



An ISO 9001  
Company

**Bharat Heavy Electricals Limited**  
(High Pressure Boiler Plant)  
Tiruchirappalli – 620014, TAMIL NADU, INDIA  
CAPITAL PURCHASE / MATERIALS MANAGEMENT / MANUFACTURING

|                |                                                                                                                                                                                             |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ENQUIRY</b> | Phone: +91 431 257 75 75<br>Fax : +91 431 252 07 19<br>Email : <a href="mailto:rrmanohar@bheltry.co.in">rrmanohar@bheltry.co.in</a><br>Web : <a href="http://www.bhel.com">www.bhel.com</a> |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|  |                        |                      |                                              |
|--|------------------------|----------------------|----------------------------------------------|
|  | <b>Enquiry Number:</b> | <b>Enquiry Date:</b> | <b>Due date for submission of quotation:</b> |
|  | <b>2620700014</b>      | <b>04.06.2007</b>    | <b>17.08.2007</b>                            |

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

| Item | Description                                                                                                                                                                      | Quantity | Delivery Schedule |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|
| 10   | Water Jet Cutting Machine as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> ) | 1 No.    | 15.01.2008        |

**Note:**

- (1) Confirmation of acceptance for BHEL commercial terms & conditions and Price Bid formats have been posted in BHEL Corporate web site [www.bhel.com](http://www.bhel.com) under Enquiry reference “2620700014”. Your offer should be based on all the above documents.
- (2) Also, you are requested to fill in the Supplier Registration formats available in [www.bhel.com](http://www.bhel.com) (under Advancement – Supplier Registration) and send it along with your offer.

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

### **QUALIFYING CRITERIA FOR THE SUPPLY OF CNC ABRASIVE WATERJET CUTTING MACHINE.**

#### **SECTION – I**

The BIDDER / VENDOR has to compulsorily meet the following requirements to get Qualified for submitting an offer for **CNC Abrasive Water Jet cutting Machine**

| <b>S. No.</b> | <b>REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Vendor's RESPONSE</b> |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 1             | The BIDDER shall have a minimum of THREE Years of Continuous Experience in the field of Design, manufacture and supply of CNC Abrasive Water Jet cutting Machine.                                                                                                                                                                                                                                                                                                                                                                                                              |                          |
| 2             | Only those vendors, who have supplied, and commissioned at least one CNC Abrasive Water Jet cutting Machine for similar applications in the past five years (on the date of opening of Tender) and such machine is presently working satisfactorily for more than one year after commissioning (on the date of opening of Tender), should quote. However, if such machine (s) has/ had been supplied to BHEL, then such machine should be presently working satisfactorily for more than six months after its commissioning and acceptance (on the date of opening of Tender). |                          |
| 2.1           | The vendor should submit the following information where similar machines have been supplied, for qualification of their offer.                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |
| 2.2           | Name and postal address of the customer / company where similar machine is installed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
| 2.3           | Name and designation of the contact person of the customer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |
| 2.4           | Phone, FAX no. and email address of the contact person of the customer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |
| 2.5           | Month and Year of commissioning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |
| 2.6           | Application for which the machine is supplied.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
| 2.7           | One Performance certificate from the customers regarding satisfactory performance of machine supplied to them. The certificate should be current and on the letterhead of the Customer. It should contain information regarding model / Size of machine, year of commissioning and performance of M/c.                                                                                                                                                                                                                                                                         |                          |
| 3.0           | BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.                                                                                                                                                                                                                                                                                                                                                                                                 |                          |

## SECTION – I I

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

| S. No | PARTICULARS                                                                                                                                                                                                   | VENDOR's RESPONSE |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 4     | Profile of the Company bringing-out the years of Experience of the BIDDER in the field of design, manufacture, integration and supply of <b>CNC Abrasive Water Jet cutting Machine</b>                        |                   |
| 5     | Number of <b>CNC Abrasive Water Jet cutting Machines</b> supplied, installed and commissioned till date for similar applications (with details on machine type / model, configuration, customer and quantity) |                   |
| 6     | YEAR of supply of latest, <b>CNC Abrasive Water Jet cutting Machine</b> for similar metal cutting applications and the Technical Specifications of the Machine supplied [Details to be furnished]             |                   |
| 7     | Details on the Firm's Registration and the FINANCIAL STRENGTH of the COMPANY (Balance Sheet for the last 3 years) shall be submitted with the TECHNICAL OFFER                                                 |                   |
| 8     | Details on International Standards / Design Process Codes followed in Design and Manufacture of the Equipment.                                                                                                |                   |
| 9     | Details on SERVICE-AFTER-SALES Set-Up in India including the Addresses of Agents / Service Centers in India. Competency & Experience of the Local Service Agency are to be provided                           |                   |
| 10    | Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment                                                                                                        |                   |

### SECTION – III

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

| <b>S. No.</b> | <b>REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                        | <b>VENDOR's RESPONSE</b> |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 11            | The BIDDER / VENDOR shall submit the offer in TWO PARTS-Technical [with PART A & PART B] & Commercial and Price Bid.                                                                                                                                                                                                                                                                                       |                          |
| 12            | The Technical Offer shall be supported by Product Catalogues and description.                                                                                                                                                                                                                                                                                                                              |                          |
| 13            | The Offer shall contain a comparative statement of Technical Specifications given by BHEL and the Offer Details submitted by the Bidder, against each clause. A mere 'CONFIRMED' or 'COMPLIES' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement [without any supporting technical write-ups, photos and datasheets] may lead to disqualification of the Technical Offer. |                          |
| 14            | The BIDDER / VENDOR shall assure a continuous support for the supply of SPARES and SERVICE for TEN Years, from the date of commissioning of equipment at BHEL Works.                                                                                                                                                                                                                                       |                          |
| 15            | The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation of the inclusion of all the accessories, tooling, attachments, auxiliary parts, spares, consumables, etc. with the main and basic equipment, to meet the technical specification requirements.                                                           |                          |
| 16            | Soft copy if any, giving the salient features of the proposed machine with all sub-systems and auxiliaries, and /or showing live-demo of an existing and working machine of similar configuration and capacity may be provided.                                                                                                                                                                            |                          |
| 17            | BIDDER has to indicate the Country of Origin for the supply of equipment.                                                                                                                                                                                                                                                                                                                                  |                          |
| 18            | The reference List of Customers shall be accompanied with (Phone Number and E-Mail ID) of the CONTACT PERSON for cross reference by BHEL                                                                                                                                                                                                                                                                   |                          |
| 19            | In case of preliminary qualification of the offer, on technical grounds, the BIDDER may be called for a detailed technical discussion on the original technical offer at BHEL Works, with a sufficient notice period.                                                                                                                                                                                      |                          |

| <b>PART-B</b>                                                 |                                              |                                                                                                                                                                                                                                          |                                                             |
|---------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| <b>SPECIFICATION OF CNC ABRASIVE WATERJET CUTTING MACHINE</b> |                                              |                                                                                                                                                                                                                                          |                                                             |
| <b>S.No.</b>                                                  | <b>Particulars</b>                           | <b>BHEL Specification</b>                                                                                                                                                                                                                | <b>Bidder's offer<br/>(With Complete Technical Details)</b> |
| 1.0                                                           | <b>Purpose</b>                               | The CNC Abrasive waterjet cutting machine is for automatic cutting of profiles and intricate shapes in Mild steel, Aluminum, Stainless steel, Titanium plates etc up to 100 mm thickness with good cut surface and reduced cutting time. |                                                             |
| 1.1                                                           | <b>Working Envelope</b>                      |                                                                                                                                                                                                                                          |                                                             |
|                                                               | (a) X travel                                 | 3010 mm                                                                                                                                                                                                                                  |                                                             |
|                                                               | (b) Y travel                                 | 1510 mm                                                                                                                                                                                                                                  |                                                             |
|                                                               | (c ) Z travel                                | 250 mm                                                                                                                                                                                                                                   |                                                             |
|                                                               | (d) Max work piece size                      | 3250 mm x 1600 mm                                                                                                                                                                                                                        |                                                             |
| 2                                                             | <b>High Pressure Pump</b>                    |                                                                                                                                                                                                                                          |                                                             |
|                                                               | (a) Pressure range                           | 500 to 3600 bar with infinitely adjustable pressure setting (System with max pr. of 3800 bar to be quoted as option)                                                                                                                     |                                                             |
|                                                               | (b) Delivery rate of water at max. Pr.       | 3.8 liter/ min                                                                                                                                                                                                                           |                                                             |
|                                                               | (c ) Required Power rating                   | Vendor to specify                                                                                                                                                                                                                        |                                                             |
| 3                                                             | <b>Abrasive Water Jet (AWJ) cutting head</b> |                                                                                                                                                                                                                                          |                                                             |
|                                                               | (a) Type of cutting                          | Abrasive Water jet cutting                                                                                                                                                                                                               |                                                             |
|                                                               | (b) Type of head for AWJ                     | Injection type with orifice and focussing nozzle                                                                                                                                                                                         |                                                             |
|                                                               | (c)Alignment                                 | Facility for precision alignment of orifice and focusing nozzle.                                                                                                                                                                         |                                                             |
|                                                               | (d) Cutting Mode                             | Open and submerged jet cutting                                                                                                                                                                                                           |                                                             |
| 4                                                             | <b>CNC Work Cell</b>                         |                                                                                                                                                                                                                                          |                                                             |
|                                                               | (a)Type                                      | Rigid Steel gantry chassis                                                                                                                                                                                                               |                                                             |
|                                                               | (b)Programmable axes                         | X, Y and Z axes are all programmable                                                                                                                                                                                                     |                                                             |

|   |                                           |                                                                                                                                  |  |
|---|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--|
|   | (c) Simultaneous controllable axes        | X & Y                                                                                                                            |  |
|   | (d) Maximum positioning Speed             | 10 m/min for X & Y, 7m/min for Z axis.                                                                                           |  |
|   | (e) Accuracies of motion at 20°C required | as per ISO230-4                                                                                                                  |  |
|   | i. Position accuracy                      | +/-0.05mm/ Meter (+/- 0.1 over full stroke)                                                                                      |  |
|   | ii. Repetition accuracy                   | +/-0.025mm                                                                                                                       |  |
|   | (f) Motion Transmission                   | Backlash free precision ball screws                                                                                              |  |
|   | (g) Guide Ways                            | LM Guide ways or equivalent                                                                                                      |  |
|   | (h) Protection                            | Ball screws, bearings, & guides are covered with bellows/SS Cover/ Moulded rubber cover to protect from dirt, dust and moisture. |  |
|   | (i) Catcher tank                          | Tank made of SS 304 of min.thickness 3 mm                                                                                        |  |
|   | (j) Work table height                     | 910mm (approx.)                                                                                                                  |  |
|   | (k) Work support grid                     | Grid of Galvanized MS/ SS to support 1200 kg/ sq m                                                                               |  |
|   | (l) Jet absorber                          | The frame and jet absorber are thermally and mechanically separated                                                              |  |
|   | (m) Foundation requirements               | Vendor to specify                                                                                                                |  |
|   | (n) Water level                           | Can be raised for "UNDER WATER CUTTING"                                                                                          |  |
| 5 | <b>Controller Specifications</b>          |                                                                                                                                  |  |
|   | (a) Type                                  | SINUMERIK/ Fanuc Current model                                                                                                   |  |
|   | (b) Motors & Drives for axes              | AC servo Motor Digital drive                                                                                                     |  |
|   | (c) Display                               | Colour Graphical Display                                                                                                         |  |
|   | (d) Simulation                            | Programming and cutting path simulation                                                                                          |  |
|   | (e) Memory                                | Sufficient inbuilt memory for storage of programs. USB port.                                                                     |  |
|   | (f) DNC Interface                         | Ethernet and Serial port                                                                                                         |  |
|   | (g) Diagnostics                           | Capability to diagnose the problems in all the sub-systems with direct English instruction.                                      |  |
|   | (h) AWJ Specific Capabilities             | (i) Automatic Speed reduction in Software at sharp corners, small holes and curves to have better edge finish                    |  |
|   |                                           | (ii) kerf width compensation is provided in the software as well as in the CNC system                                            |  |

|     |                                         |                                                                                                                                |  |
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|     |                                         | iii)Real time programming, Program preview,edit mode, background editing and online help.                                      |  |
|     |                                         | iv)Automatic piercing                                                                                                          |  |
| 6   | <b>CAD/CAM System Features</b>          |                                                                                                                                |  |
| 6.1 | <b>CNC Programming Features</b>         |                                                                                                                                |  |
|     |                                         | i) Support for standard formats of file transfer Such as DXF/DWG standards                                                     |  |
|     |                                         | ii)Automatic gathering of part history and Statistics for future reference and reporting Purpose. Database created in software |  |
|     |                                         | iii)Automatic tool path generation, including lead-ins and lead outs                                                           |  |
|     |                                         | iv)Software will report estimation of cutting time                                                                             |  |
|     |                                         | v)Automatic Speed reduction in Software at sharp corners, small holes and curves to have better edge finish                    |  |
|     |                                         | vi)Nesting module both automatic and manual in software                                                                        |  |
| 6.2 | <b>Hardware</b>                         | Requirement Shall be quoted as optional                                                                                        |  |
| 7   | <b>Power Supply</b>                     |                                                                                                                                |  |
|     | Rating                                  | 440V AC 50 HZ 3Ph                                                                                                              |  |
| 8   | <b>Abrasive delivery system</b>         |                                                                                                                                |  |
|     | (a)Capacity                             | 200 liter Storage tank with pressure vessel.                                                                                   |  |
|     | (b)Metering                             | Adjustable flow rate 0 to 1000 g/min using feeding wheel with an infinitely variable rotating speed                            |  |
| 9   | <b>Job Locating and Alignment</b>       |                                                                                                                                |  |
|     | (a)For precise movement of cutting head | Manual Pulse Generator (MPG)                                                                                                   |  |
| 10  | <b>Accessories</b>                      |                                                                                                                                |  |
|     | (a)Solid waste removal system           | Waste water pumps continuously remove sludge from tank                                                                         |  |

|      |                                                                                                                        |                                                                                                                                                                                                                                                                   |  |
|------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|      | (b)Height Sensor                                                                                                       | The height sensor is used to maintain a constant cutting height for sheets with thickness variations and irregular height.                                                                                                                                        |  |
|      | (c)Water treatment system                                                                                              | DM plant based on Reverse osmosis system with water softener to be quoted as option                                                                                                                                                                               |  |
|      | (d) Water Chiller Unit                                                                                                 | Water chiller cooling capacity of 3.7kw, outlet temperature of refrigerated water at 15° C sufficient to cool the pump with inlet water temperature at 20° C (Ambient Temp 40°C) with circulation pump of capacity 11 lit/min with minimum inlet pressure 2.4 bar |  |
|      | (e) Compressed Air                                                                                                     | Available at 5.5 bar. Compressed air dryer to be quoted as option                                                                                                                                                                                                 |  |
|      | (f) Tilting arrangement for cutting head                                                                               | Provision for 45 deg rotation of cutting heads                                                                                                                                                                                                                    |  |
|      | (g)Drill Head attachment                                                                                               | To make pilot drills in case of laminates to initiate abrasive cutting with 12 mm drill head with additional axis (optional)                                                                                                                                      |  |
|      | (h) Additional Cutting head                                                                                            | To be quoted optional                                                                                                                                                                                                                                             |  |
|      | (i) Safety devices                                                                                                     | All safety interlocks , safety devices and monitoring system for pump and trouble shooting instructions in plain language display.                                                                                                                                |  |
|      | (j)Tool kit                                                                                                            | Tool kit for High pressure pump                                                                                                                                                                                                                                   |  |
| 10.1 | <b>Spares</b>                                                                                                          | Spares required for 2 years trouble free operation of the machine                                                                                                                                                                                                 |  |
| 10.2 | <b>Consumables</b>                                                                                                     | Consumables like orifices, mixing tube, Focusing nozzles and abrasives required for various cutting applications shall be quoted along with the machine                                                                                                           |  |
| 11   | <b>Performance requirements</b>                                                                                        |                                                                                                                                                                                                                                                                   |  |
|      | (a)The system should be capable of cutting the following materials at the specified Cutting speeds employing following |                                                                                                                                                                                                                                                                   |  |



|      |                                  |                                                                                                                                                   |  |
|------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--|
|      | parameters                       |                                                                                                                                                   |  |
|      | Orifice                          | Diameter 0.35 mm                                                                                                                                  |  |
|      | Focussing nozzle                 | Diameter 1.10 mm                                                                                                                                  |  |
|      |                                  | Working pressure : 3600 – 3800 bar                                                                                                                |  |
|      |                                  | Abrasive : Indian Garnet 80                                                                                                                       |  |
|      |                                  | Surface roughness:Less than 4 microns through out the Cut surface                                                                                 |  |
|      |                                  | Kerf taper at the bottom : Not more than 3 degrees.                                                                                               |  |
|      |                                  |                                                                                                                                                   |  |
|      |                                  | Material Thickness(mm) Cutting Speed (mm/min)                                                                                                     |  |
|      |                                  | Mild Steel 20 60                                                                                                                                  |  |
|      |                                  | Mild Steel 75 15                                                                                                                                  |  |
|      |                                  | Mild Steel 100 10                                                                                                                                 |  |
|      |                                  | Stainless Steel 20 55                                                                                                                             |  |
|      |                                  | Stainless Steel 75 13                                                                                                                             |  |
|      |                                  | Stainless Steel 100 9                                                                                                                             |  |
|      |                                  | Titanium 20 65                                                                                                                                    |  |
|      |                                  | Titanium 75 17                                                                                                                                    |  |
|      |                                  | Titanium 100 11                                                                                                                                   |  |
| 11.1 | <b>Cutting Technology / Data</b> | The tables of technology with cutting parameters for Stainless Steel ,Aluminium , other metals and stone from 1 mm to 100mm shall be provided     |  |
| 12   | <b>Warranty</b>                  |                                                                                                                                                   |  |
|      |                                  | 12 months comprehensive warranty for the entire systems Against manufacturing defects shall be provided commencing from the date of Commissioning |  |
| 13   | <b>Training</b>                  |                                                                                                                                                   |  |
|      |                                  | Two Engineers shall be trained in operation, programming of software, mechanical and electrical maintenance for 1 week.                           |  |
| 14   | <b>Documentation</b>             | Three sets of following documents (3 Hard copies) in English language should be supplied along with the machine.                                  |  |
| 14.1 |                                  | <b>Machine Operation manuals:</b> <ul style="list-style-type: none"> <li>• Operating manuals of Machine &amp; CNC</li> </ul>                      |  |

|      |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
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|      |                       | <p>system with machine specifications, detailed operating instructions for machine operation, setting of machine parameters, precautions, and machine safety details.</p> <ul style="list-style-type: none"> <li>• Programming Manuals of Machine &amp; CNC system</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| 14.2 |                       | <p><b>Maintenance and trouble shooting manuals:</b></p> <ul style="list-style-type: none"> <li>• Detailed Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts, Hydraulic , Electrical circuit diagrams. All Assembly/ Sub Assembly Drawings shall be supplied with the part list also</li> <li>• Maintenance, Interface &amp; commissioning manuals for CNC system &amp; drives</li> <li>• Manufacturing drawings for all supplied holders, adapters, sleeves, fixtures etc if any.</li> <li>• Catalogues, O&amp;M Manuals of all bought out items including drawings, wherever applicable.</li> <li>• Detailed specification of all wear items and hydraulic / lube fittings</li> <li>• PLC program printouts with comments in English.</li> <li>• PLC program on CD, NC data &amp; PLC data on CD</li> <li>• Complete back up of hard disk on CD and clear written Instructions to take back up and reloading of a new hard disk.</li> <li>• The vendor shall submit complete Master List of parts used in the machine.</li> <li>• One additional set of all the above documentation on CD</li> <li>• On line fault diagnostic system</li> </ul> |  |
| 15   | <b>General Points</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| 15.1 |                       | <p>Make and Model of the machine to be mentioned. Detailed catalogs of the machine to be sent with the offer.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| 15.2 |                       | <p>Complete description of all systems &amp; sub-systems shall form part of the technical bid</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| 15.3 |                       | <p>A schematic diagram showing the layout of the</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |

|      |  |                                                                                                                              |  |
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|      |  | machine & associated systems with salient dimensions shall be submitted along with the offer.                                |  |
| 15.4 |  | The operating sequence of the machine with broad outline of various operations involved should be furnished with the offer.  |  |
| 15.5 |  | Standards for Design, Manufacture and testing of the machine shall be in accordance with internationally accepted standards. |  |
| 15.6 |  | Total weight of the Machine & Sub-Systems.<br>Weight of the heaviest part of the machine                                     |  |
| 15.7 |  | Total connected load KVA                                                                                                     |  |
| 15.8 |  | Painting of machine and Electrical panel:<br>RAL6011 Apple green (Polyurethane paint)                                        |  |
| 15.9 |  | Floor area required (Length x width x height) for complete machine and accessories                                           |  |