitable end-connectors for easy fixing up.

#### 7.0 ELECTRICAL AND ELECTRONIC DEVICES AND CONTROLS

#### INPUT POWER SUPPLY:

7.1. Input supply; 415V with a voltage fluctuation of +/- 10%, 50HZ with a fluctuation of +/-5%, 3 Phase AC (3 wire system without neutral) power supply will be provided by BHEL at a single point near the machine, as per layout recommended by Bidder. Hence design & supply of all cables, connections, circuit breakers etc. Required for connecting BHEL's power supply to the machine shall be in the scope of Bidder.

Bidder to Confirm

7.2 Bidder to specify the type and capacity of the power source with details about power transformer and associated controls. Make of the transformer to be indicated.

Bidder to Specify

7.3 All Current carrying conductors and cables should be of copper.

Bidder to Confirm

7.4 Primary Voltage Control Bidder to Specify

7.5 Digital display to be provided on the front side of the power source for easy visibility to the operator.

Bidder to Confirm.

7.6 All feedback systems & field sensors, limit switches, proximity switches, pressure switches, temperature controllers, should be for heavy duty application and wired up with flexible PVC insulated screened cables running in conduits and converging to common terminal block.

Terminal blocks shall be of reputed make acceptable to BHEL. Bidder to Confirm

7.8. All field elements shall have easy accessibility for maintenance.

Bidder to Confirm

7.9. All electrical / electronic equipment shall be tropicalized. Bidder to Confirm.

7.10. All electrical components in the control box should be mounted suitably.

Bidder to Confirm.

7.11. 5/15 Amp AC. All adapters /receptacles should have compatibility with Indian equivalents.

Bidder to Confirm.

7.12. Details of the protection system provided to avoid short circuiting of secondary side of welding transformer. Bidder to Specify

7.13. Bidder should ensure the proper earthing for the machine and its peripherals.

Bidder to Confirm.

7.14 Control Circuit Voltage shall not exceed 24V DC. Bidder to Confirm.

7.15. The total tentative power requirement (including that for all the accessories and attachments) in kVA to be indicated.

Bidder to Specify

#### 8.0 MACHINE SPARES:

8.1 Itemized break-up of mechanical, electrical and electronic spares used in the machine in sufficient quantity as per recommendation of Bidder for 2 years of trouble free operation on three shifts continuous running basis shall be furnished by Bidder along with offer. The list is to include following, in addition to other recommended spares: (Unit

Price for each item of spare shall be offered)

Bidder to confirm

8.2 Mechanical Spares: All types of mechanical wearing components due to linear movement and rotation etc

Bidder to confirm

8.3 Electrical / Electronic Spares: All types of Relays, Contactors, Proximity Switches, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers, Main Power Switch, Encoders, Spares for PLC

I/O Card, Digital to Analogue Card, HMI, Display Unit, Servo Motors for Feed Drives, Power Module & Control Cards for Main Drive as well as Feed Drives, Field Sensors (such as Encoders, Optical Sensors, Proximity Switch, Limit Switch) etc.

8.4 All types of spares for total machine and accessories shall 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 Bidder should inform BHEL sufficiently in advance and provide drawings of parts / details of spares & suppliers to enable BHEL to procure these in advance, if required

Bidder to confirm

8.5 Bidder to confirm that complete list of spares for machine and accessories, along with item part no / specification / type / model, and name & address of the spare supplier shall be furnished along with documentation to be supplied with the machine

#### 9.0 DOCUMENTATION:

9.1 The following documents in English language should be supplied along with the machine:

Hard Copies - 3 Sets

In CD form - 1 Set Bidder to confirm

1. Operating manuals of Machine & its PLC System

2. Programming manuals of Machine

3. Complete PLC Programming manuals

4. Maintenance manuals with all drawings of machine assemblies / subassemblies with parts list

5. Electrical circuit diagrams and components with bill of materials

6. Pneumatic circuit diagrams and components with bill of materials
7. Maintenance & Interface manuals for Machine Control System
8. Preventive Maintenance check list for Electrical and Mechanical System
9. Manufacturing drawings for all toolings, ordered along with the machine, including Tool Holders, Spindle Mounting details, Adapters etc.
10. Catalogues, O&M manuals for all bought out items used in the machine.
11. Operating Manuals, Maintenance Manuals & Catalogues for all supplied Accessories.

Bidder to Confirm

#### 10.0 PRE DISPATCH INSPECTION

- 10.1.1. Acceptance of the machine prior to dispatch to BHEL will be based on satisfactory demonstration of drum to nozzle welding mockup prepared by the supplier.

Bidder to Confirm

#### 11.0 AT BHEL WORKS:

- 11.1 The weld parameters for the given below sizes of nozzle to drum welding shall be established by the Supplier at BHEL Works after installation, Sizes :OD 517x115.45mm long 1448mm nozzle to be welded with drum shell .The test samples will be provided by BHEL.

Bidder to Confirm

#### 12.0 TRAINING:

- 12.1 The supplier shall train TWO BHEL Engineers from WRI, Operation (Mechanical, Electrical/ Electronics and Programming) of the Machine for FIVE working days at suppliers works after the pre-dispatch inspection.

Bidder to confirm

- 12.2 Bidder to clearly mention whether the training is offered free of cost or chargeable.

If chargeable, the Bidder has to quote on man day basis.

Bidder to Specify

- 12.3 Travel charges, board & lodging for the BHEL Engineers who will be visiting suppliers works for pre-dispatch inspection and training, shall be borne by BHEL.

Bidder to note

- 12.4 The Supplier shall impart training to BHEL's Machine Operators and Maintenance crew in Operation and Maintenance (Mechanical, Electrical/ Electronics and PLC based control System) during commissioning of the Machine at BHEL works for 10 working days.

Bidder to confirm

- 12.5 The training shall include specialized coaching in

- i) Safety
- ii) Operation of the machine
- iii) PC based System and Operation,
- iv) Trouble-Shooting,
- v) Software Application
- vi) All special features of the machine
- vii) Electrical / Mechanical / Electronics systems

Bidder to Confirm

- 12.6 Competent, English speaking experts shall be arranged by the Bidder during training for satisfactory & effective training of BHEL personnel

Bidder to Confirm

#### 13.0 ERECTION & COMMISSIONING

- 13.1 Supplier to take full responsibility for Supervision of commissioning of machine, its controls and accessories. Supplier shall send suitable qualified Engineers for supervision of Commissioning of the machine at BHEL works. Bidder to Confirm

- 13.2 Service requirement like power, air & water shall be provided by BHEL at only one point to be indicated by Bidder in their foundation/layout drawings. Other requirements like crane and helping personnel shall also be provided by BHEL. - Bidder to Confirm

- 13.3 Commissioning spares, required for commissioning of the machine shall be supplied free of cost

Bidder to Confirm

- 13.4 Test Mandrels, Instruments and other necessary equipment, to carry out all above activities should be brought by the Bidder.

Bidder to confirm

- 13.5 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 Bidder. For this purpose, the Bidder should supply sufficient quantity of touch-up paint of various colours of paint used.

Bidder to Confirm

- 13.6 General schedule of Erection and Commissioning shall be submitted with the offer.

Bidder to Confirm

- 13.7 The Bidder shall bring special tools and equipment required for erection of the machine. Necessary tools like Torque Wrench, Spanners, Keys, grease guns etc. for operation

and maintenance of the machine should be supplied. List of such tools should be submitted with offer Bidder to confirm

#### 14.0 IN-BUILT SAFETY ARRANGEMENTS

14.1 Following safety features in addition to other standard safety features should be provided on the machine:

Bidder to confirm

14.2 A detailed list of all alarms / indications provided on machine should be submitted by the Bidder.

Bidder to specify

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.

Bidder to Confirm

14.4 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.

Bidder to specify

14.5 Machine functions should be continuously monitored and alarm / warning indications through lights/ alarm number with messages (on the display and operator panels) should be available.

Bidder to Confirm

14.6 All the rotating parts used on machine should be statically & dynamically balanced to avoid undue vibrations and suitably guarded.

Bidder to Confirm

14.7 Emergency Switches should be provided at suitable locations as per International Norms.

Bidder to Confirm

14.8 All lubricated parts like Bed, guide ways shall have provision for collecting the used Lubrication oil from machine guide ways and preventing them from spilling over on to the ground.

#### 15.0 THERMAL STABILITY FOR AMBIENT CONDITIONS & ENVIRONMENTAL PERFORMANCE OF THE MACHINE:

15.1 The machine shall be suitable for an ambient temperature of +45 deg C and relative humidity of 90 % respectively, but both do not occur simultaneously.

Bidder to confirm

15.2 The Bidder should ensure trouble free operation of the machine with Thermal Stability of the complete machine and accuracy requirements of BHEL components, keeping in view of ambient conditions as mentioned above.

Bidder to confirm

15.3 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 the year.

Bidder to Confirm

15.4 If any safety / environmental protection enclosure is required it shall be built in the machine by the Bidder.

Bidder to confirm

15.5 Paint of the machine should be oil / coolant resistant and should not peel off

Bidder to confirm

#### 16.0 PAINTING:

16.1 Painting of Machine / Electrical Panels:

a. One coat of Primer

b. Two coats of Polyurethane Paint

Bidder to Confirm

#### 17.0 GUARANTEE:

17.1 Performance Guarantee to be given for 12 months from the date of commissioning OR 18 months from the date of dispatch whichever is earlier.

Bidder to confirm

#### 18.0 MACHINE PACKING:

18.1 Sea worthy & rigid packing for all items of complete machine, PLC System, Data logger 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

Bidder to confirm

#### 19.0 GENERAL:

19.1 Machine Model No. Bidder to specify

19.2 Total connected load (KVA): Bidder to specify

19.3 Floor area required (Length, Width, Height) for complete machine & accessories

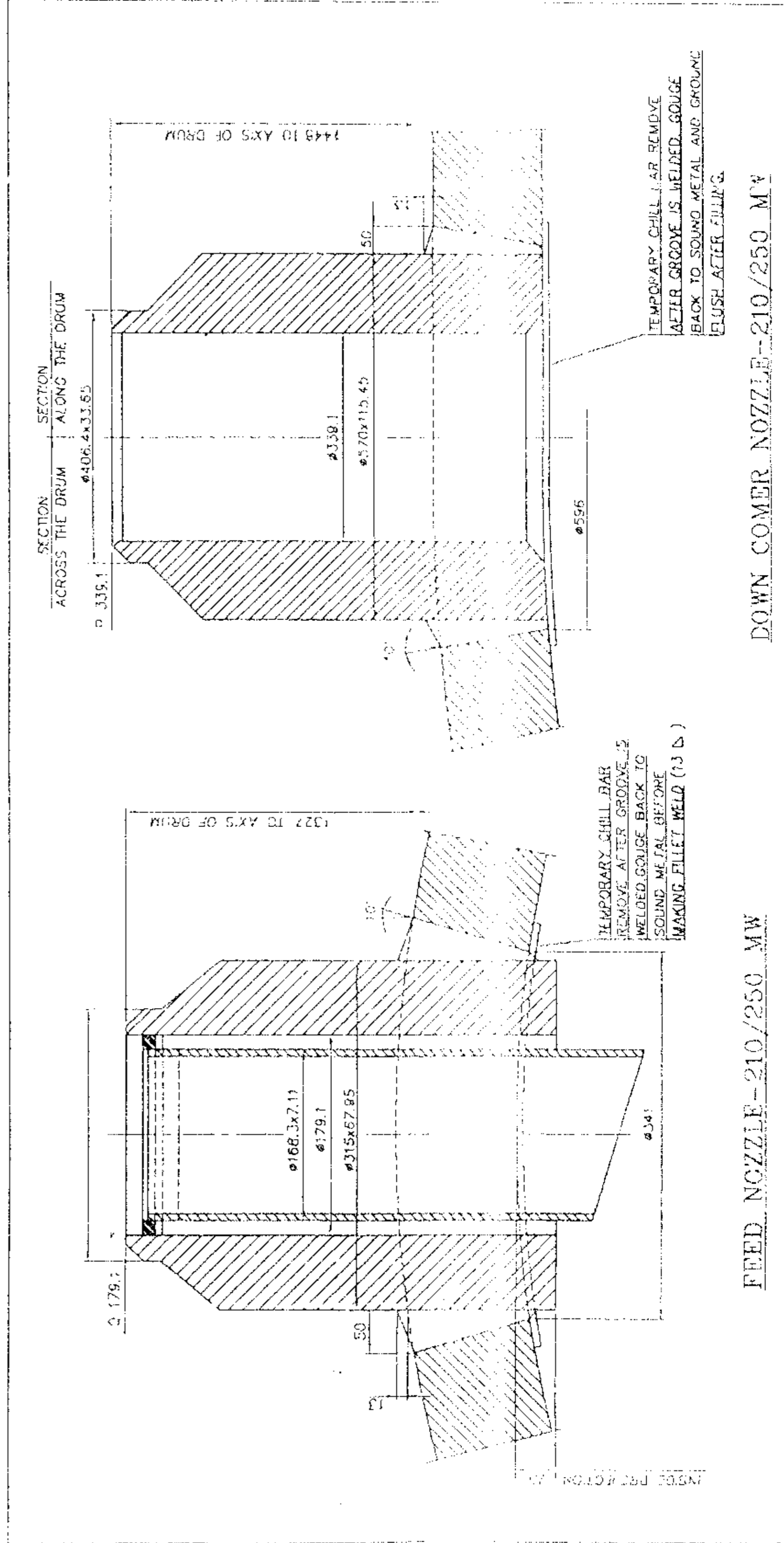
Bidder to specify

19.4 Total weight of the machine Bidder to specify

19.5 The machine configuration and element arrangement should have easy accessibility, high rigidity, and good maintainability  
Bidder to confirm

20.0 The Technical Offer shall contain the following: a) Point by Point confirmation / details wherever called for to be provided.  
b) Complete Scope of Supply, including Main Equipment, All Accessories and Attachments, etc.  
c) List of Operating Spares  
d) Anchoring Materials  
e) Performance Prove-Out Details.  
f) Complete description of all systems & sub-systems  
g) A General Arrangement drawing showing the layout of the machine & associated systems with salient dimensions. The drawing should be clear and legible.

ANNEXURE - 1 : TYPICAL NOZZLE DRAWING



**Bharat Heavy Electricals Limited, Trichirapalli - 620 014**

**MM : CAPITAL PURCHASE**

**(To be filled and submitted along with offer )**

<b>BHEL Commercial Terms and Conditions for Indigenous Supplies</b>	<b>Vendor's Confirmation / Comments</b>
Technical confirmation to BHEL's Specification as called for in BHEL Format shall be furnished. If needed additional sheets shall be used.	
Prices shall be quoted item wise only as per the model format enclosed.	
Prices shall be quoted on "FIRM PRICE" basis only. The prices should be only on F.O.R / Despatching station basis inclusive of Packing & Forwarding charges if any. Applicable % of ED & Sales Tax, Freight & Insurance, Installation & Commissioning Charges should be clearly indicated.	
Validity of offer shall be for a minimum period of 120 days from the date of Tender opening	
Delivery period from the date of Letter of Intent / Purchase order shall be clearly mentioned in the offer.	
Liquidated damages @ 1/2% per week subject to a maximum of 15% of the order value shall be applicable for delay in deliveries.	
Following Risk Purchase clause shall be applicable: The purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated or if the same were not available, the best and the nearest available substitute therefore. The supplier shall be liable for any loss which the Purchaser may sustain by reason of such risk purchases.	
Payment terms for supply portion: • 100% payment will be made within 45 to 90 days after receipt and acceptance / commissioning of goods at BHEL. against submission of PBG for 10% of Order value with required validity. (or) * 80% value of the goods will be paid within 45 to 90 days against dispatch documents, negotiated through bank. Balance 20% will be paid within 45 to 90 days from the date of acceptance / commissioning of goods against submission of supplementary invoice and also against submission of PBG for 10% of Order value with required validity. All bank charges are to vendor's account only.	
Erection / commissioning: Erection / commissioning shall be done at free of cost.	
The equipment shall be guaranteed for a period of 12 months from the date of commissioning.	
Equipment will be inspected and proved at vendor's works prior to dispatch. However final inspection and acceptance of equipment will be after installation at BHEL, Trichy.	
The vendor shall provide necessary drawings, Test Certificates and Operating Maintenance Manuals etc., as called for in the Technical Specification, in the required number of copies at no extra cost.	
Any warranty replacement during warranty period shall be supplied free of charge on FOR BHEL, Trichy basis.	
Offers should be submitted only in sealed cover super-scribing clearly the Enquiry reference and due date.	

**NOTE:-**

- It is confirmed that all the terms and conditions stipulated in the Enquiry have been fully understood by us and all clarifications & details have been obtained.
- Your offer should be indicating applicable if any P&F Charges, % of ED, Sales Tax -CST or VAT, Service Tax, Freight, Insurance and Installation and Commissioning Charges etc., as per our Price Format.
- Your specific acceptance to our Payment terms, LD, Risk Purchase Clause & Submission of PBG for 10% of the order value are essential for consideration of your offer. Other wise your offer is liable for rejection.

Signature & Office Seal of the vendor

7

# MM : CAPITAL PURCHASE

**Bharat Heavy Electricals Limited, Trichirapalli – 620 014**  
(To be filled and submitted along with Offer)

BHEL Enquiry No.

Date :

<b>BHEL Commercial Terms and Conditions for IMPORT SUPPLIES</b>	Vendor's Confirmation / Comments
Technical confirmation to BHEL's Specification as called for in BHEL Format shall be furnished. If needed additional sheets shall be used.	To be furnished along with offer (or) Technical Bid – Part No. I
Prices shall be <b>quoted item wise</b> only as per the model format enclosed.	
Prices shall be quoted on " <b>FIRM PRICE</b> " basis only. The prices should be only on FOB/FCA basis inclusive of Packing & Forwarding charges if any.	
<b>Validity of offer</b> shall be for a minimum period of 120 days from the date of Tender opening	
<b>Delivery period</b> from the date of Letter of Intent shall be clearly mentioned in the offer.	
<b>Liquidated damages @ ½%</b> per week subject to a maximum of 15% of the order value shall be applicable for delay in deliveries.	
<b>Following Risk Purchase clause</b> shall be applicable: The Purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated or if the same were not available, the best and the nearest available substitute therefore. The supplier shall be liable for any loss which the Purchaser may sustain by reason of such risk purchases.	
<b>Payment terms for Foreign vendor (Principal):</b> 80% value of the goods will be paid through an irrevocable Letter of Credit established by our bankers. Balance 20% will be paid against acceptance / commissioning of goods for which supplementary invoice and PBG for 10% of total Purchase order value shall be submitted. <b>All bank charges outside India are to vendor's account only.</b>	
<b>Payment terms for Indian Agent:</b> Indian Agency commission, if any, shall be clearly specified in the offer and the same will be paid in Indian Rupees against acceptance / commissioning of the equipment.	
<b>Erection / commissioning:</b> Erection / commissioning shall be done at free of cost.	
<b>Submission of Performance Bank Guarantee (PBG):</b> Vendor should provide a performance bank guarantee(PBG) for 10% of the total Purchase order value valid for a period of 12 months from the date of commissioning (or) 18 months from the date of dispatch <b>whichever is later</b> with an additional claim period of 2 months. This PBG shall form part one of the documents for effecting the balance 20% payment.	
<b>Part Shipment or Transshipment is not permissible</b>	
In case of any short shipment in the main equipment / spares, where separate rates are not available in the contract, the customs duty levied on such supplies, shall be borne by the supplier / Indian agent.	
Any warranty replacement during warranty period shall be supplied free of charge on FOR BHEL, Trichy basis.	
Equipment will be inspected and proved at vendor's works prior to dispatch. However final inspection and acceptance of equipment will be after installation at BHEL, Trichy.	
The equipment shall be <b>guaranteed</b> for a period of 12 months from the date of commissioning.	
The vendor shall provide necessary drawings, Test Certificates and Operating Maintenance Manuals etc., as called for in the Technical Specification, in the required number of copies at no extra cost.	
<b>Offers should be submitted only in sealed covers super-scribing clearly the Enquiry reference and due date.</b>	

**NOTE:-**

- It is confirmed that all the terms and conditions stipulated in the Enquiry have been fully understood by us and all clarifications & details have been obtained.**
- The prices are to be offered only on FOB/FCA basis, inclusive of Packing & Forwarding charges if any.**
- Your specific acceptance to BHEL Payment terms, LD, Risk Purchase Clause & Submission of PBG for 10% of the order value are essential for consideration of your offer. Other wise your offer is liable for rejection.**

Signature & Office Seal of the vendor