



Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

MATERIALS MANAGEMENT / CAPITAL EQUIPMENT

An ISO 9001
Company

ENQUIRY

NOTICE INVITING TENDER

Phone: +91 431 257 76 53

Fax : +91 431 252 00 31

Email : skaruna@bheltry.co.in

Web : www.bhel.com

TWO PART BID

Enquiry Number:
2851400028

Enquiry Date:
25.03.2014

Due date for submission of
quotation: 25.04.2014

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

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

S. No	Description	Qty
10	Shot Blasting Station as per the Technical Specification, General Guidelines Instructions & Compliance Form for Commercial Conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	01 No.

Important points to be taken care during submission of offer:-

1. Compliance Form No. IND 06 as applicable to the vendor to be filled in and enclosed along with the offer failing which, their offer will not be considered for evaluation.
2. EMD for this Tender will be Rs.100,000/-.
3. All updates, amendments, corrigenda, etc., (if any), for each tender will be posted only on the above websites from time to time, as and when required, until each tender is opened. There will be no publication of such updates, amendments, corrigenda, etc., through newspapers or any other media.

All updates, amendments, corrigenda etc (if any) will be posted only on the above websites from time to time, as and when required, until tender is opened. There will be no publication of such updates, amendments corrigenda etc. Through newspapers or any other media. BHEL commercial terms & conditions with Price Bid and Bank Guarantee formats can be downloaded from BHEL web site <http://www.bhel.com> or from the Government tender website <http://tenders.gov.in> (public sector units) Bharat Heavy Electricals Limited page) under Enquiry reference above .

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

Engineer / MM / Capital Equipment

PART A

SHOT BLASTING STATION

SECTION – I : QUALIFYING CRITERIA

The BIDDER has to compulsorily meet the following requirements to get qualified for considering the technical offer :

S. No.	REQUIREMENTS	VENDOR'S RESPONSE
1	<p>Only those vendors (OEMs), who have supplied and commissioned at least ONE PNEUMATIC SHOT BLASTING STATION WITH SHOT BLASTING CHAMBER, ABRASIVE RECLAMATION AND ABRASIVE RECYCLING SYSTEM OF</p> <p>1.0 SIZE Length : 15000mm Width : 8000 mm Height : 8500mm Job weight min. 25 tons</p> <p>2.0 To blast the surfaces at height, a full length platform with ladder and railing shall be provided at the height of 2.0-3.0M on both the sides of the wall for the movement of the operator.</p> <p>3.0 With Rubberised Roll-Up Door</p> <p>4.0 Shot Blast Apparatus: (2 Nos.) Shot holding capacity above 750 kgs</p> <p>5.0 Motorised trolley:</p> <p>6.0 Dust collection chamber with cartridge type filters, timer, solenoid/diaphragm valves and all features</p> <p>7.0 Filtering capacity: Dust clean up to 50 microns</p> <p>8.0 Efficiency of filters: 99.97% for 10 Microns & above</p> <p>9.0 The surface finish is SA 2 ½ as per Swedish Standards.</p> <p>in the past ten years (from the date of opening of Tender) and such station is presently working satisfactorily for more than one year after commissioning (from the date of opening of Tender) should quote.</p>	

The vendor should submit following information where similar machine has been supplied for qualification of their offer.		
1.1	Name and postal address of the customer or company where similar shot blasting station is installed as per clause no. 1.	
1.2	Name and designation of the contact person of the customer.	
1.3	Phone, FAX no and email address of the contact person of the customer.	
1.4	Month and Year of commissioning of the shot blasting station.	
1.5	Application for which the shot blasting station is supplied	
1.6	Performance certificate from the customer regarding satisfactory performance of shot blasting station supplied to them. Also, vendor shall arrange a copy of performance certificate directly from customer to BHEL for its authenticity.	
1.7	In case Part-A is incomplete, BHEL will not entertain the technical offer.	
1.8	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.	
2.0	DELIVERY - The bidder shall quote the best possible delivery as per the commercial terms given separately. <u>The delivery period shall be reckoned from date of purchase order to completion of erection work at BHEL works.</u>	

SECTION – I I

The BIDDER / VENDOR is requested to provide the following information:

S. No.	REQUIREMENTS	VENDOR's RESPONSE
3.0	The BIDDER/VENDOR to furnish Reference List of Customers, with full address, details of contact person, where PNEUMATIC SHOT BLASTING STATIONS have been supplied in the past as per clause no. 1.	
4.0	Details of PNEUMATIC SHOT BLASTING STATIONS supplied to other BHEL units, if any. (Year of commissioning, size of blasting room etc.)	
5.0	Details on SERVICE-AFTER-SALES Set-Up in India including the Address of Agents / Service Centers in Central India.	
6.0	Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

SECTION – III

The BIDDER to note:

S. No.	PARTICULARS	VENDOR'S RESPONSE
7.0	The BIDDER / VENDOR shall submit the offer in TWO PARTS. 1. Technical Offer [with PART A & PART B] & commercial offer 2. Price Bid.	
8.0	The Technical Offer shall contain a comparative statement of Technical Specifications demanded by BHEL and Offer Details submitted by the Bidder , against each clause. A just 'CONFIRMED' or 'COMPLIED' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement may lead to disqualification of the Technical Offer.	
9.0	The Technical Offer shall be supported by product Catalogues & Data Sheets and also technical details of Bought-Out-Items with copies of Product Catalogue to the extent possible.	
10.0	The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation.	
11.0	For obtaining the performance certificate from the customer, a suggestive format is provided in SECTION – IV	

SECTION – IV

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

PERFORMANCE CERTIFICATE

DETAILS OF SUPPLIED MACHINE		CUSTOMERS REMARK
1. Supplier of the machine		
2. Make & Model of the M/C		
3. Month & Year of Commissioning		
4. Application for which M/C is used		
5	<p>ONE PNEUMATIC SHOT BLASTING STATION WITH SHOT BLASTING CHAMBER, ABRASIVE RECLAMATION AND ABRASIVE RECYCLING SYSTEM OF</p> <p>1.0 SIZE Length : 15000mm Width : 8000 mm Height : 8500mm Job weight min. 25 tons and</p> <p>2.0 To blast the surfaces at height, a full length platform with ladder and railing shall be provided at the height of 3.0M on both the sides of the wall for the movement of the operator.</p> <p>3.0 Rubberised Roll-Up Door</p> <p>4.0 Shot Blast Apparatus: (2 Nos.) Shot holding capacity above 750 kgs</p> <p>5.0 Motorised trolley:</p> <p>6.0 Dust collection chamber with cartridge type filters, timer, solenoid/diaphragm valves and all features</p> <p>7.0 Filtering capacity: Dust clean up to 50 microns</p> <p>8.0 Efficiency of filters: 99.97% for 10 Microns & above</p> <p>9.0 The surface finish is SA 2 ½ as per Swedish Standards.</p>	
6. Performance of the shot blasting station (Strike off whichever is not applicable)		Satisfactory / Good / Average / Not Satisfactory
7. Any Other remarks		
Date:		Signature & Seal of the Authority Issuing the Performance Certificate

PART B**TECHNICAL SPECIFICATION FOR SHOT BLASTING STATION**

S.No	TECHNICAL SPECIFICATION	Vendor to confirm	VENDOR'S OFFER / COMMENTS
1.0	Purpose The proposed compressed air operated Shot blasting system is used for cleaning the surface of steel plates & fabricated components. The surface cleaning of these components would be to remove: 1. Scales due to process of hot forming 2. Scales due to heat treatment, particularly scales formed due to heat treatment of fabricated components. 3. Rust preventive coatings & paint	Vendor to confirm	
		Vendor to confirm	
		Vendor to confirm	
		Vendor to confirm	
		Vendor to confirm	
		Vendor to confirm	
		Vendor to confirm	
		Vendor to confirm	
2.0	Component details The surface finish required is SA 2 1/2 as per Swedish Standards.	Vendor to confirm	
2.1	Component materials specification : A) CARBON STEEL: SA 516Gr 60/70, IS 2062 B) ALLOY STEEL: Fabricated items.	Vendor to confirm	
2.2	Fabricated components: Max. job size Width of Job 5500mm Height 5500 mm Long: 10,800 mm loaded on low height trolley Weight: 25 ton approx..	Vendor to confirm	
3.0	BLASTING CHAMBER	Vendor to explain the construction of the blast chamber through drawings and write up	
3.1	Inside dimensions of blast chamber size shall be: Length : 15000mm Width : 8000 mm Height : 8500mm To blast the surfaces at height, a full length platform with ladder and railing shall be provided at the height of 3.0 M on both the sides of the wall for the movement of the operator.	Vendor to confirm	

3.2	Blast chamber shall have entry/exit for the job on one side only	Vendor to confirm	
3.3	The chamber shall be constructed from min. 2.5mm thick mild steel sheets having adequate reinforced. The shot -blasting chamber shall be provided with perforated plate (6 mm thick MS) on top of Longitudinal screw conveyor	Vendor to confirm	
3.4	The bottom hopper shall be constructed from mild steel (5 mm thick) having reinforced.	Vendor to confirm	
3.5	The interior of sidewalls and rear wall of the chamber shall be protected with 3 mm thick replaceable hanging abrasive resistant rubber having 40-50 Duro shore hardness. 25% of rubber sheets required in the blast chamber shall be supplied as compulsory spares.	Vendor to confirm	
3.6	ABRASIVE RECYCLING SYSTEM: The equipment shall consist of mild steel constructed shot blast chamber with required reinforcement with abrasive reclaiming & recycling system including section steel base frame, 3 No's Bottom hopper, 3No's. 6" diameter longitudinal screw conveyors & 1 No. 6" diameter cross screw conveyor, 2 number 7" x 21½" bucket elevator with, 2 Nos 18" Gravity separator with superstructure.	Vendor to explain in detail with drawing and write up and confirm	
3.7	Operation: The operator will have to go inside the blast chamber for carrying out blasting operation, the man door / inspection door shall be provided for this purpose. An alarm device operative from 2 points inside the chamber is to be installed to allow the operator to signal to persons outside the chamber if he is in difficulty. In emergency, the alarm switch should close down the plant entirely except for lighting. The alarm shall continue to sound until reset button is operated and it should not be possible to restart the plant until this has been carried out.	Vendor to explain in detail and confirm	
3.8	FRESH AIR INLET: The shot-blasting chamber shall be provided with fresh air inlets, suggested quantity 35 nos. for the chamber.	Vendor to confirm	
3.9	ILLUMINATION OF PLANT 25 No's of metal halide light (150 watts). Fixture shall be provided in each room for illumination. Each light unit is being fitted with a plug and socket to facilitate easy removal of the complete fitting for cleaning and maintenance. The pit portion shall be illuminated by 10 No's of tube lights. A suitable electrical switchboard with switches for lamps/lights shall be provided.	Vendor to confirm and show the layout	
3.10	RUBBERIZED ROLL-UP DOOR:- 1 No. Rubberized roll up door with suitable reinforced & interlock.	Vendor to explain with drawing and write up in	

	<p>The rubber roll-up door at the entry side of the cabinet shall be fabricated of section of 6 mm thick rubber sheeting spliced with rubber belt connecting strip and fastened together with flush mounted belt fasteners rubber door stiffeners shall be connected to the door .The door shall roll up onto the roll up drum mounted on stub shaft .The stub shafts shall rotate in anti-friction type bearings. The door shall be raised and lowered by 5 HP reversing motor with solenoid break and V-belt drives to gear reducer. The drive shall be transmitted from the gear reducer by chain and sprockets to drum shafts. 4 Nos vision window of 200 mm x 200 mm size, with wire mesh protected 6 mm thick glass. One man door shall also be provided on side of blast room of sizes 1000 mm wide X 2000 mm height.</p>	<p>detail and confirm.</p>	
4.0	<p>Job Loading: The job shall be loaded outside the room on the motorized trolley and trolley shall go inside of the room with job. The blasting shall be done manually: 2Nos. using pressure blast apparatus with 1 No. 5/16" (8 mm) diameter CTB nozzle each. After blasting operation completed, the job shall be unloaded outside the room. Pressure blast unit shall have manifold arrangement with provision of fitting 1 number mixing tube each.</p>		
5.0	<p>ABRASIVE RECLAIM SYSTEM:</p>		
5.1	<p>The automatic abrasive reclaiming system shall consist of heavy duty mild steel bar grating on floor, 3 numbers hoppers fabricated from mild steel sheets with stiffener which would be supported on section steel base frame, 3 numbers longitudinal screw conveyors and 1 number cross screw conveyor that will feed the abrasive to the boot section of the elevators.</p>	<p>Vendor to explain with drawing and write up in detail and confirm</p>	
5.2	<p>Space shall be provided for the movement of inspection personnel at both sides of the vertical conveyor. Stairs shall be provided from floor level to underground floor.</p> <p>BOTTOM SCREW CONVEYOR: (6" DIA SCREW CONVEYOR.) Longitudinal conveyors shall be provided to transfer the spent abrasive to cross screw conveyor to transfer the boot section of the elevator. The screw conveyor trough shall be fabricated from mild steel plates with end adaptor plates for fitting of bearing. The helicoids screw flights of mild steel plates shall be built up on steel pipe. The longitudinal screw conveyor shall be protected with mild steel perforated plates. The inspection covers shall be provided on bottom hoppers to remove any broken parts and maintenance. Suggested sizes are as under:</p>	<p>Vendor to explain with drawing and write up in detail and confirm</p>	

	<p>Longitudinal screw conveyor – 150mm dia. x 13250 mm long x 3 Nos. each & driven by 2 HP Geared motor (For each Screw)</p> <p>Pipe size - Nominal bore 50mm</p> <p>Flight Thickness - 5 millimeters thick mild steel plate</p> <p>Cross screw conveyor – 150mm diameter x 11325 mm long x 1No. driven by 2 HP Geared motor</p> <p>Pipe size - Nominal bore 50mm</p> <p>Flight Thickness - 5 millimeters thick mild steel plates</p>		
5.3	<p>BUCKET ELEVATOR (suggested size 175mm X 545mm) (2 Nos.)</p> <p>The elevator transfers (lifts) media from one level to another and in general from a lower level reclaim hoppers area to an overhead separator system. The elevator shall be belt conveyor with MS bucket type lift with centrifugal discharge. It shall include a ventilated steel casing, which houses the upper and lower belt pulleys and their connecting vertical lift belt assembly. The belt assembly shall consist of lifting buckets uniformly spaced and fastened on a heavy duty, multiply fabricated rubber belt. Belt tensioning shall be done manually through a take-up bolt.</p> <p>Number of unit : Two (2)</p> <p>Size & capacity : 175mm x 545mm fabricated from mild steel</p> <p>Overall height : 5500 millimeter (Approx.)</p> <p>Motor : 2 HP Geared motor</p>	Vendor to explain with drawing and write up in detail and confirm	
5.4	<p>18" GRAVITY SEPARATOR (2 Nos.):</p> <p>The elevator shall deliver the abrasives from the head spout, which is distributed across the full width of the 18" wide separator. The ventilation air pulls out the useless fines to the refuse side of the separator. The usable air-washed abrasive drops into the integral storage hopper, located below the separator, from where it is feed to the shot blast apparatus unit by separator under valve control.</p>	Vendor to explain with drawing and write up in detail and confirm	
6.0	SAFETY DEVICES:		
6.1	The man door shall be equipped with a switch, which shall automatically shuts-off the compressed air supplies to pressure blast unit if by accident; the door remains open during the blasting operation. The switch shall also prevent starting the pressure blast unit unless the door is turned into a fully closed position.	Vendor to explain with write up in detail and confirm	
6.2	<p>SAFETY DRESS (shall comprising of):</p> <p>1. Air fed helmet: 10 No.</p> <p>2. Helmet hose : 10 meter; 10 nos.</p>	Vendor to explain with specifications in detail and confirm	

	<ol style="list-style-type: none"> 3. Helmet air conditioner: 8 Nos. 4. Helmet Air breather: 8 Nos. 5. Gum boot : 10 Pair 6. Hand gloves : 10 Pair 7. Operator's suit : 10 set 		
6.3	<p>SHOT CONTROLLER: When the level of the abrasive in the pressure blast unit storage hopper drops below a predetermined level, the electrical capacitance probe shall energizes the solenoid and opens the shut-off valve at the bottom of the clean shot storage hopper. This valve shall allow abrasive to enter the recycling system of the machine. Once the level of abrasive in the pressure blast unit storage hopper returns to the required level, the current is broken within the Level-tek control and the solenoid closes shall shut-off valve at the bottom of the clean shot storage hopper.</p>	Vendor to explain with write up in detail and confirm	
7.0	<p>SHOT BLAST APPARATUS: (2 Nos.) Shot blast unit shall operate by dry compressed air at pressure 80 psi. The apparatus shall be in the form of a pressure vessel consisting of two dished ends welded together to give maximum abrasive capacity with minimum space. A lightweight mushroom valve shall be incorporated in the top portion of the apparatus which shall be operated by air from the main air system. The valve shall seats onto a replaceable rubber ring and shall be so balanced that extremely low pressure can be obtained. The design of mixing tube fitted shall provide external adjustment of air and abrasive mix without interruption of operation. The control of the blast operation shall be through a pneumatic "DEAD MAN'S HANDLE" incorporating a small air valve operated by thumb lever, allowing ease of operation. The handle cuts off the flow of abrasive automatically when released. The apparatus shall be complete with necessary accessories like 5/16" (8 mm) diameter carbon tetra boride (CTB) 1 no. nozzle, control valve for air/abrasive ratio, non-return valve, air pressure reducing valve etc. and also 1-1/4" diameter high pressure abrasive resistant antistatic blast hose of ample length sufficient to cover full blasting area at one side, nozzle assembly, pressure gauge etc. shall be provided. The moisture separator shall be provided to keep abrasive dry and free from</p>	Vendor to explain with drawing and write up in detail and confirm	

	<p>moisture. The pressure tank storing the abrasive shall be tested hydraulically for 250 psi and of welded construction.</p> <p>25 nos. of nozzle and 10 nos. shot blasting pipe shall be supplied as necessary spares.</p>		
7.1	<p>Shot blast apparatus</p> <p>2 number pressure blast apparatus shall be provided with a complete pneumatic piping, airline equipments, safety valve, drain separator etc.</p> <ol style="list-style-type: none"> Model : Vendor to specify Abrasive holding capacity: min. 800 kgs. Abrasive shot delivered: 80 psi pressure and delivery of abrasive 18-20 kg/min Suggested tank overall size : 600 mm diameter x 2360mm height Operating air pressure: 80 psi Test pressure: 250 psi Pipe size: 1-1/4" diameter Air required: 134 CFM per nozzle. Total air requirement : 268 CFM Nozzle size: 8mm diameter CTB – 1 Number. Abrasive resistant hose : 1-1/4 " diameter X 20M long, hose–working with “DEADMAN’S HANDLE” at pressure 7 Kg/cm², proof pressure 17.5 Kg/cm², bursting pressure 35 Kg/cm², temperature range from - 40⁰ F to + 158⁰ F, quantity 1 number per nozzle L. Major components: Boiler quality plate tank, tank-filling valves, diaphragm control valve mixing chamber, water separator & trap, inspection covers 	Vendor to confirm and provide details of every point	
8.0	<p>MOTORIZED TROLLEY (1 No.):</p> <p>Trolley shall be provided for carrying out loading & unloading jobs to and from blast room.</p> <ol style="list-style-type: none"> Motorized Trolley Size : 5000(L) x 2500(W) x 500 (H) (mm) (approx.-) Capacity : 25 Tons Speed : 4 M/min Qty : 1 No. Drive Arrangement : Fully Motorized Motor HP : 10 HP (1 No.) BS-90 Rail : Scope of supply shall be 25 meter 1 set Cable reeling Drum : suitable for 25 meter length 	Vendor to confirm and provide details of every point	

9.0	DUST COLLECTION SYSTEM:	Vendor to confirm and provide full details against each clause	
9.1	<p>CARTRIDGE TYPE DUST COLLECTOR (1 No.)</p> <p>CONSTRUCTION</p> <p>Housing Features:</p> <ol style="list-style-type: none"> 1. 1/4" HRS tube sheet 2. Spun aluminum venture assemblies 3. 1-1/2" Diaphragm valves with pilot solenoids 4. 6" dia pulse air header 5. Pulse air manifold pipe assemblies 6. Flanged outlet. 7. Dust clean up to 50 microns. <p>HOPPER FEATURES</p> <ol style="list-style-type: none"> 1. One pyramidal hopper 2. One flanged dust discharge opening 3. One flanged inlets with perforated inlet baffle plate to distribute and reduce dust loading to cartridges. <p>LOCKING MECHANISM</p> <p>Cartridge locking mechanism to seal filter elements at tube sheet. Simple replacement of cartridges shall not require tools and shall be performed without entry to the collector.</p>		
9.2	<p>FILTER ELEMENTS:</p> <p>Suggested size 325 mm diameter, 1016 mm long multi pleated spun bonded filters, for optimum efficiency, cake release and moisture resistant. Designed for continuous operation</p> <ol style="list-style-type: none"> 1. Capacity : 32500 CFM 2. Model : 3. Efficiency: 99.97% for 10 Microns & above. <p>Construction:</p> <ol style="list-style-type: none"> 1. Cartridge House & Hopper: 3mm MS welded and duly stiffened with MS. Sections. 	Vendor to confirm, specify and explain in detail	

	<p>2. Tube Sheet: 5mm thick MS.</p> <p>Filter Cartridge:</p> <ol style="list-style-type: none"> 1. Size: 325 mm dia. X 1016 mm long. 2. Quantity: 64 Nos. 3. Filter Area: 11000 ft². 4. Material: Spun bonded polyester. 5. Fabric make: Reputed indigenous. 6. Cartridge removal: From roof (clean air side) 7. Type of Cartridge cleaning: Pulse Jet Cleaning initiated by timer. 8. Air to cloth ratio : 2.96:1 ft³/min/ft 		
9.3	<p>Timer:</p> <ol style="list-style-type: none"> 1. Type : 10 position solid state Electronic Sequential 2. Quantity: 1 No. 3. Make : Maniks (suggested) 	Vendor to confirm, specify and explain in detail	
9.4	<p>Solenoid / Diaphragm Valves:</p> <ol style="list-style-type: none"> 1. Type & Make : Combined solenoid operated Pulse valves (1-1/2") of Indigenous reputed make like -Avcon / Schrader / Equivalent) 2. Quantity: 16 Nos. 3. Compressed Air requirement : 34 M³/Hr at 6.5 kg/cm² Oil & Moisture free compressed air req.) <p>Compressor capacity : 43 M³/Hr at 6.5 kg./cm²</p>	Vendor to confirm, specify and explain in detail	
9.5	<p>Venturi:</p> <ol style="list-style-type: none"> 1. Material : Aluminum 2. Quantity: 64 Nos. 3. Opening : 228.6 x 228.6 <p>The Cartridge Filter shall consist of Inlet and Outlet Flanges, compressed air manifold and supporting structures.</p>	Vendor to confirm, specify and explain in detail	
10.0	<p>BRIEF DESCRIPTION OF EXHAUST FAN</p> <ol style="list-style-type: none"> 1. Model : Indabrador, NADI, C-Doctor 2. Capacity : 32500 CFM. 3. Drive : V-belt 4. Qty. : 1 No. 5. Static Pressure : 10" Water Gauge 6. Suggested Motor power : 100 HP 	Vendor to confirm and specify	
11.0	AIR COMPRESSOR	Vendor to confirm and	

	<ol style="list-style-type: none"> 1. Qty. 1 No. 2. Make: Atlas Copco/ Elgi/ IR 3. Type: Screw type Air cooled 4. Capacity: FAD 345 CFM at 80 psi 5. Motor: 75 HP (Approx.) 6. Receiver tank capacity: 1 M³ 	specify	
12.0	<p>AIR DRYER</p> <p>Refrigerant type Air dryer shall be provided for drying of compressed air supply.</p> <ol style="list-style-type: none"> 1. Qty.: 1 No 2. Make: Compressor OEMs or ELGI, GEM 3. Capacity: 345 CFM 4. Type: Refrigerated air 5. Working pressure: 7 kg/cm² 	Vendor to confirm and specify	
13.0	<p>FIRST FILL OF ABRASIVE</p> <p>First fill of blasting media and quantity required for blast cleaning of the blasting media i.e. steel shots sizes S-230, S-280 & S-330 in equal proportion offered shall be 3 MT. 10 Tons as necessary spares</p>	Vendor to confirm and specify	
14.0	<p>FIRST FILL OF CONSUMABLE</p> <p>First fill and two additional fills of consumables like lubricating oils, greases, hydraulic oil etc. The quantity supplied for first fill & additional fills of lubricants shall be Lithium base grease, Bharat MP-2 & 3, 10 kgs. each, Oil Bharat Hydrol 29-20 ltr.</p>	Vendor to confirm and specify	
15.0	<p>LEVELLING & ANCHORING SYSTEM</p> <p>Complete anchoring system including foundation bolts, anchoring materials fixtures, leveling shoes, etc should be supplied.</p>	Vendor to confirm and specify	
16.0	<p>INTERCONNECTING DUCTING:</p> <p>Interconnecting ducting fabricated from 2.5 mm thick steel sheets is provided between machine and dust collector considering the distance between them to be a maximum of 10 Meter.</p>	Vendor to confirm and specify	
17.0	<p>EXHAUST DUST:</p> <p>Exhaust duct fabricated out of 6 mm thick mild steel sheets shall be provided from outlet of exhaust fan for a total height of 15 mtr. The exhaust duct is complete with platforms, ladders, railings, guy rope, aviation lamp & lightning arrester with earthing strip.</p>	Vendor to confirm and specify	

18.0	<p>ELECTRICAL INSTALLATION: The following TEFC squirrel cage induction motors with controls suitable to operate on 415 ± 10 % volts, 3 phases no neutral, 50± 3 % Hz shall be provided by BHEL at one point near the machine, as per layout recommended by the Vendor..</p>	Vendor to confirm and specify																																					
18.1	<p>Suggested load is given as under:</p> <table border="1" data-bbox="898 371 1206 1048"> <thead> <tr> <th>Description`</th> <th>HP</th> <th>Qty</th> <th>Total HP</th> </tr> </thead> <tbody> <tr> <td>Bucket elevator</td> <td>02</td> <td>1</td> <td>4</td> </tr> <tr> <td>Longitudinal screw conveyor</td> <td>03</td> <td>2</td> <td>6</td> </tr> <tr> <td>Cross screw conveyor</td> <td>02</td> <td>1</td> <td>2</td> </tr> <tr> <td>Exhaust fan</td> <td>100</td> <td>1</td> <td>100</td> </tr> <tr> <td>Motorised trolley</td> <td>10</td> <td>1</td> <td>10</td> </tr> <tr> <td>Roll up door</td> <td>05</td> <td>1</td> <td>5</td> </tr> <tr> <td>Air compressor</td> <td>75</td> <td>1</td> <td>75</td> </tr> <tr> <td>Total</td> <td></td> <td></td> <td>202</td> </tr> </tbody> </table>	Description`	HP	Qty	Total HP	Bucket elevator	02	1	4	Longitudinal screw conveyor	03	2	6	Cross screw conveyor	02	1	2	Exhaust fan	100	1	100	Motorised trolley	10	1	10	Roll up door	05	1	5	Air compressor	75	1	75	Total			202	Vendor to confirm and provide details of load	
Description`	HP	Qty	Total HP																																				
Bucket elevator	02	1	4																																				
Longitudinal screw conveyor	03	2	6																																				
Cross screw conveyor	02	1	2																																				
Exhaust fan	100	1	100																																				
Motorised trolley	10	1	10																																				
Roll up door	05	1	5																																				
Air compressor	75	1	75																																				
Total			202																																				
18.2	<p>Tropicalization: All electrical / electronic equipment shall be tropicalized.</p>	Vendor to confirm																																					
18.3	<p>All electrical/electronic control cabinets & panels shall be dust & vermin proof and shall have IP 54 protection.</p>	Vendor to confirm																																					
18.4	<p>a. All electrical and electronic panels including operator's panel should be provided with fluorescent lamps for sufficient illumination and power receptacles of 220 Volts, 5/15 Amp. AC. b. All adapters /receptacles should have compatibility with Indian equivalents.</p>	Vendor to confirm																																					
18.5	<p>Control circuit voltage shall be 24 V DC</p>	Vendor to confirm																																					
18.6	<p>Motors shall be energy efficient and shall be any of the following make: M/S Siemens/Crompton Greaves/KEC/ABB or equivalent makes conforming to IEC standards.</p>	Vendor to confirm																																					
18.7	<p>Wiring: All electricians shall be wired using PVC sheathed cable running in conduits to common terminal block</p>	Vendor to confirm																																					
18.8	<p>External wiring from/to exhaust fan etc. shall be by means of armored multi-core copper cables. All current carrying conductors shall be of copper.</p>	Vendor to confirm																																					

18.9	Vendor shall ensure proper earthing	Vendor to confirm	
19	PNEUMATIC CIRCUITS:		
19.1	All pneumatic components including cylinders shall be of FESTO or any other make acceptable to BHEL.	Vendor to confirm & provide the makes of pneumatic elements	
19.2	BHEL will terminate the shop compressed air supply at the hand wheel valve to be provided by the supplier. The compressed air will be at a pressure of 5 bars only. All pneumatic systems on the machine, dust collector etc. shall be designed to operate efficiently at this air pressure.	Vendor to confirm	
20.0	SPARES		
20.1	Vendor shall list the set of recommended operating spares for the blasting plant	Vendor to furnish list	
21	PRE DISPATCH INSPECTION AT VENDOR'S WORKS - Since the Shot Blasting Station cannot be inspected in the assembled condition, 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 to BHEL Engineers, at supplier's works, prior to dispatch.	Vendor to confirm	
22.0	Documentation		
22.1	The following documents shall be supplied along with the offer : a. GA drawing of the shot blasting unit b. Catalogue of the pneumatic abrasive blaster c. Makes of bought-outs d. Catalogues of the filter e. Catalogue of the exhaust fan	Vendor to confirm	
22.2	5 sets of the following shall be supplied along with the machine: a. Operating manual for the portable pneumatic abrasive blaster b. Operating instructions of the dust extraction system c. Maintenance manual of all the systems offered	Vendor to confirm	
22.3	Civil works for the equipment - Vendor shall submit the preliminary layout drawing for getting BHEL's approval within one month from the date of PO.	Vendor to confirm	

	Vendor shall submit complete foundation details including static and dynamic loads within three months after getting BHEL's approval. The layout should consist of all requirements pertaining to complete equipment including space requirement for any other accessories. BHEL shall construct complete foundation for the equipment.		
23	ERECTION & COMMISSIONING:		
23.1	<p>a. Vendor to take full responsibility for the erection & commissioning including workmen, material handling and testing of the machine.</p> <p>b. Service requirement like power, air & water shall be provided by BHEL at only one point to be indicated by Vendor in their foundation/layout drawings.</p> <p>c. Crane, lifting tackles to be arranged by vendor if BHEL is unable to provide these facilities.</p> <p>d. Welding sets, gas required for cutting shall be arranged by vendor.</p>		
23.2	The Vendor should bring tools, Tackles, instruments and other necessary equipments that are required to carry out all the above activities-	Vendor to confirm	
23.3	The supplier shall arrange commissioning spares required for commissioning of the machine	Vendor to confirm	
23.4	Schedule of Erection and Commissioning shall be submitted with offer.	Vendor to confirm	
23.5	Duration, terms & conditions for E&C shall be furnished with this technical offer in detail. Charges for the same shall be submitted with the price bid.	Vendor to confirm	
24	LEVELLING & ANCHORING SYSTEM		
24.1	Complete anchoring system including foundation bolts, anchoring materials, fixators, levelling shoes. etc shall be supplied.	Vendor to confirm	
25	PERFORMANCE PROVE-OUT:		
25.1	The trouble free operation of all the systems forming part of the total blasting station shall be demonstrated successfully after the commissioning activity.	Vendor to confirm	
25.2	The supplier shall carry out the performance prove-out of five jobs with the BHEL supplied components after commissioning of the shot blasting equipment to the specified surface finish.	Vendor to confirm	

26.0	TRAINING The supplier has to impart comprehensive training to BHEL Staff - on the Operation, Trouble shooting and Maintenance of the Shot Blasting Station - for a minimum period of 5 Working Days after the successful completion of the commissioning and performance prove-out of the shot blasting station.	Vendor to confirm	
27.0	PERFORMANCE GUARANTEE Performance Guarantee for a minimum period of 24 months from the date of commissioning at BHEL.	Vendor to confirm	
28.0	GENERAL POINTS:		
28.1	Total Connected Load (in kVA)	Vendor to Indicate	
28.2	Floor area required (Length, Width, Height) for complete equipment & accessories	Vendor to Indicate	
28.3	Painting of Equipment / Electrical Panels using RAL 6011 Resada Green Colour paint	Vendor to confirm	
28.4	Layout drawing of the equipment to be submitted to BHEL for approval within one month of placement of purchase order.	Vendor to confirm	