



# BHARAT HEAVY ELECTRICALS LIMITED

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

PHONE :2577938  
GRAMS : BHARATELEC  
FAX NO: 2520719  
E-mail: tvenkat@bheltry.co.in  
Web:

429-002/A

	<b>Enquiry No</b> 2681600011 - 79	<b>Enquiry Date</b> 15.06.2016	<b>Due Date for Quotation</b> 11.07.2016
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order. <b>Bid should be submitted in two parts. 1.Techno-commercial bid (Part-I) and 2.Price bid(Part-II) in a separate sealed cover and both covers must be placed in a third cover and sealed. Our Enquiry No., Enq. date &amp; Enq. Due date must be written on all three covers.</b>			

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	RETROFITTING OF BLAST CHAMBER. RETROFITTING OF BLAST CHAMBER WITH ACCESSORIES IN TUBE ROTO BLASTING MACHINE AT BAY A / BUILDING 50. QUALIFYING CRITERIA: As per PART-A SCOPE OF SUPPLY AND WORK: As per PART-B NOTE: Vendor may visit BHEL site to get complete acquaintance about the application before quoting.	NO	1.000	1.00	16.03.17

**General Note:**

1. Please submit your detailed offer in two part bid system i.e Part-I. Technical bid + Checklist (Annexure-A) + Unpriced bid indicating taxes & duties (Annexure-B) in a sealed cover, super scribing on the cover as "TECHNICAL & COMMERCIAL BID / PART-I"

Part-II. Priced offer in another separate sealed cover super scribing on the cover as "PRICE BID / PART-II"

Both the covers shall be duly super-scribed with tender reference and due date of opening. These covers shall be put in a single cover duly super-scribed with tender reference and due date of opening and addressed to us.

2. Point-to-point confirmation to BHEL's specification and commercial terms & conditions shall be provided. The supplier must fill and send all the Annexures as indicated in the list of attachments. Annexure-A & Annexure-B (with taxes and duties, without indicating prices) should be filled and submitted along with the technical bid, else your offer is liable for rejection.

3. Offers with validity of less than 120 days and non-acceptance of LD & RP clause and reverse auction will lead to rejection of submitted offer.

4. If the due date of tender opening happens to be a holiday, the tenders will be opened on the next working day.

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,

**R.I PETER IRUDAYARAJ**  
Senior Manager

Materials Management /  
BHEL, TIRUCHY - 620 014.



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5. All clarifications may be sought at least ten days prior to tender due date, from the undersigned with due written request.
6. BHEL reserves the right to go for a reverse auction (RA) instead of opening the submitted sealed price bid, which will be decided after technical and commercial evaluation. Information and general terms and conditions covering RA are given in commercial terms and conditions (Annexure-A/Point no.18)
7. BHEL will consider MSE vendor as per Government guidelines.
8. Vendors are requested to avoid the following points while submitting the Bid Documents:
- Loose or spiral bound bid documents are not encouraged.
  - In case of any corrections/overwriting in the tender documents, the same shall be duly attested by the bid submitter.
9. Corrigendum if any, with respect to this tender will be hosted only in the website <http://www.bhel.com> or <http://tenders.gov.in>. You are requested to visit the website regularly for updates.
10. List of Attachments:
- Qualifying Criteria - Part-A
  - Technical Specification - Part-B
  - Commercial Terms & Conditions - Annexure-A
  - Price Bid Format - Annexure-B
  - CA certificate for MSE vendors - Annexure-C.

All the tenders may be addressed to the following address:

**The Tender Opening Cell / MM  
Room No: 26, Building 24, Ground Floor  
Bharat Heavy Electricals Limited  
TIRUCHIRAPALLI 620014**

In case personal delivery of the offer, it shall be dropped into the respective box kept in Room No: 26, after duly entering the data in the system.

Offers will be accepted only up to 14.00 Hrs on the due date. Therefore, vendors shall ensure to submit the offers well before this time. All due date extension requirements should be addressed to the respective Purchase mail IDs. All the due date extension requests from vendors will be considered only up to 48 hours before the due date and time.

Vendors are requested to avoid submission of offers through e mail / fax. In case of any unavoidable situation, offers shall be sent through e mail to the following mail ID only [tender\\_cell@bheltry.co.in](mailto:tender_cell@bheltry.co.in).

As tenders are being opened by Common Tender Opening Cell, offer covers should be sealed with

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Yours faithfully,  
For BHARAT HEAVY ELECTRICALS LIMITED

MANAGER / PURCHASE  
(FOSSIL BOILERS)  
Yours faithfully,

**R.I. PETER IRUDAYARAJ**  
Senior Manager

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tenderer's distinctive seal and super scribed with correct Tender No. item of supply and due date of opening.

The offers will be opened at 14.30 hrs on the due date of the 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.

The bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL fraud prevention policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL management about any fraud or suspected fraud as soon as it comes to their notice.

The supplier shall submit EI/EII forms to BHEL time to time as indicated by the BHEL and in case of inordinate delay in issuing EI/EII forms, then BHEL reserves the right to deduct 5% of the value of the supplied items against which EI/EII forms pending to be issued

**Enclosures:**

"LD clause has to be confirmed without fail."

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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  
R.I. PETER IRUDAYARAJ (FOSSIL BOILERS)  
Senior Manager  
Yours faithfully,

Materials Management /  
BHEL, TIRUCHY - 620 014.

**RETROFITTING OF BLAST CHAMBER WITH ACCESSORIES IN TUBE ROTO BLASTING MACHINE****PART A – QUALIFYING CRITERIA**

SlNo	Requirements	Vendor's Response
<b>1.0</b>	<b>QUALIFYING CRITERIA</b>	
1.1	The BIDDER / VENDOR (OEM) shall have a minimum of TEN Years of Continuous Experience in the Design, Manufacture, Supply, Erection & Commissioning of " <b>Custom Built Wheel blasting stations</b> ". Vendor may indicate the actual no. of years of experience in the field with documents. Bidder to confirm are only eligible to quote.	
1.2	Only those vendors ( <b>OEMs</b> ), who have designed, manufactured, supplied, erected and commissioned at least one " <b>Custom built Wheel Blasting Station</b> " in the last five years (as on the original date of tender opening) having all the following features as compulsory: <ol style="list-style-type: none"> <li><b>1. Continuous Tube shot blasting</b></li> <li><b>2. Surface finish – after shot blasting SA 2½ (as per Swedish standard)</b></li> <li><b>3. Speed of tube travel : Minimum 4 m/min</b></li> <li><b>4. Blast wheel unit of minimum size 19" Dia. X 2 ½" Width in the blasting station.</b></li> <li><b>5. Blast Cabin fabricated/lined with alloy liners (11% to 14% Austenitic Manganese Steel of minimum thickness 8 mm).</b></li> </ol> EITHER (i) In at least one country other than the country of origin to establish vendor's global business activity OR (ii) In India, and the referred machines are presently working satisfactorily for more than one year from the date of commissioning (as on the original date of tender opening) are only eligible to quote.	
1.3	Vendor has to submit at least one Performance Certificate from their Customers for satisfactory performance of " <b>Custom built Wheel Blasting Station</b> " as given in under clause 1.2 above, supplied to them in the customer's letter head. For obtaining the Performance certificate, a suggestive format is provided. Bidder to confirm are only eligible to quote.	
1.4	BHEL reserves the right to verify the above information provided by Vendor. In case the information provided is found to be false/ Incorrect, the offer shall be rejected. The BIDDER / VENDOR shall submit/confirm/response the above details as mentioned in Sl.No.1.1, 1.2 & 1.3 which are necessary for qualifying their offer.	

*M.S. GURAN*  
 Sr. Engineer  
 Maintenance & Services  
 BHEL, TRICHY - 620 014.

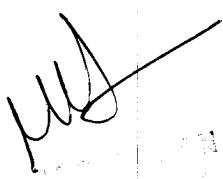
*R. MOHAN*  
 Sr Engineer  
 Maintenance & Services  
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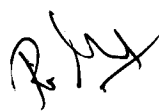
*M. MANOJARAJ*  
 Dy. General Manager  
 Maintenance & Services  
 BHEL, TRICHY - 620 014.

Part A

2.0	<b>INFORMATION TO BE PROVIDED BY VENDOR</b>	
2.1	The BIDDER / VENDOR to furnish Reference List of Customers, with complete address, details of contact person, where <b>Custom built Wheel Blasting Stations</b> have been supplied in the past.	
2.2	Specify details of <b>Custom built Wheel Blasting Stations</b> supplied to other units of BHEL, if any (Year of commissioning, type of station, type of jobs shot blasted etc.)	
2.3	Details on SERVICE-AFTER-SALES Set-up in India including the Address of Agents / Service Centers in India.	
2.4	Any Additional data to supplement the manufacturing capability of the BIDDER for the subject equipment.	



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**R. MOHAN**  
 Sr. Engineer  
 Maintenance & Services  
 BHEL, TRICHY - 620 014.



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Part A

Suggestive Format of Performance Certificate:


The performance certificate should be produced **on Customer's Letter Head.**


**PERFORMANCE CERTIFICATE**


- 1 Supplier of the machine :
- 2 Make & Model of the M/C :
- 3 Month & Year of Commissioning :
- 4 Machine Details :
  - a) Length of tubes (m)
  - b) Blasting medium (Shot size)
  - c) Speed of tube travel (m/min)
  - d) Surface finish
- 5 Performance of the Machine : Satisfactory / Good / Average / Not Satisfactory  
(Strike off whichever is not applicable)
- 6 After sales service : Satisfactory / Good / Average / Not Satisfactory  
(Strike off whichever is not applicable)
- 7 Any Other remarks :

Date:

Signature & Seal of the Authority  
Issuing the Performance Certificate

  
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Sr. Engineer  
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Sr. Engineer  
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M. THANGARAJU  
Sr. Engineer  
Maintenance & Services  
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**RETROFITTING OF BLAST CHAMBER WITH ACCESSORIES IN TUBE ROTO BLASTING MACHINE**


**PART - B: Technical Specification**


**Note:-**

1. The Column "Vendor's offer with Technical details & Remarks" of this format shall be filled in by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous or unsustainable information against any of the clauses of the specifications / requirements shall be treated as non-compliance.
2. The offer and all documents enclosed with offer should be in **English language** only.

Name & Address of the Supplier:	Name & Address of the Indian agent:
Telephone no.:	Telephone no.:
Fax no.:	Fax no.:
e-mail:	e-mail:

  
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 Sr. Engineer  
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**R. MOHAN**  
 Sr. Engineer  
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**M. THANGARAJ**  
 Dy. General Manager  
 Maintenance & Services  
 BHEL, TRICHY - 620 014.

Part B


**Scope of supply & Work: -**

1. Design, Supply, Erection & Commissioning of BLAST CHAMBER WITH ACCESSORIES IN TUBE ROTO BLASTING MACHINE (EXCLUDING TUBE HANDLING FACILITY & DUST COLLECTOR) for BHEL complying with the specification as below.


S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR's OFFER with complete technical details
1.0	PURPOSE:	Tube rotoblast station is intended for outer surface cleaning by shot blasting of seamless steel tubes of diameters ranging from 31.8 to 76.1mm that are used in high pressure boiler components.	


  
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M. THANGARAJ  
Dy. General Manager  
Maintenance & Services  
BHEL, TRICHY - 620 014.


S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR'S OFFER with complete technical details
2.0	APPLICATION	<p>a) The shot blasting operation shall be carried out automatically by Impinging cast steel shots (S280 and S330) at high velocity through centrifugal blast wheel(s) mounted inside the blasting chamber.</p> <p>b) The machine shall have an integrated facility for tube in feed and out feed, Tubes rotation, shots loading, dust extraction, shots recovery and shots recycling, chimney.</p> <p>c) The basic machine with all the Sub-Systems, Accessories &amp; Attachments are to be designed for working in three shifts (8 hour shift) a day.</p>	
3.0	PRODUCTIVITY	The machine is expected to have a surface cleaning capacity of 3000 pass meters in total for dia. 63.5mm tubes, with in-feed of <b>Two tubes</b> at a time on an average - in a shift of 8 hours.	
4.0	TUBE DETAILS		
4.1	Tube Material	Carbon Steel and Alloy Steel	
4.2	Tube Outer Diameter Range	31.8 to 76.1 mm	
4.3	Tube max. thickness	15 mm	
4.4	Tube Length range	5000 mm to 15000 mm	
5.0	SURFACE FINISH		
5.1	Surface Finish after shot blasting	Surface finish required is equivalent to SA 2½ as per Swedish Standard SIS 0559 00-1967 uniformly over the tube surface.	
5.2	Shots size and grade	Cast Steel Shots – S330 (dia.0.84mm) and S390 (dia.0.99mm)	


  
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 Sr Engineer  
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**M. THANGARAJ**  
 Sr. General Manager  
 Maintenance & Services  
 BHEL, TRICHY - 620 014.


S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR'S OFFER with complete technical details
6.0	<p><b>MACHINE CONFIGURATION:</b></p> <p>The machine has to be configured with the following sub-systems, integrated in total to give the desired results :</p> <ol style="list-style-type: none"> <li>1. Infeed Tube Storage Rack with stopper. <b>(BHEL Scope)</b></li> <li>2. Tube Kick-Off System 'lift and tube roll type' from Infeed tube storage rack to infeed roller conveyor. <b>(BHEL Scope)</b></li> <li>3. Tube In-feed Roller Conveyor system. <b>(BHEL Scope)</b></li> <li>4. Inlet vestibule chamber. <b>(Vendor Scope)</b></li> <li>5. Blasting chamber with blasting wheels and cabin rollers (including screw conveyor) with accessories. <b>(Vendor Scope)</b></li> <li>6. Outlet vestibule chamber. <b>(Vendor Scope)</b></li> <li>7. Tube out-feed Roller conveyor system. <b>(BHEL Scope)</b></li> <li>8. Tube kick off system from out-feed roller conveyor to finished tube storage rack. <b>(BHEL Scope)</b></li> <li>9. Finished tube storage rack with stopper facility at out-feed <b>(BHEL Scope)</b></li> <li>10. Steel shots loading, feeding, recovery and recycling system. <b>(Vendor Scope)</b></li> <li>11. Dust extraction system with integrated chimney. <b>(BHEL Scope)</b></li> <li>12. Centralized control unit for controlling the above systems. <b>(BHEL Scope)</b></li> <li>13. The rotoblast station shall be capable of blasting two / three tubes in one pass. <ul style="list-style-type: none"> <li>• 2 Tubes of OD 63.5mm, shall be blast cleaned together in one pass.</li> <li>• 3 Tubes of OD 38.1mm shall be blast cleaned together in one pass.</li> </ul> </li> <li>14. The equipment design should ensure <b>nil shot leakage</b> from any part of the shot blasting system / sub-system. <b>(Vendor Scope)</b></li> </ol>		


  
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**M. THANGARAJ**  
 Dy. General Manager  
 Maintenance & Services  
 BHEL, TRICHY - 620 014.

S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR's OFFER with complete technical details
7.0	<b>TUBE IN-FEED&amp;OUT-FEED TUBE STORAGE RACKS (Pl. Refer to Indicative general arrangement in Annexure – I) (BHEL Scope)</b>		
7.1	In-feed side Tube Storage Rack with tube handling system	<ul style="list-style-type: none"> <li>a) Tubes will be loaded to the storage rack in the form of bundles</li> <li>b) At a time, TWO bundles may be loaded in the storage rack.</li> <li>c) Each tube bundle size will be equivalent to that formed by 20 tubes of OD 63.5 mm or 40 tubes of 38.1mm.</li> <li>d) Max. weight of two tube bundles loaded on rack : 10 Tons</li> <li>e) Storage rack shall have flat portion of minimum 1m width to load the bundles. Height of the flat portion from the ground shall be 1.5m.</li> <li>f) Storage Rack shall have Bundle Stops to hold the tubes in bundle form.</li> <li>g) Sloping rack shall start after the straight portion. Angle of slope shall be 2-3 degrees. Vendor to specify the angle</li> <li>h) Width of the sloping rack shall be 3m.</li> <li>i) Release of Bundle Stop shall spread the bundled tubes (single layer of tubes) on the sloping stand, without causing damage to the tubes and the storage system.</li> <li>j) Bundle stops to be operated by a centralized pneumatically actuating system.</li> <li>k) The in feed stand shall be lined with Teflon / nylon so that noise generated when tubes rolling over is minimum</li> <li>l) Pneumatically operated 'Lift and tube roll type' tube kick-off system to be provided to lift two or three tubes from storage rack and shift to the infeed conveyor. Vendor to furnish details.</li> <li>m) A stopper mechanism before kick-off facility. Vendor to specify</li> </ul>	

  
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**M. THANGARAJ**  
 Dy. General Manager  
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S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR's OFFER with complete technical details
7.2	Out-feed side Tube Storage Rack with tube handling system	10) The shot blasted tubes shall be smoothly kicked-out onto the out feed stand. b) The Out feed stand shall have a width 3m c) The Out feed stand shall be lined with heat resistant Teflon / nylon so that noise generated when tubes roll over is minimum d) The out feed stand shall have a stopper arrangement to hold the tubes as they are spread out on the stand e) The tubes from the out feed stand shall roll over smoothly into the storage dump, when the stopper is released. F) Storage dump shall have a width 1m g) The storage dump shall be so designed that the tubes can be bundled h) Wooden blocks to be provided in the storage dump so that the sound of tube falling into the dump can be dampened.	(BHEL Scope)
7.3	Constructional Details	a) In-Feed side rack shall be made of stands & supports, including bundle stops with proper design so that no damage occurs with the style of impact loading and rough handling of tubes. b) The minimum thickness of sections and plates used for the structure construction should be NOT less than 7.5 mm. c) A schematic diagram shall be furnished with the offer for the In-Feed and Out-Feed Tube Feeding System.	(BHEL Scope)
8.0	<b>TUBE IN- FEED AND OUT-FEED CONVEYORSYSTEM</b>		(BHEL Scope)
8.1	Basic Configuration	a) The tube should rotate on its axis as it moves through the blast chamber for exposing the surface easily to the blast media. b) The tube feeding rollers should be supported outside the blasting chamber (with suitably projecting out) by the sealed bearing such that stray shots will not affect or clog the rollers.	

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*M. Thangaraj*  
**M. THANGARAJ**  
 Dy. General Manager  
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Part B

S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR'S OFFER with complete technical details
		c) Tube Feeding Rollers should be supported on either side of the chamber. d) Width of the roller to be specified by vendor. e) Rollers within the blast cabinet shall be of 11%-14% austenitic manganese steel f) Number of rollers shall suit the length of tubes handled g) Rollers are to be positioned at a pitch distance of 300mm between rollers and the roller outer diameter shall not be less than 100mm. h) Roller plate thickness shall not be less than 6mm i) Roller Drive chain shall be provided with tension adjuster, for the entire length of roller conveyor so as to maintain roller & tube contact always, to maintain the feed rate. j) Suitable Guide roller arrangement on in feed and out feed conveyor system. Vendor to specify and furnish details.	
8.2	Conveyor Type	Skew – Roll Drive type Conveyor Angle of skew to be specified by the vendor.	(BHEL Scope)
8.3	Line Speed (Tube Feed Rate)	Steplessly Variable up to 5m/min. [approx.] – to match the expected productivity level	
8.4 8.5	Line Drive Design Parameters	Infinitely Variable Speed (BHEL Scope) a) Vendor to furnish a schematic sketch of the Roller and Drive Arrangements b) Vendor to specify the Speed and Rating of Electric Motors and details of the Drives selected.	
		c) Movement of loaded tubes in and out of the chambers should be uniform and not to roll over on each other.	

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 Sr. Engineer  
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 Sr. Engineer  
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 BHEL, TRICHY - 620 014.

*[Handwritten signature]*  
**M. THANGARAJU**  
 Dy. General Manager  
 Maintenance & Services  
 BHEL, TRICHY

S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR'S OFFER with complete technical details
9.0	<b>INLET &amp; OUTLET VESTIBULE CHAMBERS</b>		<b>Vendor scope</b>
9.1	Material	Mild Steel with Structural reinforcement	
9.2	Vestibule Wall Thickness	12 mm or more	
9.3	Chamber lining	High wear resistant 8 mm or more thick vulcanized rubber with 16 Gauge spring steel inserts.	
9.4	Vestibule Dimensions	Vendor to submit the dimensions for approval by BHEL	
9.5	End Curtains	High wear resistant Polyurethane flexible curtains of 8 mm or more thick with 40-45 shore hardness to prevent leakage of shots past the inlet and exit tube passage. Details of arrangement to be furnished with the offer.	
10.0	<b>BLASTING CHAMBER - Vendor scope</b>		
10.1	Material – Chamber Wall	Mild Steel with structural reinforcement	
10.2	Chamber Wall Thickness	12 mm or more	
10.3	Material-Inside back plate Lining	11 to 14% Austenitic Manganese Steel	
10.4	Back plate Lining Thickness	12 mm or more	
10.5	Replaceable Liners (for the entire chamber)	Shall be of 11 to 14% Austenitic Manganese Steel (12mm or more thickness which is over and above back plate lining) – Tiles type replaceable liners with Ni hard dome shaped bolted construction. Perforated liners (16 mm or more) in the bottom.	Bidder to specify
10.6	Chamber Dimensions	Vendor to furnish the details to suit the existing machine conditions (Space & duct limitations). Cabin size to be around 5 m x 1 m x 1.5 m (approx.) from floor level inclusive with leg (Around 400 mm). It has to suit the existing machine structures & anchoring/foundation. (To meet the productivity specified).	Bidder to specify

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**R. MOHAN**  
 Sr. Engineer  
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 BHEL, TRICHY - 620 014.

*[Handwritten Signature]*  
**M. THANGARAJ**  
 General Manager  
 Maintenance & Services  
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Part B

10.7	Service Doors for Inspection & Maintenance	To be provided with suitable safety interlock to stop the machine Operation when doors (Size Minimum 450 mm x 450 mm) are open. All the bolts used in the entire chamber/lining inside the machine shall be Ni hard dome shaped material. Bidder to specify.	
10.8	Suitable air vents, ducts and exhaust boxes shall be provided.	Ducts & other details to be supplied along with scope by the supplier to connect with existing machine functions. Vendor to confirm & provide details.	
10.9	Cabin rollers	11 to 14% Austenitic Manganese Steel, 12mm or more thick plate rolled, and the drives shall be outside the chambers for free rotation. Full length rollers inside blast cabin. It is to be designed such way to avoid rollers jam while production. Bearings shall be heavy duty double side sealed type. Bidder to specify.	
10.10	Side support rollers inside cabin	11 to 14% Austenitic Manganese Steel, 12mm or more thick plate rolled, for free rotation. It is to be designed such way to avoid rollers jam while production. Bearings shall be heavy duty double side sealed type. Bidder to specify. Minimum 4 sets inside the cabin, 2 sets outside the cabin.	
10.11	Cabin drive	Simplex sprocket and chain type only. Vendor to confirm. Chain shall be provided with tension adjuster, for the entire length of roller conveyor so as to maintain roller & tube contact always, to maintain the feed rate. Make: Diamond/Rolon/SKF/Tsubaki	
10.12	Conveyor motor rating	Supplier to specify (Geared Motor rating). (Make: Bonfiglioli/Sumitomo)	
11.0	<b>BLAST WHEEL UNIT</b>		<b>Vendor scope</b>
11.1	Number of Blast Wheel Unit	Minimum - Two. Vendor to specify the MAKE & MODEL.	

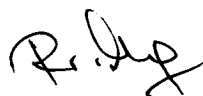
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S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR'S OFFER with complete technical details
11.2	Type & Size	Centrifugal – Airless type. Each blast wheel unit of minimum size 19" Dia. X 2 ½" Width. Bidder to confirm/specify.	
11.3	Shot Velocity	Preferred in the level of 80 m/sec. Vendor to furnish details	
11.4	No of Blades	Vendor to furnish details [with a minimum of 8 per blast wheel]	
11.5	Shot throughput in kg/min	Vendor to furnish details. Minimum 100 – 130 Kgs Per wheel	
11.6	Motor Power	To suit existing ELECTRIC MOTOR of 20 HP (Each Wheel).	
11.7	Wheel Speed	Vendor to furnish details	
11.8	Blasting Surface Area	Vendor to furnish details	
11.9	Constructional Features	<p>a) Centre fed impeller [Vendor to furnish details].</p> <p>b) Angle adjustment with reference to surface finish of the control cage arrangement on outside the chamber.</p> <p>c) Clock dial type control cage to control shot feed. Should be easy &amp; should not involve removal / shifting of any other item to gain access.</p> <p>d) Wear resistant &amp; easily replaceable blades. Vendor to specify the blade material.</p> <p>e) Heavy steel plate wheel housing completely lined with wear plates assembled to overlap one another and prevent wear and abrasive leakage.</p> <p>f) Impeller blade life. Vendor to specify the life of offered blades.</p> <p>g) Muffler/Soundabrator to control the noise less than 85 db from 1 meter distance. Entire wheel unit fitted with alloy liner (15% Chromium, 2 % Molybdenum) having hardness 55 to 65 HRC.</p> <p>h) Wheels shall be grounded &amp; balanced perfectly. It is recommended not to weld weight on the hub to balance the wheel unit. Bidder to confirm with details.</p>	


Part B

12.0	ABRASIVE (STEEL SHOT) RECOVERY & RECYCLING SYSTEM		Vendor Scope
12.1	Hopper & Screw Conveyor		
12.1.1	Construction	<p>a) 12mm thick gravity fed hopper supported on base frame beneath blast chamber made of 11 to 14% Austenitic Manganese Steel with structural.</p> <p>b) Helicoids conveyor with guard of suitable capacity.</p>	

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S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR's OFFER with complete technical details
		<p>c) To convey spent steel shots and dusts from various chambers to the elevator boot section.</p> <p>d) Helicoid plate thickness should be 10 mm (min) with hard facing on the periphery. Hard facing to be done total flight (screw) area since it is subjected to shots impacts continuously and also depth of hard face should be 0.8mm to 1 mm on the screw. Hard Facing Hardness- 60-65 HRC.</p> <p>e) The conveyor support within the chamber shall be with sealed dust proof bearing system and easy approach from outside for easy maintenance.</p> <p>f) Chamber with a long rubber beaded door for inspection and opening. All the bolts used in the entire machine shall be Ni hard dome shaped material. Bidder to specify.</p> <p>g) Vendor to confirm &amp; provide details. Material = Shaft Pipe (11 mm or more thickness) in the screw conveyor.</p> <p>h) Leg for the entire cabin shall be preferably mounted at the floor level. Thickness of the leg (10 mm or more). Bidder to specify. Folded channels/legs/Structurals/MS are manufactured from plate that has IS 2062:2011 Grade A 250 Quality - BR and Test certificate to be submitted for approval.</p>	
12.1.3	Conveyor motor rating	Supplier to specify (Geared Motor rating) (Make: Bonfiglioli/Sumitomo)	
12.2	Belt Type Bucket Elevator		

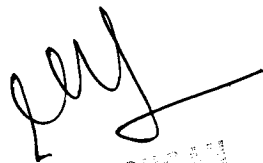
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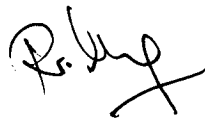
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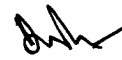
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Part B

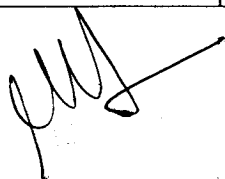
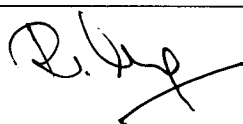
12.2.1	Features	<p>a) To convey spent abrasives from lower conveyor to the abrasive separator system.</p> <p>b) Provision to compensate for belt slackness outside the chamber</p> <p>c) Back-stop arrangement to prevent the belt from slipping down during sudden stoppage</p> <p>d) Bucket elevator to be housed in a ventilated dust-tight fabricated steel casing provided with inspection doors</p> <p>e) The boot section of the bucket elevator shall be at floor level</p>	
12.2.2	Bucket material	Cast alloy steel - 11 to 14% Austenitic Manganese Steel, 16mm or more thick – Vendor to confirm & provide details.	
12.2.3	Belt material	Cotton fabric 6 ply, 14mm thick or more. Vendor to confirm and provide details.	
12.2.4	Elevator motor rating	Vendor to specify. (Make: Bonfiglioli /Sumitomo)	
12.2.5	Design Parameters	<p>Vendor to specify the following</p> <p>a) Bucket material and thickness</p> <p>b) Elevator motor rating</p>	
12.3	<b>Abrasive Separator Unit</b>		

  
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S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR's OFFER with complete technical details
12.3.1	Minimum Constituents	The offered Abrasive Separator shall have : a) Counter flow air wash separator b) Removable screen for trapping coarse particles c) Refuse hopper for fines with non-return valves for discharge of fines d) Integral storage hopper for reclaimed abrasives [Vendor has to specify the hopper capacity] e) Abrasive level indicator	
12.3.2	Abrasive loading	Shall be designed at floor level for easy manual loading	
12.4	<b>Abrasive Feeding Unit</b>	a) By means of feed pipes connecting storage hopper and blast wheel unit b) Solenoid operated, pneumatic cylinder actuated control valve for feeding shots to the blast-wheel unit c) Manual shut-off valve for cutting-off shot feed to the blast-wheel unit during maintenance. Valve Make: SMC/Accept to BHEL.	
12.5	<b>DUST COLLECTOR (BHEL scope)</b>		
12.5.1	Basic Design Features	a) Type - Continuous automatic Pulse jet b) Filter media – by Cartridge filters c) Cleaning of Filters shall be by reverse air flow d) Cleaning cycles shall be Timer controlled / programmable e) Differential Pressure Sensing to initiate cleaning cycle f) Dust hopper with manual slide gate for dust removal g) Should include supporting structures for floor mounting h) Chamber shall be of water proof design to avoid the mixing of moisture with dust and forming paste during rainy seasons. i) Particulate emission at outlet shall be not more than 100mg/Nm <sup>3</sup> for particle size greater than or equal to 5 micron j) Suction Duct work from shot blasting chamber to the dust collector	

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S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR's OFFER with complete technical details
		- For a separation distance of maximum 6 m. k) Side opening door for ease of approach for maintenance.	
12.5.2	Basic Design Parameters	Vendor to specify the following: a) Dust Collector Model & Make b) Capacity c) No of filter cartridges d) Filter area e) Capacity of Exhaust Fan suitable to purge the entire system f) Exhaust Fan motor rating & speed g) Ducting details from the Dust Collector to Exhaust Fan	(BHEL scope)
13.0	CHIMNEY	a) Height of Chimney shall be 25 m. b) Traverse ports shall be provided at two elevations. One at 5 m elevation and the other at 2/3 rd the height of chimney, from floor level. Suitable cowl at the top to be provided. c) At each elevation four ports shall be provided 90 degrees apart. Each port hole shall be of dia. 100 mm. At each port hole a standard pipe, 100mm long shall be welded. The other end of the pipe shall be provided with a bolted dummy flange. d) Platform shall be provided around the chimney, 1 m below each traverse plane, with hand rails, toe guard and approach ladder. e) A weather protection cowl should be provided at the top. f) The chimney drawings indicating the traverse ports shall be furnished to BHEL upon receipt of purchase order g) Lightning arrester to be provided.	(BHEL scope)
14.0	SYSTEM INTERLOCKS	a) All necessary interlocks to ensure safety of equipment & personnel operating the equipment b) Service doors to be interlocked with blast wheel unit such that the	Vendor Scope

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S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR's OFFER with complete technical details
		blast unit shuts off if service door is opened, during the blasting operation and the blast wheel unit cannot be started unless service door is fully shut.	
15.0	<b>OPERATION AND CONTROL SYSTEM</b>		
15.1	Machine Operation	The entire cycle of tube shot blasting operation shall be controlled automatically through suitable PLC control system. Manual operation of sub-systems, with safety interlocks, should be provided for trouble shooting.	
15.8	Help guide	Help guide should be provided to use both diagnostic systems	
16.0	<b>LUBRICATION</b>	Details of the Lubrication provided in the machine to be furnished.	<b>(BHEL scope)</b>

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Part B

S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR'S OFFER with complete technical details
16.1	First Fill	First filling of Grease / Oil should be supplied by vendor. Indian Equivalent shall be mentioned.	
17.0	<b>PNEUMATIC SYSTEM</b>	The pneumatic operated elements of the machine shall work efficiently with BHEL compressed air supply at a pressure of 4 to 4.5kg/cm <sup>2</sup> .	(Vendor Scope)
17.1	Supply Point	BHEL will provide compressed air at only one point near / on the Machine with ¾" line. All the other distribution lines are under supplier scope.	
17.2	FRL Unit	Vendor shall provide suitable filter-regulator-lubrication (FRL) unit at this point	
17.3	Air Dryer	Refrigerant type Air Dryer of suitable capacity. Vendor to provide Details/Confirm. MAKE: SMC/FESTO/REXROTH/PARKER	
17.4	Pneumatic Piping	Pneumatic piping should be preferably metallic except places where Flexible piping is essential with suitable pneumatic fittings for Polyurethane end connections. All the pipes required for the same shall be included in the standard scope of the machine.	
17.5	Pneumatic elements	Make shall be FESTO, SMC, REXROTH & PARKER only	
18.0	<b>ELECTRICAL &amp; ELECTRONICS SYSTEMS</b>		(Vendor Scope)
18.1	Electrical Power Input	AC 3 Phase supply, 415 V ± 10 %, 50 Hz ± 2 % through a 3 Wire System. No neutral conductor.	
18.2	Electrical Supply Point	Electrical power supply will be provided by BHEL at a single point near the machine, as per layout recommended by Vendor. All cables, connections, circuit breakers etc. required for connecting BHEL's power supply to the machine shall be in the scope of vendor.	
18.3	Power Requirement	Vendor has to indicate the total tentative power requirement (including that for all the accessories and attachments) in kVA with the offer.	
18.4	Control Voltage	The Control Circuit Voltage shall be 24 V DC	

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S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR'S OFFER with complete technical details
18.5	Lighting for panels	All electrical and electronic panels should be provided with fluorescent lamps for sufficient illumination and power point of 220V, 5/15A AC. All adapters /receptacles should have compatibility with Indian equivalents.	
18.6	Earthing	Vendor should ensure the proper earthing for the machine and its peripherals.	
18.7	Cable Routing	Cables shall be routed through totally enclosed cable trays. There shall not be cable trenches.	
18.8	Tropicalization	All electrical / electronic equipment shall be tropicalized.	
18.9	Electrical Cabinet	All electrical components in the cabinets should be mounted on DIN Rail	
18.10	Electrical Cabinet protection	All electrical & electronic control cabinets & panels should be vermin and dust proof. All Electric enclosures shall have IP 64 protection	
18.11	AC for Electrical Cabinet	Air Conditioners with Dehumidifiers of suitable capacity to be provided for all Electrical/Electronic Panels/Cabinets. <b>Make: Rittal/Werner &amp; Finley . Vendor to provide details.</b>	
18.12	Electrical & Electronic cabling	All feedback systems in the existing machine may be used. If any all requirement may be added. The supply of 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. All field elements shall have easy accessibility for maintenance. External wiring from / to control panel, control desk,	
18.13	Electric Motors ( EFF 1)	All Existing Electric Motors may be used. New supply of any motor (if required) shall be of ABB / CROMPTON GREAVES/ BBL or makes conforming to IEC Standards	
18.14	Motors & Components	Motors & other electrical components shall conform to IEC or Indian Standards	

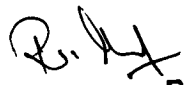
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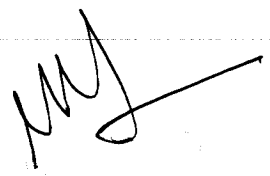
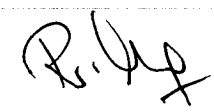
S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR's OFFER with complete technical details
18.15	Electrical drives system	Existing VFDs in the machine can be used to interface.  Details are as below: 1. VF DRIVE - YASAKAWA VS MINI V7 – 1 No. Model : CIMR - V7AA42P2 Power : 2.2 kw / 3 HP 2. VF DRIVE - YASAKAWA VS MINI V7 – 2 Nos. Model : CIMR - V7AA43P7 Power : 3.7 kw / 5 HP 3. VF DRIVE - YASAKAWA VARISPEED F7 – 2 Nos. Model : CIMR - F7A4015 Power : 15 kw / 20 HP	
18.16	Gear boxes/Geared Motor	Heavy duty Industrial type service rating only Make shall be from BONFIGLIOLI / SEW /MAKISHINKO/SUMITOMO only.	(Vendor Scope)
19.0	Painting	a) The heavier machine parts are to be heat-treated after fabrication and shot blasted for surface preparation prior to painting. b) One coat of Primer c) Two coats of Polyurethane Paint (Colour–Reseda Green–RAL 6011)	(Vendor Scope)
20.0	<b>MACHINE SPARES</b>		
20.1	Operating Spare Parts	The Supplier shall LIST DOWN with the OFFER, the complete set of Replaceable parts / items / components coming in the Machine and other Sub-Systems / Accessories / Attachments and shall QUOTE the Unit Price for each item.	

  
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20.2	Commissioning Spares	Vendor has to COMPULSORILY quote for the spares of the following items with the OFFER : (Included along the scope of supply) a) Blasting Blades – 4 Sets b) Elevator belt – 1 set	(Vendor Scope)
21.0	Pre-dispatch Inspection	Shot Blasting Station shall be offered for pre dispatch inspection at supplier's works, by BHEL Engineers prior to dispatch from the supplier's works. In case the Shot Blasting Station cannot be inspected in the assembled condition at supplier's works, the supplier has to offer the complete quantum of materials, semi-finished/finished machine components, sub-assemblies, bought-out items, spares, consumables, etc. required to build the shot blasting station in total, along with one set of O&M documentation for inspection, at the supplier's works, by BHEL Engineers prior to despatch from the supplier's works.	(Vendor Scope)
22.0	<b>ERECTION &amp; COMMISSIONING</b>		
22.1	Mechanical Erection	Erection of the Equipment shall be done by the SUPPLIER'S SERVICE ENGINEER & Erection Crew	(Vendor Scope)

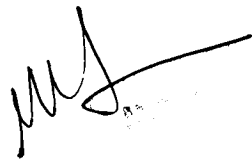
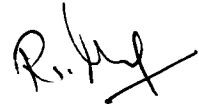



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S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR'S OFFER with complete technical details
22.2	Commissioning	Commissioning of the Equipment and Smooth Functioning of all the Sub-Systems (as per scope) (at BHEL Works) shall be ensured and will be the SOLE RESPONSIBILITY of the Supplier.	(Vendor Scope)
22.3	Performance Prove-Out at BHEL	After the successful commissioning of the machine and sub-systems, the COMMISSIONING ENGINEER of the Supplier have to establish the Performance Prove-Out for the Machine's Capability and the Production Rate from the Machine, as given under the Specification Clause S.No. 3.0	(Vendor Scope)
23.0	<b>MACHINE DOCUMENTATION</b>		
23.1	O & M Manuals	a) Three Copies of the Operation & Maintenance Manual (ENGLISH) with preventive maintenance checklist to be given in Hard Bound Paper Copies with one copy in DVD form (SOFT COPY/PDF format) b) The following documents and details [given under the Clause Sl. No. 23.2] shall form part of the Operation & Maintenance Manual.	(Vendor Scope)
23.2	Documents and Technical Details	a) GA Drawing of the Roto Blasting Station. b) GA Drawing of Individual Mechanisms. c) Sub-Assembly Drawings (without dimensions) for sub-systems for maintenance purpose. d) Electrical Wiring Drawings—Power & Control Circuits. e) Complete Printed Circuit Board Schematics indicating check points (Test Points) for Electronic Controls. f) Pneumatic Circuit Diagram g) Specifications/Ratings of All Bought-Out-Items. h) Warranty / Guarantee Card for all Bought-Out-Items i) Technical specification of the total equipment. j) Safety instructions k) Test certificates for all bought out items as applicable.	(Vendor Scope)

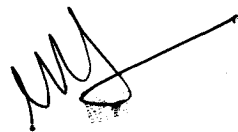



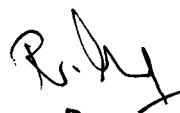
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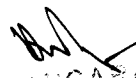


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S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR'S OFFER with complete technical details
		l) Trouble Shooting Chart for Main and all Sub-Systems m) Steel Shots – Quantity, Mix, selection & specification n) Name and address of suppliers for rollers, liner plates, rubber items. o) Total weight of the Machine & Sub-Systems p) PLC software CD q) PLC programme both soft and hard copy. r) Programming manual in PDF format	
24.0	TRAINING	The Supplier's Service/Application Engineer shall train BHEL Engineers in the Operation, Trouble Shooting and Maintenance of the ROTO- BLAST Machine at BHEL Works for a minimum period of 10 Working Days, after the SUCCESSFUL COMMISSIONING of the Equipment, at BHEL Works.	(Vendor Scope)
25.0	TECHNICAL OFFER	The Technical Offer shall contain the following : a) Complete Scope of Supply, including Main Equipment, Job Handling Unit, All Accessories and Attachments, etc. b) List of Operating Spares, Commissioning Spares, Foundation / Anchoring Materials c) Erection, Commissioning and Performance Prove-Out Details. d) Complete description of all systems & sub-systems forming part of the Roto-Blast Station e) A schematic diagram showing the layout of the machine & associated systems with salient dimensions f) The operating sequence of the machine with broad outline of various operations involved	(Vendor Scope)
26.0	DRAWING APPROVAL	Vendor to submit all manufacturing drawings related to the equipment for BHEL approval within 45 days of ordering by BHEL. BHEL shall provide approval within 15 days after all the clarifications	(Vendor Scope)



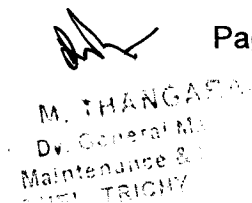
  
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S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR'S OFFER with complete technical details
		sought have been submitted by supplier. Within one month after BHEL approval of manufacturing drawings, supplier to submit foundation drawing with details of static & dynamic loads.(if required)	
27.0	GENERAL	The machine configuration and element arrangement should have easy accessibility, higher rigidity, self-aligning /fitting, locking & piloting arrangement of machine components and modules.	(Vendor Scope)
28.0	Noise Level	The noise generated out of the machine and sub-systems, during its Running, shall not exceed the level of 85 dB (A) at 1 meter.	(Vendor Scope)
29.0	Safety Guards	The Roto-Blasting Machine to have Safety Guards / Sliding Doors for protection against the splash/stray flying shots for the Machine Operators. Vendor to submit details on this arrangement.	(Vendor Scope)
30.0	Ambient Atmospheric Conditions	a) The ROTO-BLAST Machine with all Sub-Systems shall be suitable for operation in an ambient temperature of 25 to 50°C and with a Relative Humidity of 85%. b) The entire equipment shall be tropicalized in Design and construction.	
31.0	PERFORMANCE GUARANTEE	The Performance of the Total Equipment and/or the Components / Sub-Assemblies / Bought-Out-Items shall be guaranteed for a minimum period of 12 months from the date commissioning at BHEL Works OR 18 Months from dispatch.	(Vendor Scope)
32.0	SCOPE OF SUPPLY		
32.1	Supplier Scope	1. Design, Manufacture, Supply, Erection, Retrofitting, Integrating with existing unit, Commissioning and Prove out of Tube Roto Blast Station (AS PER SCOPE) 2. First fill of shots (Both at Pre dispatch inspection & Site) 3. All anchoring & foundation bolts, floor drilling equipment, levelling	

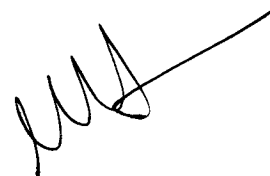



**R. MOHAN**  
Sr. Engineer  
Maintenance & Services  
BHEL, TRICHY - 620 014.



**M. THANGARAJ**  
Dy. General Mgr.  
Maintenance & Services  
BHEL, TRICHY

S. No.	PARTICULARS	BHEL SPECIFICATION	VENDOR's OFFER with complete technical details
		4. Levelling Instruments, Power Tools / Hand Tools for erection. 5. Crane for erection and other peripherals where there is no reach of shop EOT crane. 6. Commissioning Engineer with erection crew. 7. Job Quality and Productivity Prove-out.	
32.2	BHEL Scope	1. Drawings approval 2. Civil foundation work (if required) as per manufacturer's drawing 3. Tube materials for trials and prove out 4. EOT Crane inside shop 5. Single Compressed air point at the location indicated in the drawing 6. Single Electrical Supply point at the location indicated in the drawing 7. Welding machines and consumables required for erection	
<b>33</b>	<b>MAKE OF THE BOUGHT OUT ITEMS</b>		
	<b>Makes of all the applicable bought out items shall be as follows unless otherwise specified in the above specification</b>		Vendor to specify
	BELTS (V - BELT, TIMING BELT& OTHER BELTS)	FENNER/SKF/GATES/DUNLOP/GOODYEAR	
	HYDRAULIC HOSES	GATES/PARKER/AEROQUIP	
	HYDRAULIC VALVES &PUMPS	REXROTH/EATON VICKERS/PARKER	
	POLYURETHENE TUBES & ONE TOUCH FITTINGS	FESTO/ SMC /PARKER/REXROTH	
	CHAINS, CONNECTING LINK&SPROCKETS	DIAMOND/ ROLLON/ SKF/ TUSABAKI	
	PNEUMATIC VALVES &PUMPS, SYSTEM	FESTO/ SMC/PARKER/REXROTH	
	HYDRAULICS SEALS, SPRING LOADED OIL SEAL& ORINGS	PARKER/ MARKEL/ SIMRIT/ FREDUNBERG/ BUSHAK & SHABAN/HUNGER/ HALLITE/ JAMES WALKER	





**R. MOHAN**  
 Sr. Engineer  
 Maintenance & Services  
 BHEL, TRICHY - 620 014.

M. CHANDRAN  
 Dy. General Manager  
 Maintenance & Services  
 BHEL, TRICHY

Part B

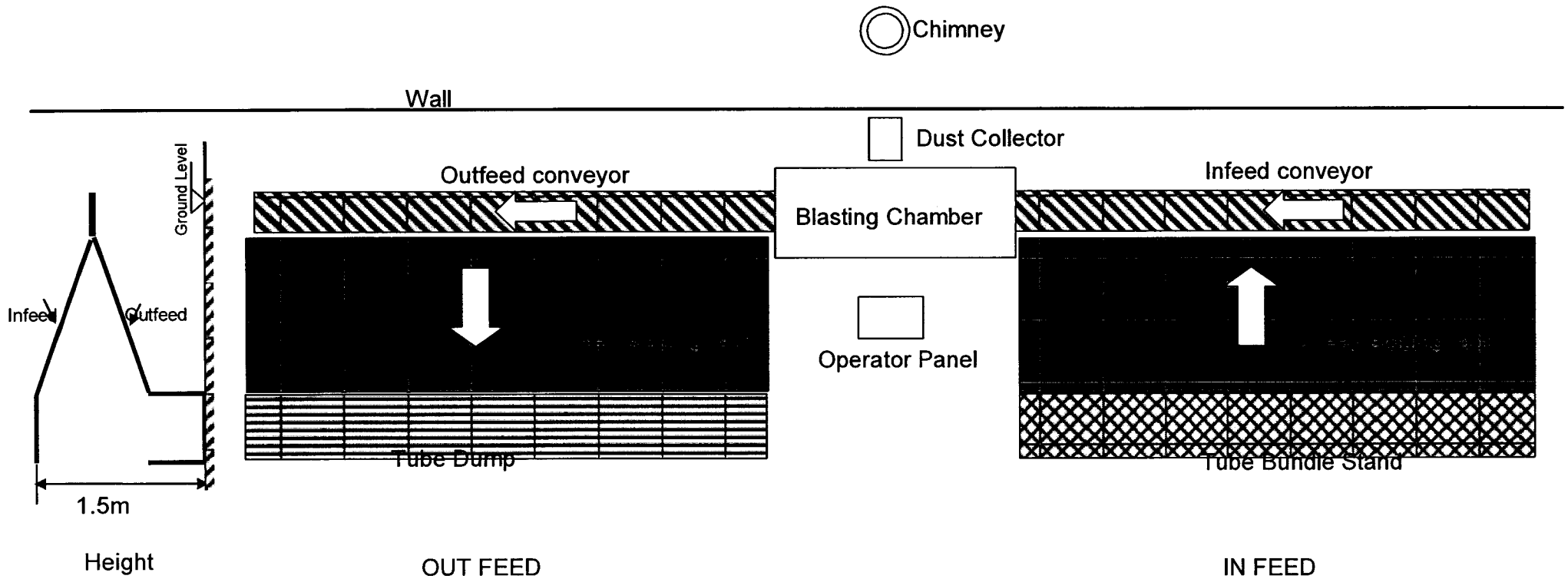
	REDUCTION GEAR BOX	BONFIGLIOLI/MAKISHINKO/ SUMITOMO/ SEW	
	GEARED MOTOR	BONFIGLIOLI / SEW /MAKISHINKO/SUMITOMO	
	COOLANT PUMP	BE / SUGUNA / SEAPUMP / KSB / RAJAMONI	
	HYDRAULIC JACKS	LARZEP / ENERPACK / POWER TEAM /HI- FORCE	
	ALL HYDRAULIC SYSTEM	BOSCH REXROTH/EATON VICKERS/PARKER	
	PRESSURE GAUGE	REXROTH/WIKA/WAREE/PARKER	
	ALL COUPLINGS WITH GUARDS	SKF/FENNER/HYDAX	
	HYDRAULIC FITTINGS	ARKER/SWAGELOC/HYLOC	
	MOTORS	ENERGY EFFICIENT EFF II ABB/ SIEMENS/SUMITOMO	
	CONTACTORS	SIEMENS/L&T/SCHENIEDER/TELEMECHANIC	
	PUSH BUTTONS AND SELECTOR SWITCHES	SIEMENS/TELEMECHANIC	
	TEMPERATURE GAUGE	WIKA/WARRE/REXROTH/EATON VICKERS	
	LM GUIDE WAYS, BALL SCREW UNIT & SCREW ROD	THK/IKO/NB/THOMPSON	
	BEARINGS/PILLOW BLOCKS/PLUMMER BLOCKS	SKF/FAG/NTN/TIMKEN/IKO/ASAHI	
	GEARED COUPLINGS	WMI / FENNER / ALFEX / SKF	
	BREAK LINING	FERRODA / COMPAQ	
	FASTNERS (GRADE: 10.8/12.9 AS PER IS.2269/IS 1367)	TVS/UNBROKO	
	DRIVES	SCHNEIDER/SIEMENS/MISTIBUSHI	
	SERVO MOTOR	SCHNEIDER /SIEMENS/ MISTIBUSHI	
	Any other makes recommended by the supplier may be approved by BHEL during technical evaluation. Bidder to confirm.		
37	Standards for Design and Manufacture: Standards for design and manufacture of the welding station shall be in accordance with ISO or JIS or DIN. Any other standards shall be approved by BHEL before manufacturing. Anything unspecified in the above specification but necessary for tube blasting station function shall be indicated by the supplier. Vendor may visit BHEL site to get complete acquaintance about the application before quoting. Vendor to confirm.		

*[Handwritten Signature]*

*[Handwritten Signature]*  
**R. MOHAN**  
 Sr. Engineer  
 Maintenance & Services  
 BHEL, TRICHY

*[Handwritten Signature]*  
**M. THANGARAJU**  
 Dy. General Manager  
 Maintenance & Services  
 BHEL, TRICHY - 621 005

**INDICATIVE GENERAL ARRANGEMENT OF TUBE ROTO BLAST STATION**



*M.S.*  
M.S. G...  
...

*R. Mohan*  
**R. MOHAN**  
Sr. Engineer  
Maintenance & Services  
BHEL, TRICHY - 620 014.

*M. TH*  
M. TH...  
Sr. General...  
Maintenance...  
BHEL, TRICHY...

**BHARAT HEAVY ELECTRICALS LIMITED TIRUCHIRAPALLI**  
**CAPITAL PURCHASE**

**Annexure-A**

**ACCEPTANCE OF COMMERCIAL TERMS AND CONDITIONS BY THE VENDORS.**

(This should be essentially filled in and sent along with the techno-commercial offer without fail. If this check list is not filled and submitted along with techno-commercial offer (Part I) or if the vendor does not confirm acceptance to the terms and conditions proposed, BHEL reserves the right to reject such offer)

**CHECK-LIST FOR VENDORS**

Sl. No.	DESCRIPTION
1.	<p>The Bidders shall submit their offer in <b>TWO INNER ENVELOPES</b> as indicated below which shall be sealed in one outer envelope.</p> <ul style="list-style-type: none"> <li>❖ <b>Envelope I:</b> This sealed envelope should contain all the copies of technical bid together with un-priced commercial bid. This envelope should be clearly marked "<b>Part I - Technical and commercial bid</b>", indicating Enquiry No., Due Date and Address &amp; Reference of the Bidder.</li> <li>❖ <b>Envelope II:</b> This sealed envelope should contain <b>Price Details</b>. This envelope should be clearly marked "<b>Part II - Price bid</b>", indicating Enquiry No., Due Date and Address &amp; Reference of the Bidder. This part should contain the schedule of price particulars and must be co-related to the technical details provided in Part I.</li> </ul> <p>All the two envelopes (Part I&amp;II) shall be put in one cover, duly sealed, super scribing as "<b>Part I and Part II of Enquiry No., Due date of opening</b>" and the address and reference of the Bidder. The offer received without the above guidelines, will not be considered for opening.</p> <p>Offers will be accepted &amp; received till 14.00 Hr. on the due date. Therefore Vendors shall ensure to submit the offers before this time. Late offers will not be considered.</p> <p>The Tenders should be addressed to the following address to  <b>The Tender Opening Cell/MM</b>  <b>Room No-26 , Building – 24 , Ground Floor</b>  <b>Bharat Heavy Electrical Limited</b>  <b>Tiruchirapalli - 620014.</b></p> <p>In case personal delivery of the offer, it shall be dropped into the respective box after duly entering the data in the system kept in Room No 26.</p> <p>Vendors are requested to avoid submission of offers thro email / fax. In case of any unavoidable situation, offers shall be sent thro email to the following mail ID only "<b>tender_cell@bheltry.co.in</b> "</p> <p>As such Tenders are being opened by Common Tender opening Cell , offer covers should be sealed with tender's distinctive seal and super scribed with correct Tender NO, item of supply and due date of Opening</p> <p>Tenders should be free from <b>CORRECTIONS AND ERASURES</b>. Corrections if any, must be attested. All amounts shall be indicated both in words as well as in figures. In case of any difference between amount quoted in words and figures, amount quoted in words shall prevail.</p> <p>Offers should be in <b>ENGLISH</b> and accompanied by detailed technical literature, catalogue and detailed dimensional drawings in <b>ENGLISH</b> or otherwise, the offers will not be considered.</p>
2.	<p><b>OPENING OF TENDERS</b></p> <p>The Part I- Technical &amp; commercial bid would be opened on the Tender opening date.</p> <p>The Part II - Price bid of Technically suitable Bidders alone would be opened. The Technically suitable Bidders would be informed about the tender opening date.</p> <p>Clarifications if any required by BHEL for Technical evaluation would be sought from bidders before opening of Part II - price bid.</p>
3.	<p><b>Taxes and Duties</b></p> <p>All Taxes and Duties payable as extra to the quoted price should be specifically stated in offers along with CST &amp; TIN No / Tariff No. etc., failing which the purchaser will not be liable for payment of such Taxes and Duties. Our TIN No. 33243560005, TNGST No. 3560005, CST. No. 239383 Dt. 11-06-1991 &amp; BHEL ECC No. AAACB4146PXM012, Service Tax Registration No (STC)- AAACB4146PST006. Assessment circle Tiruverambur.</p>
4.	<p><b>Special Provisions for Micro and Small Enterprises (MSE)</b></p> <ol style="list-style-type: none"> <li>1. 20% of the tendered quantity is earmarked for MSE suppliers in this tender.</li> <li>2. Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC/ST entrepreneurs.</li> <li>3. In case MSE vendor participating in the tender quotes within the price band of L1+15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately.</li> <li>4. MSE suppliers can avail the intended benefits only if they submit along with offer, attested copies of either EM II (Entrepreneur Memorandum Part II) certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (Format enclosed as per <b>Annexure - C</b>) applicable for the relevant financial year (latest audited), certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over. Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Offer/s received without these documents will lead to consideration of their offer at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier.</li> </ol>

No row shall be left blank. Please indicate NA, in case the item is "Not Applicable"	Vendor's confirmation
5. <b>Validity:</b> Validity of the offer should be <b>120 days</b> from the date of tender opening.	
6. <b>Release of Purchase Order:</b> > Purchase Orders will be released on successful L1 vendor. > Separate orders for supply & service will be released on the successful L-1 vendor for each line items. (Service order released only in the case of, Installation / erection / commissioning portion are applicable on tender scope & quoted separate charge for same by vendor).	
7. <b>Payment Terms for supply Portion:</b> a) 80% of payment will be released within 45-90 days after receipt & acceptance of material. b) 20% of payment will be released after completion of successful commissioning of Blast Chamber against submission of 10% PBG for a Warrantee period of 18 Months.	
<b>Installation &amp; Commissioning Portion (if applicable only):</b> 100% of the installation / commissioning charges (in case contract involves erection / installation /commissioning) shall be paid only on completion of such erection / commissioning at BHEL, Tiruchirapalli.	
Any deviation in the above payment term will attract loading as mentioned below. "Base rate of SBI (as applicable on the date of bid opening. Techno commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.	
8. <b>Performance Bank Guarantee (PBG):</b> The bidder in the event of an order, should furnish a Bank Guarantee from an Indian Bank approved by BHEL, at no extra cost in a format prescribed by BHEL, along with the order, for an amount equivalent to <b>10% (Ten percent)</b> of the value of the contract. The PBG shall be valid for a period of 18 months from the date of despatch or <b>12 months</b> from the date of receipt / acceptance / commissioning of equipment at BHEL, Tiruchirapalli whichever is more, with a claim period of two months. The Performance Bank Guarantee shall be obtained from any one of the following banks which is a member bank in our consortium of Banks: <b>List of Consortium Banks</b> DEUTSCHE BANK, HDFC BANK, ANZ GRINDLAYS BANK, CITI BANK, STANDARD CHARTERED BANK, BANK OF AMERICA, ABN AMRO BANK, IDBI LTD, ICICI BANK LTD, THE HONGKONG & SHANGHAI BANKING CORPORATION LTD. <b>List of Nationalised Banks</b> ALLAHABAD BANK, ANDHRA BANK, BANK OF INDIA, BANK OF BARODA, BANK OF MAHARASTHRA, BHARAT OVERSEAS BANK, CANARA BANK, CENTRAL BANK OF INDIA, CORORATION BANK, DENA BANK, INDIAN BANK, INDIAN OVERSEAS BANK, ORIENTAL BANK OF COMMERCE, PUNJAB NATIONAL BANK, PUNJAB & SINDH BANK, STATE BANK OF INDIA, STATE BANK OF TRAVANCORE, STATE BANK OF MYSORE, STATE BANK OF BIKANER & JAIPUR, STATE BANK OF HYDERABAD, STATE BANK OF PATIALA, STATE BANK OF MAHARASTHRA, STATE BANK OF SOURASTHRA (SBI-13.09.08), SYNDICATE BANK, UCO BANK, UNION BANK OF INDIA, UNITED BANK INDIA, VIJAYA BANK. <u>If PBG is issued by foreign counter part of the BHEL consortium Indian Bank, in case of claim against the PBG, it will be lodge in any one of the Indian counters of the Foreign Bank which issued the PBG.</u>	
9. <b>Liquidated Damages (LD):</b> The delivery of the goods specified in the purchase order should be made within the time prescribed. LD for delay in 'Supply' and/or 'E&C' will be applicable to the delays attributed to vendor. LD will be considered separately for 'Delivery' and 'E&C'. Where the seller supplies or dispatches the goods, beyond the delivery period Liquidated damages shall be applicable 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value. Detail of LD mode are shown below <b>Single Delivery Date (Material Dispatched after Due date)</b> Once the delivery due date is crossed, bills have to be clubbed till final despatch and forwarded for processing of payment as a single bunch. LD percentage will be calculated from Delivery due date to final despatch date. (100% Order should be completed for processing the bill) <b>Staggered Delivery</b> LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value. PO Pending value (each Bill Value) up to Max 10 % of Total PO value) <i>Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).For the purpose of Imposing LD, the FOB delivery (B/L date) shall be considered. Bidder should indicate the LD mode (single delivery or staggered delivery) on the confirmation column, otherwise single delivery date will be considered for further evaluation</i>	
10. <b>Risk Purchase:</b> Alternatively 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 despatch within the time stipulated as aforesaid or if the same were not available from the best and the nearest available substitute. The supplier shall be liable for any loss which the Purchaser may sustain by reason of such risk purchases.	
11. <b>Delivery Terms and evaluation process:</b> Indian Bidders should submit their offer for <b>FOR-BHEL, Tiruchirapalli basis</b> . Packing & Forwarding and Freight & Insurance charges from works to BHEL, Tiruchirapalli to be indicated separately if extra from basic rate. Applicable % of ED & Sales Tax, Commissioning Charges should be clearly indicated. <b>Evaluation of offers shall be on the basis of delivered cost (Net cash outflow to BHEL-Trichy).</b>	

12.	<p><b>Guarantee:</b> Vendors shall provide a guarantee for a period of 12 months from the date of commissioning of the equipment or 18 months from date of supply, whichever is earlier. The date of B/L or AWB shall be taken as the date of supply. <u>Offers from vendors not accepting the requested guarantee period will be rejected.</u></p>	
13.	<p><b>Short shipment / Warranty replacement:</b> In case of any short shipment in the main equipment / spares, customs duty levied on such supplies, shall be borne by the supplier. Any warranty replacement during the warranty period shall be on FOR-BHEL, Tiruchirappalli basis.</p>	
14.	<p><b>Inspection &amp; Testing:</b> All goods shall be subject to inspection by BHEL or its authorized representatives at supplier's works or at BHEL stores or at any other place in India indicated by BHEL as the case may be. The supplier will not charge for the facilities provided for inspection of goods. In case of machine tools, the machine would be inspected and proved at supplier's works prior to dispatch however, final inspection and acceptance of the machine will be carried after installation of the machine at BHEL, Tiruchirappalli.</p>	
15.	<p><b>Test certificates / Operating and Maintenance manuals :</b> The Bidders shall clearly mention in their offer, that Test Certificates and Operating Maintenance Manuals, etc., as called for in the Technical Specification, in the required number of copies will be provided at no extra cost</p>	
16.	<p>Payment through Bank is not preferred. In case of Payment through Bank is opted by Supplier, BHEL prefers documents submission through bank with copy of LR and door delivery of Goods to Site/Stores with Consignee copy attached. In this case Loading will be 3% on the offered value. <b>Offers of indigenous Suppliers with payment terms as LC/Advance Payment are liable for rejection.</b></p>	
17.	<p><b>BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed.</b></p>	
18.	<p><b>Reverse Auction (RA):</b> BHEL reserve the right to conduct on-line internet Reverse Auction i.e. ONLINE BIDDING (THROUGH A SERVICE PROVIDER) for finalising the tender. This decision will be communicated to the techno-commercially qualified vendors after evaluation. Details / General terms / guidelines for conduct of RA are shown below: Vendors are requested to confirm their acceptance for BHEL proceeding with RA route for finalisation of the enquiry.</p> <ol style="list-style-type: none"> <li>1. Technically and Commercially acceptable Bidders shall only be eligible to participate in the Reverse Auction.</li> <li>2. BHEL shall engage the services of a Service Provider, who shall extend all necessary training and assistance before commencement of ON-LINE-BIDDING through Internet, at NO extra-cost to the Bidders.</li> <li>3. Eligible Bidders shall be informed in writing, about the details of Service Provider, to enable Vendors to contact the Service Provider and get trained.</li> <li>4. Event Date, Time, Start Price, Bid Decrement, Time-Extensions, etc. shall also be communicated through the Service Provider for compliance by Bidders.</li> <li>5. Vendors have to FAX the Compliance Form (Annexure-IV), before start of RA. Without furnishing the above Compliance Form, Bidders shall not be eligible to participate in the RA.</li> <li>6. BHEL shall provide the calculation sheet through the Service Provider, which shall be helpful to arrive at "TOTAL COST to BHEL", like Packing and Forwarding Charges, Taxes and Duties, Freight Charges, Insurance, Service Tax and other loading factors (for non-compliance to BHEL Standard Commercial Terms and Conditions), for each of the Bidder, to enable them to fill in the price and keep it ready for inputting data during the RA.</li> <li>7. RA shall be conducted on a pre-determined Date and Time.</li> <li>8. At the end of RA, the lowest Bid Value will be known on the Network.</li> <li>9. Lowest Bidder has to FAX the Prescribed Format, duly filled in and signed in, as provided, on a case-to-case basis, to the Service Provider, within 24 Hours of RA without fail.</li> <li>10. Any variation between the ON-LINE Bid Value and the signed document will be considered as unethical the Tender process and will invite disqualification of Bidder, for further business dealings with BHEL as per the prevailing procedure.</li> <li>11. In case BHEL decides not to go for Reverse Auction procedure for this tender, the Price Bids &amp; Price Impacts, if any, already submitted &amp; available with BHEL shall be opened as per BHEL's standard practice.</li> <li>12. BHEL reserves the right to negotiate if need be, with the L-1 vendor of the RA.</li> <li>13. <u>BHEL reserves the right not to consider offers from vendors not complying with the RA process for finalisation of the enquiry.</u></li> <li>14. If the Bidder or any of his representatives are found to be involved in Price manipulation / cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines shall be initiated by BHEL and results of the RA scrapped / aborted.</li> <li>15. In case BHEL decided to go for Reverse auction, the H-1 bidder(s) (whose quote is highest in the online sealed bid) may not be allowed to participate in further Reverse Auction.</li> </ol>	
19.	<p><b>ARBITRATION:</b> All disputes or differences whatsoever which may arise at any time during execution of the Contract shall be mutually settled by BHEL and Contractor as per provision of the Contract. However, in the event such disputes cannot be settled mutually, such disputes shall be settled as per the Arbitration and reconciliation Act, 1996 of the Govt. of India and it's subsequent amendments. In case of disputes with the Central PSUs, the same shall be settled at Tiruchirappalli as per the Guidelines of the Govt. of India. However, during the period such disputes are settled either by mutual discussions between the parties or by legal means, Contractor shall continue to do the work as per terms &amp; conditions of Contract.</p>	

20.	<ul style="list-style-type: none"> <li>➤ Point to point confirmation for the Technical Specification enclosed to be provided. If there are any deviations, the same should be clearly specified. Offers received without confirmation to our specifications will be liable for rejection. If needed additional sheets shall be used.</li> <li>➤ Equipment offered shall be "New". Re-built / Re-conditioned / Used equipment's will not be accepted. Incomplete offers will not be considered for further processing Fixed price:</li> <li>➤ BHEL reserves its right to reject a tender due to unsatisfactory past performance in the execution of a contract at any of BHEL projects / units.</li> <li>➤ BHEL shall be at liberty to reject or accept any tender, part or in full, at their own discretion and any such action is not liable for any question or claim against BHEL.</li> <li>➤ 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</li> <li>➤ The Supplier shall arrange for securely protecting and packing the stores to avoid loss or damages during transit.</li> </ul>		
21.	<b>Company Details &amp; Contact</b>		
	Full Address of the company for future correspondence / placing order. (Copy of address proof & PAN card shall be attached along with Part-I)		
	Company Email ID:	Phone No.:	
	Fax No	Pan No with copy	
	CST /TIN No		
	Name of the contact person:	Mobile No.:	
	e-mail ID		
22.	<b>TO BE CONFIRMED BY VENDOR</b>		
	Country of origin:		
	Station of dispatch / Port Of Shipment		
	Delivery Terms (FOR Destination / Ex-works)		
	Packing & Forwarding Charges in % or Lump sum, if extra from basic rate		
	% of Excise Duty with cess		
	% of TAX (CST / VAT) (TNGST with FORM-17 or CST with C-FORM)		
	(If applicable only) Installation & Commissioning charge is inclusive (or) exclusive on basic rate.		
	Service Tax extra or Not		
	Freight & Transit insurance charges (if any, in Lump sum (or) percentage) from Dispatching station to BHEL Tiruchirapalli.		
23.	<b>DELIVERY SCHEDULE:</b>		
	<b>Supply Portion:</b> Delivery schedule from the date of Letter of Intent / Purchase Order. (This should be inclusive of Order acceptance, drawing approval and time period required for receiving goods at BHEL Trichy etc.)		
	Time period required for Installation / Erection & Commissioning from date of site clearance given by BHEL, Trichy.		
24.	<b>Weight &amp; Cubage of package:</b>		
	Approximate Net weight of the total consignment:		
	Approximate Gross weight of the total consignment:		
	Approximate volume of the total consignment:		
For any queries / clarifications the bidders may contact us through our FAX NO. +91 431 2520719 or through e-mail <peterri@bheltry.co.in>			

**NOTE:-**

- a) Your specific acceptances to our Payment terms, LD, Risk Purchase Clause are essential for consideration of your offer. Otherwise your offer is liable for rejection.
- b) No row shall be left blank. Please indicate NA, in case the item is "Not Applicable"

**Declaration:-**

We have gone through and understood the 'General guidelines & instructions to bidders for submitting offer' enclosed as a part of the Tender and confirm that our offer has been made in line with the same.

Signature with date:

Name:

Designation:

Department:

(Please Affix Your Signature with Seal on Each Page)

(AFFIX OFFICIAL SEAL HERE)

**Annexure-B**

**Bharat Heavy Electricals Limited TIRUCHIRAPPALLI/CAPITAL PURCHASE**

**MODEL PRICE BID FORMAT FOR INDIAN BIDDERS**

Enquiry No. & Date:

Bidder's Offer No. & Date:

Sl. No.	Description of item	Unit (Set / No.)	QTY	Basic Rate / Qty. in Rs. (excluding all Taxes)	ED in %	VAT / CST in % (TNGST with FORM-17 or CST with C-Form)	Service Tax in %	Total Value in Rs. (Including all taxes & duties)
10	Supply Portion							
20	Installation & Commissioning Charges for Sl. No: 10 (if available in tender scope & exclusive from basic rate for supply portion)							
	Packing & Forwarding charges (if any) in percentage (or) Lump sum							
	FOR Dispatching station value in Rs.							
	Percentage of Freight & transit insurance charges, if any (Lump sum or %) Freight & Insurance charges from Dispatching station to BHEL, Tiruchirapalli							
	Approximate Net weight of the total consignment							
	Approximate Gross weight of the total consignment							
	Approximate Dimensions of the Consignment							

Signature & Seal of Vendor

The price bid should be submitted only as per the above format. No row shall be left blank. Please indicate NA, in case the item is "Not Applicable".

**Bharat Heavy Electricals Limited TIRUCHIRAPPALLI/CAPITAL PURCHASE**

**CERTIFICATE BY CHARTERED ACCOUNTANT**

This is to Certify that M/s. ....  
hereinafter referred to as 'company') having its registered office at  
..... is registered under MSMED Act 2006,  
Entrepreneur Memorandum No (Part - II) .....  
dtd:.....,  
Category :.....( Micro / Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company  
as on date ..... as per MSMED Act 2006 is as follows:

1. For Manufacturing Enterprises: Investment in plant and machinery (i.e.  
original cost excluding land and building and the items specified by the  
Ministry of Small Scale Industries vide its notification No.5.0.1722(E) dated  
October 5, 2006:

Rs.....Lacs

2. For Service Enterprises: Investment in equipment (original cost excluding  
land and building and furniture, fittings and other items not directly related  
to the service rendered or as may be notified under the MSMED Act, 2006:

Rs.....Lacs

The above investment of Rs..... Lacs is within permissible limit of  
Rs.....Lacs for Micro / Small (Strike off which is not applicable) Category under  
MSMED Act 2006.

Date:

(Signature)

Name -

Membership Number -

Seal of Chartered Accountant