



An ISO 9001  
Company

## Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirapalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

### ENQUIRY

### NOTICE INVITING TENDER

Phone: +91 431 257 76 53

Email : [skaruna@bheltry.co.in](mailto:skaruna@bheltry.co.in)

[spsy@bheltry.co.in](mailto:spsy@bheltry.co.in)

Web : [www.bhel.com](http://www.bhel.com)

### TWO PART BID

Tender to be submitted in two Parts

Enquiry  
Number:

**2631700053**

Enquiry  
Date:

**09.10.2017**

Due date for submission  
of quotation:

**03.11.2017**

You are requested to quote the Enquiry number date and due date in all your correspondence. 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 should reach physically on or before 14.00 Hrs(IST) on the Date of tender opening. Tenders received after 14.00Hrs (IST) will not be considered for evaluation.

| Item | Description                                                                                                                                                                                                                                                    | Quantity  | (Indigenous Vendors)<br>Matl. Will be Delivered to                     |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------|
| 10   | Electrical Handheld Engraving 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> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )       | 3.00 Nos. | FOR, BHEL,Stores, High Pressure Boiler Plant, Tiruchirappalli - 620014 |
| 20   | Electrical Column Mounted Engraving 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> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> ) | 3.00 Nos  | FOR, BHEL,Stores, High Pressure Boiler Plant, Tiruchirappalli - 620014 |

### Important points to be taken care during submission of offer

- 1) Material shall be delivered to (By Indigenous vendors): As stated above.
- 2) By Foreign Vendors: CFR Chennai Seaport / Airport
- 3) Delivery required 2 months from the date of purchase order.
- 4) Erection & Commissioning period required 2 Weeks from the date of intimation by BHEL to vendor for deputation of their Engineers for E&C.
- 5) EMD for this Tender will be (INR): 40000
- 6) Compliance Forms. TRY/IMP/03 & TRY/IND/03A to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.
- 7) 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.

BHEL's General guidelines / instructions (refer MM / CE / GENL / GENL / 001 - EMD) including bank guarantee formats and list of consortium banks, commercial terms check-list 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 .

Tenders should be submitted before 14.00Hrs (IST) on the due date  
Tenders will be opened online at 14:30 hours on the due date  
Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present.

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

DGM / Capital Equipment / MM

**TECHNICAL SPECIFICATION FOR  
ELECTRICALLY OPERATED HANDHELD ENGRAVING MACHINE**

**PART - A**

| <b>S.No</b> | <b>BHEL Specification</b>                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Vendor's Offer</b> |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>1.0</b>  | <b>QUALIFYING CRITERIA</b>                                                                                                                                                                                                                                                                                                                                                                                                                      |                       |
| 1.1         | The BIDDER / VENDOR (OEM) shall have at least <b>FIVE</b> Years of Experience in the Design, Manufacture & Supply of “engraving machines”.                                                                                                                                                                                                                                                                                                      |                       |
| 1.2         | Only those vendors ( <b>OEMs</b> ), who have Manufactured, supplied and commissioned <b>at least ONE Handheld type engraving machine-Dot peening type</b> similar to the machine specified under Part B, in the last FIVE years [as on date of this tender opening(first date)] should quote.                                                                                                                                                   |                       |
| 1.3         | Vendor has to submit at least ONE Performance Certificate from their customer, for satisfactory performance of <b>Handheld type engraving machine-Dot peening type specified in clause 1.2</b> supplied to them and such equipment is working satisfactorily for a minimum period of one year [as on date of this tender opening(first date)]. For obtaining the Performance certificate, a suggestive format is provided at the end of part-A. |                       |
| 1.4         | BHEL reserves the right to verify the information provided by the Vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.                                                                                                                                                                                                                                                              |                       |

|            |                                                                                                                                                                   |  |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>2.0</b> | <b>INFORMATION TO BE PROVIDED BY VENDOR</b>                                                                                                                       |  |
| 2.1        | Vendor shall provide contact details (phone no & email id) including the address of his Agents / Service Centres in India.                                        |  |
| 2.2        | Details of Handheld type engraving machine-Dot peening type machines supplied to BHEL units, if any. (Year of commissioning, Application, Type )                  |  |
| 2.3        | Number of Handheld type engraving machine-Dot peening type supplied and commissioned till date (to quote the equipment supplied during the last three years only) |  |
| 2.4        | The BIDDER/VENDOR to furnish Reference List of Customers (max 10 customers) including Contact details (phone no & email id).                                      |  |

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 | Application for which M/C is used                                      |                                 |
| 5 | a. Weight of the machine                                               |                                 |
| 6 | Performance of the Machine<br>(Strike off whichever is not applicable) | Satisfactory / Not Satisfactory |
| 7 | After sales service<br>(Strike off whichever is not applicable)        | Satisfactory / Not Satisfactory |
| 8 | Any Other remarks                                                      |                                 |
| 9 |                                                                        |                                 |

Performance certificate issued date:

Signature & Seal of the Authority  
Issuing the Performance Certificate

Contact details of issuing authority  
Name & Designation:  
Office No/ Mobile no:  
Email ID:

## TECHNICAL SPECIFICATION FOR

### ELECTRICALLY OPERATED HANDHELD ENGRAVING MACHINE

**Brief Description:** Electrically Operated engraving machine is used to engrave data having alphanumeric characters, symbols, logos etc on different materials like Carbon steel, Alloy steel, stainless steel, aluminium Alloys etc. It is used to engrave on different geometries like Cylindrical and flat objects. It should be in-situ type.

#### Technical Specification

**Qty:3 Nos**

| Sl.No                         | Particulars                   | BHEL Specification                                                                                                                                                                                               | Vendor comments |
|-------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 1.0                           | <b>Application</b>            | Electrically Operated engraving machine is used to engrave data (Alphanumeric ,scientific symbols, company logos etc) on the job.                                                                                |                 |
| 2.0                           | <b>Method of operation</b>    | Dot peening                                                                                                                                                                                                      |                 |
| 3.0                           | <b>Job details</b>            |                                                                                                                                                                                                                  |                 |
| 3.1                           | Materials                     | Carbon steel, alloy steel, Stainless Steel, Aluminium Alloys (Hardness value max: 62HRC)                                                                                                                         |                 |
| 3.2                           | Job Dia Range                 | 100mm dia to 2800mm dia                                                                                                                                                                                          |                 |
| 3.2.1                         | Job length                    | 100mm to 24000mm                                                                                                                                                                                                 |                 |
| 3.3                           | Job types                     | pipes, rods, plates, Shells etc                                                                                                                                                                                  |                 |
| 4.0                           | <b>Equipment Construction</b> |                                                                                                                                                                                                                  |                 |
| 4.1                           | Main components               | Engraving unit must have the following main components: <ul style="list-style-type: none"> <li>• Engraving Head</li> <li>• Keyboard unit</li> <li>• Display unit</li> <li>• Column</li> </ul>                    |                 |
| 4.2                           | Engraving Head                | Engraving usable window must be minimum of 100mm x 40mm size. Vendor to specify the actual size.<br>Also V-Type contour should be provided at the marking interface side for easy engraving on cylindrical jobs. |                 |
| 4.3                           | Keyboard                      | QWERTY type dust proof and waterproof keyboard to be provided                                                                                                                                                    |                 |
| 4.4                           | Display unit                  | Digital display unit clearly showing the alphanumerics, symbols etc to be inbuilt with the engraving head                                                                                                        |                 |
| 4.5                           | Column                        | Column to hold the engraving head and to engrave on small objects can be provided.                                                                                                                               |                 |
| <b>5.0 Equipment Features</b> |                               |                                                                                                                                                                                                                  |                 |
| 5.1                           | Engraving requirement         | 4 to 5 lines of around 20 characters for each line, depending on the size of character                                                                                                                           |                 |
| 5.2                           | Engraving Language            | English                                                                                                                                                                                                          |                 |

|            |                                              |                                                                                                                                                                                                                                 |  |
|------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 5.3        | Font Type                                    | ARIEL, COURIER, OCR & OCRA are the minimum styles to be available                                                                                                                                                               |  |
| 5.4        | Font size-Variable                           | Vendor to specify the range                                                                                                                                                                                                     |  |
| 5.5        | Font Orientation                             | Straight , angular & radial orientations                                                                                                                                                                                        |  |
| 5.6        | Numeric increments & scientific symbols      | Should have automatic numeric increments. It should also be able to engrave scientific symbols like $\theta$ , $\phi$ etc.                                                                                                      |  |
| 5.7        | Pause and resume Option                      | The equipment should have pause and resume option so as to enable to engrave multiple line program on cylindrical objects by shifting the head to the concerned location                                                        |  |
| 5.8        | Date(Optional)                               | Automatic date updation feature to engrave on jobs may be offered optionally.                                                                                                                                                   |  |
| 5.9        | Logo and border line engraving               | Should be able to engrave border lines & logos. It should also be able to engrave flat surfaces as well as cylindrical surfaces.                                                                                                |  |
| 5.10       | Logo engraving software                      | Vendor should provide the details & software(if required) which could be able to convert logos in to the required format for engraving.                                                                                         |  |
| 5.11       | Depth of engraving                           | Vendor to specify minimum & maximum depth value for engraving on material of various HRC. Minimum 0.3mm depth should be possible for 62HRC material. Provision for adjusting the depth levels (Minimum 8 levels) to be provided |  |
| 5.12       | Dot Density                                  | Vendor to specify maximum no.of dots per inch                                                                                                                                                                                   |  |
| 5.13       | No.of engravings per day                     | Average 200 engravings.<br>Vendor to specify exact speed of engraving                                                                                                                                                           |  |
| 5.14       | Weight                                       | Engraving head should be less than 2.5 kg                                                                                                                                                                                       |  |
| <b>6.0</b> | <b>Indenter details</b>                      |                                                                                                                                                                                                                                 |  |
| 6.1        | Diameter of indent                           | Vendor to specify                                                                                                                                                                                                               |  |
| 6.2        | Material of indent                           | Vendor to specify                                                                                                                                                                                                               |  |
| 6.3        | Life of the tip                              | Vendor to specify                                                                                                                                                                                                               |  |
| <b>7.0</b> | <b>Programming and connectivity features</b> |                                                                                                                                                                                                                                 |  |
| 7.1        | Pc connectivity                              | USB or RS232 communication port to connect to PC for transferring logos, data etc                                                                                                                                               |  |
| 7.2        | Internal memory                              | Sufficient enough to store minimum 500 programs                                                                                                                                                                                 |  |
| 7.3        | Programming                                  | User friendly                                                                                                                                                                                                                   |  |
| 7.4        | Portability                                  | Handle provision should be provided                                                                                                                                                                                             |  |
| 7.5        | Sound/Noise level                            | Not more than 85 dbA                                                                                                                                                                                                            |  |
| <b>8.0</b> | <b>Power supply</b>                          | 230 $\pm$ 10% V, 50 $\pm$ 3 Hz, Single Phase AC .                                                                                                                                                                               |  |
| 8.1        | Power Consumption                            | Vendor to specify                                                                                                                                                                                                               |  |

|             |                                   |                                                                                                                                                                                                                                                                                                                                                                           |  |
|-------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>9.0</b>  | <b>Safety</b>                     | <ul style="list-style-type: none"> <li>• Short circuit protection should be provided</li> <li>• Password protection to be provided in the software</li> </ul>                                                                                                                                                                                                             |  |
| <b>10.0</b> | <b>Spares</b>                     | <p>Vendor should quote all the consumables and spares list for two years of trouble free operation apart from the following. The price for spares shall be quoted item wise.</p> <ul style="list-style-type: none"> <li>• Stylus/Indentor pin-3 Nos</li> <li>• Mechanical origin sensor-3 Nos</li> <li>• Stylus/Indentor spring-3 Nos</li> <li>• Main PCB-1 No</li> </ul> |  |
| <b>11.0</b> | <b>O &amp; M manuals</b>          | 3 Copies of Operation & Maintenance Manual hard copy & one soft copy in CD in English to be provided                                                                                                                                                                                                                                                                      |  |
| <b>12.0</b> | <b>Test certificate</b>           | The equipment shall be tested for its performance at supplier's work prior to dispatch of the equipment and test certificate shall be provided.                                                                                                                                                                                                                           |  |
| <b>13.0</b> | <b>Installation and Prove out</b> | Vendor to install the equipment at BHEL Trichy works. Also prove out on jobs (2 cylindrical and 2 flat jobs) during installation of the machine at BHEL, Trichy to be carried out by supplier                                                                                                                                                                             |  |
| <b>14.0</b> | <b>Training</b>                   | Vendor has to give training at BHEL, Trichy for one day                                                                                                                                                                                                                                                                                                                   |  |
| <b>15.0</b> | <b>Guarantee</b>                  | Guarantee for a period of 12 months from the date of commissioning of the equipment or 18 months from the date of dispatch whichever is earlier .                                                                                                                                                                                                                         |  |

**TECHNICAL SPECIFICATION FOR  
ELECTRICALLY OPERATED COLUMN MOUNTED ENGRAVING MACHINE  
PART - A**

| <b>S.No</b> | <b>BHEL Specification</b>                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Vendor's Offer</b> |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>1.0</b>  | <b>QUALIFYING CRITERIA</b>                                                                                                                                                                                                                                                                                                                                                                                                                          |                       |
| 1.1         | The BIDDER / VENDOR (OEM) shall have at least <b>FIVE</b> Years of Experience in the Design, Manufacture & Supply of "Engraving machines".                                                                                                                                                                                                                                                                                                          |                       |
| 1.2         | Only those vendors ( <b>OEMs</b> ), who have Manufactured, supplied and commissioned <b>at least ONE column mounted engraving machine-Dot peening type</b> similar to the machine specified under Part B, in the last <b>FIVE</b> years [as on date of this tender opening(first date)] should quote.                                                                                                                                               |                       |
| 1.3         | Vendor has to submit at least ONE Performance Certificate from their customer, for satisfactory performance of <b>column mounted engraving machine-Dot peening type specified in clause 1.2</b> supplied to them and such equipment is working satisfactorily for a minimum period of one year [as on date of this tender opening(first date)].<br>For obtaining the Performance certificate, a suggestive format is provided at the end of part-A. |                       |
| 1.4         | BHEL reserves the right to verify the information provided by the Vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.                                                                                                                                                                                                                                                                  |                       |

|            |                                                                                                                                                     |  |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>2.0</b> | <b>INFORMATION TO BE PROVIDED BY VENDOR</b>                                                                                                         |  |
| 2.1        | Vendor shall provide contact details (phone no & email id) including the address of his Agents / Service Centres in India.                          |  |
| 2.2        | Details of engraving machine-Dot peening type machines supplied to BHEL units, if any. (Year of commissioning, Application, Type )                  |  |
| 2.3        | Number of engraving machine-Dot peening type supplied and commissioned till date (to quote the equipment supplied during the last three years only) |  |
| 2.4        | The BIDDER/VENDOR to furnish Reference List of Customers (max 10 customers) including Contact details (phone no & email id).                        |  |

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 | Application for which M/C is used                                      |                                 |
| 5 | a. Weight of the machine                                               |                                 |
| 6 | Performance of the Machine<br>(Strike off whichever is not applicable) | Satisfactory / Not Satisfactory |
| 7 | After sales service<br>(Strike off whichever is not applicable)        | Satisfactory / Not Satisfactory |
| 8 | Any Other remarks                                                      |                                 |
| 9 |                                                                        |                                 |

Performance certificate issued date:

Signature & Seal of the Authority  
Issuing the Performance Certificate

Contact details of issuing authority  
Name & Designation:  
Office No/ Mobile no:  
Email ID:



## TECHNICAL SPECIFICATION FOR ELECTRICALLY OPERATED COLUMN MOUNTED ENGRAVING MACHINE

**Brief Description:** Electrically Operated Column mounted engraving machine is used to engrave data having alphanumeric characters, symbols, logos etc on different materials like Carbon steel, Alloy steel, stainless steel, aluminium Alloys etc. It is used to engrave on different geometries like cylindrical and flat objects.

### Technical Specification

**Qty:3 No**

| Sl.No | Particulars                   | BHEL Specification                                                                                                                                                                                                         | Vendors offer |
|-------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1.0   | <b>Application</b>            | Electrically Operated engraving machine is used to engrave data (Alphanumeric ,scientific symbols, company logos etc) on the job.                                                                                          |               |
| 2.0   | <b>Method of operation</b>    | Dot peening type                                                                                                                                                                                                           |               |
| 3.0   | <b>Job details</b>            |                                                                                                                                                                                                                            |               |
| 3.1   | Materials                     | Carbon steel, alloy steel, Stainless Steel, Aluminium Alloys<br>(Hardness value max: 62 HRC)                                                                                                                               |               |
| 3.2   | Max Job Dia and weight        | 150mm dia max and 3kg in weight                                                                                                                                                                                            |               |
| 3.3   | Job types                     | tubes, pipes, rods, plates etc                                                                                                                                                                                             |               |
| 4.0   | <b>Equipment Construction</b> |                                                                                                                                                                                                                            |               |
| 4.1   | Main components               | Engraving unit must have the following main components: <ul style="list-style-type: none"> <li>• Engraving Head</li> <li>• Column</li> <li>• Rotary chuck unit</li> <li>• Keyboard unit</li> <li>• Display unit</li> </ul> |               |
| 4.2   | Engraving Head                | Engraving usable window must be minimum of 100mm x 100mm size. Vendor to specify the actual size                                                                                                                           |               |
| 4.3   | Column                        | Column stroke should be minimum 270 mm. The engraving head must be supported by this column and the head can be moved and fixed at any location along the column manually. Vendor to give details                          |               |
| 4.4   | Rotary Chuck                  | Rotary chuck to be provided such that it can hold and rotate cylindrical objects up to 150mm dia and 3kg weight. The rotary chuck should be synchronised with engraving.                                                   |               |
| 4.5   | Keyboard                      | QWERTY type dust proof and waterproof inbuilt keyboard to be provided                                                                                                                                                      |               |
| 4.6   | Display unit                  | Digital display unit clearly showing the alphanumerics, symbols etc to be inbuilt with the engraving head                                                                                                                  |               |

| <b>5.0 Equipment Features</b> |                                              |                                                                                                                                                                                                                                 |  |
|-------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 5.1                           | Engraving requirement                        | 4 to 5 lines of around 20 characters for each line, depending on the size of character                                                                                                                                          |  |
| 5.2                           | Engraving Language                           | English                                                                                                                                                                                                                         |  |
| 5.3                           | Font Type                                    | ARIEL, COURIER, OCR & OCRA are the minimum styles to be available                                                                                                                                                               |  |
| 5.4                           | Font size-Variable                           | Vendor to specify the size range                                                                                                                                                                                                |  |
| 5.5                           | Font Orientation                             | Straight , Radial and Angular                                                                                                                                                                                                   |  |
| 5.6                           | Numeric increments & scientific symbols      | Should have automatic numeric increments. It should also be able to engrave scientific symbols like $\theta, \phi$ etc.                                                                                                         |  |
| 5.7                           | Date(Optional)                               | Automatic date updating feature to engrave on jobs may be offered optionally.                                                                                                                                                   |  |
| 5.8                           | Logo and border line engraving               | Should be able to engrave border lines & logos. It should also be able to engrave flat surfaces as well as cylindrical surfaces up to 150mm dia                                                                                 |  |
| 5.9                           | Logo engraving software                      | Vendor should provide the details & software (if required) which could be able to convert logos in to the required format for engraving.                                                                                        |  |
| 510                           | Depth of engraving                           | Vendor to specify minimum & maximum depth value for engraving on material of various HRC. Minimum 0.3mm depth should be possible for 62HRC material. Provision for adjusting the depth levels (Minimum 8 levels) to be provided |  |
| 5.11                          | Dot Density                                  | Vendor to specify maximum no.of dots per inch                                                                                                                                                                                   |  |
| 5.12                          | No.of engravings per day                     | Average 200 engravings.<br>Vendor to specify exact speed of engraving                                                                                                                                                           |  |
| 5.13                          | Weight                                       | Vendor to specify the weight of the equipment                                                                                                                                                                                   |  |
| <b>6.0</b>                    | <b>Indenter details</b>                      |                                                                                                                                                                                                                                 |  |
| 6.1                           | Diameter of indent                           | Vendor to specify                                                                                                                                                                                                               |  |
| 6.2                           | Material of indent                           | Vendor to specify                                                                                                                                                                                                               |  |
| 6.3                           | Life of the tip                              | Vendor to specify                                                                                                                                                                                                               |  |
| <b>7.0</b>                    | <b>Programming and connectivity features</b> |                                                                                                                                                                                                                                 |  |
| 7.1                           | Pc connectivity                              | USB or RS232 communication port to connect to PC for transferring logos, data etc                                                                                                                                               |  |
| 7.2                           | Internal memory                              | Sufficient enough to store minimum 500 programs                                                                                                                                                                                 |  |
| 7.3                           | Programming                                  | User friendly                                                                                                                                                                                                                   |  |
| 7.4                           | Sound/Noise level                            | Not more than 85 dbA                                                                                                                                                                                                            |  |

|             |                                   |                                                                                                                                                                                                                                                                                                                                                                           |  |
|-------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>8.0</b>  | <b>Power supply</b>               | 230 ± 10% V, 50±3 Hz, Single Phase AC will be provided by BHEL                                                                                                                                                                                                                                                                                                            |  |
| 8.1         | Power Consumption                 | Vendor to specify                                                                                                                                                                                                                                                                                                                                                         |  |
| <b>9.0</b>  | <b>Safety</b>                     | <ul style="list-style-type: none"> <li>• Short circuit protection should be provided</li> <li>• Password protection to be provided in the software</li> </ul>                                                                                                                                                                                                             |  |
| <b>10.0</b> | <b>Spares/ consumables</b>        | <p>Vendor should quote all the consumables and spares list for two years of trouble free operation apart from the following. The price for spares shall be quoted item wise.</p> <ul style="list-style-type: none"> <li>• Stylus/Indentor pin-3 Nos</li> <li>• Mechanical origin sensor-3 Nos</li> <li>• Stylus/Indentor spring-3 Nos</li> <li>• Main PCB-1 NO</li> </ul> |  |
| <b>11.0</b> | <b>O &amp; M manuals</b>          | 3 Copies of Operation & Maintenance Manual hard copy & three soft copies in CD in English to be provided                                                                                                                                                                                                                                                                  |  |
| <b>12.0</b> | <b>Test certificate</b>           | The equipment shall be tested for its performance at supplier's work prior to dispatch of the equipment and test certificate shall be provided.                                                                                                                                                                                                                           |  |
| <b>13.0</b> | <b>Installation and Prove out</b> | Vendor to install the equipment at BHEL Trichy works. Also prove out on jobs (2 cylindrical and 2 flat jobs) during installation of the machine at BHEL, Trichy to be carried out by supplier                                                                                                                                                                             |  |
| <b>14.0</b> | <b>Training</b>                   | Vendor has to give training at BHEL, Trichy for one day.                                                                                                                                                                                                                                                                                                                  |  |
| <b>15.0</b> | <b>Guarantee</b>                  | Guarantee for a period of 12 months from the date of commissioning of the equipment or 18 months from the date of dispatch whichever is earlier .                                                                                                                                                                                                                         |  |