

## Annexure-A

### Scope for Retrofitting of Peddinghaus make Flame Hardening machine (Model No. 241Ti ) Plan No. 2-359, TBM, BI-3, BHEL Haridwar

**Brief About Machine:** This machine consists of a gas torch for heating of the inlet edge of LP turbine blades. The vertical feed moves under the control of an online non contact type radiation thermometer and temperature controller in such a manner as to maintain the temperature of the blade within 10 degrees throughout the hardening length. This system has to be changed but the output performance parameters have to be maintained. Existing control is by online non contact type radiation thermometer and Miliscope T-79 controller with variable speed controlled AC drive for vertical movement. The heating mechanism, mechanical, gas control systems and the technological processes are to be retained.

Sl. No	Description	Quantity	Accepted (Yes/No)	Deviation	Remarks
1.	<b>MATERIAL SUPPLY INCLUDING SCOPE OF WORK</b>				
1.1	<b>AC SERVO MOTOR</b>				
1.1.1	1FK7 Siemens AC servo motor for vertical controlled axis Rated Torque (Mn) =2.6 Nm or above; 3000 RPM or above; With Holding brake. The existing motor is AMK Arnold Muller make Type: RDB80-2, 365V, 2.1 A, 0.43 KW	01 No.			<u>Vendor to provide details &amp; comply</u>
1.2	<b>AC SERVO DRIVE</b>				
1.2.1	Siemens make Sinamics S110 AC Servo drive for Feed motor control with input voltage of 415 VAC (+/- 10%), 3 phase 3 wire system.				<u>Vendor to provide details &amp; comply</u>
1.2.2	Vendor to include input transformer (if required)	01 No.			<u>Vendor to specify whether it is required, provide details</u>

					<u>&amp; comply.</u>
<b>1.2.3</b>	Servo drive is to be provided with analogue speed reference 0 to +/- 10 VDC				<u>Vendor to comply</u>
<b>1.2.4</b>	Sinamics S110 drive (0.59 KW or above) suitable for the above mentioned AC Servo motor.	01 No.			<u>Vendor to comply</u>
<b>1.2.5</b>	Line filter with HF Commutating Choke of suitable capacity.	01 No.			<u>Vendor to comply</u>
<b>1.2.6</b>	Control unit, BOP & Flash card for Vertical axis feed drive.	01 Set			<u>Vendor to comply</u>
<b>1.2.7</b>	Pre-assembled Encoder cable 10 meters or above for 1 FK7 motor.	01 No.			<u>Vendor to comply</u>
<b>1.2.8</b>	Power cable with brake 10 meters or above for 1FK7 motor.	01 No.			<u>Vendor to comply</u>
<b>1.2.9</b>	The AC Servo drive should provide potential free contacts for possible alarms, drive ready for interfacing with the PLC control.				<u>Vendor to comply</u>
<b>1.2.10</b>	Pre-assembled communication cable to connect laptop with the drives & PLC for commissioning and diagnostic purposes.	01 Set			<u>Vendor to comply</u>
<b>1.2.11</b>	Licensed Drives commissioning software on CD/ DVD.	01 Set			<u>Vendor to comply</u>
<b>1.3</b>	<b><u>PLC, HMI AND MACHINE SPECIFIC FEATURES</u></b>				
<b>1.3.1</b>	S7-200 PLC with 224-XP CPU or higher	01 No.			<u>Vendor to comply</u>
<b>1.3.2</b>	S7-200 PLC with <ul style="list-style-type: none"> <li>• 32 Digital Inputs</li> <li>• 16 Output/ 2A</li> <li>• 4 Analog inputs (Suitable to Analog output from the temperature Control &amp; Display unit)</li> <li>• 4 Analog outputs (0 to 10 VDC reference for the Servo drive, +/- 10 VDC for manual potentiometer)</li> </ul>	01 Set			<u>Vendor to comply</u>
<b>1.3.3</b>	TD200 Text display interfaced with S7-200 PLC with the following features:	01 No.			<u>Vendor to comply</u>

	<ul style="list-style-type: none"> <li>• Display of Alarms and Messages</li> <li>• Input of Maximum and minimum temperature for Hardening which should be in retentive memory with no need to feed the data after Power OFF/ON.</li> <li>• Settings for Auto mode viz. Quenching delay1 &amp; 2, Approach feed-rate, Quenching feed-rate etc. which should be in retentive memory with no need to feed the data after Power OFF/ON.</li> </ul>				
<b>1.3.4</b>	<p>The machine should have a full fledged Automatic mode with the following sequence of operations:</p> <ul style="list-style-type: none"> <li>• Machine will be in initial position.</li> <li>• After pressing of cycle start, machine will come in downward direction at Approach feed-rate (fed in TD200) to heating position (sensed by Limit switch), Oxygen and LPG will be started to start heating.</li> <li>• Quenching will start after a Quenching delay 1 fed in TD200.</li> <li>• <b>After reaching the set temperature, vertical feed in down direction will start controlled by PLC (through Analog output to the drive) in such a manner that temperature remains within minimum and maximum level and preferably in the centre of the window. The feedback is provided by online non contact type radiation thermometer &amp; its display/ controller.</b></li> <li>• After reaching Hardening end position (sensed by Limit switch), Feed will stop; Oxygen and LPG will switch OFF. Quenching will continue for Quenching delay 2.</li> <li>• Vertical Feed will start in UP direction at a feed-rate fed in</li> </ul>				<u>Vendor to comply</u>

	<p>the TD200 as quenching feed &amp; Quenching will continue.</p> <ul style="list-style-type: none"> <li>•After reaching Heating position, quenching will stop and vertical feed will move upward at Approach feed-rate (fed in TD200) to initial position.</li> </ul>				
<b>1.3.5</b>	<p>The machine should have a full fledged manual mode with the possibility of all manual operations and with following features:</p> <ul style="list-style-type: none"> <li>• Machine ON, OFF Push-buttons</li> <li>• MANUAL/ AUTOMATIC selector switch</li> <li>• Quenching ON/OFF selector switch</li> <li>• Burner ON, OFF Push-buttons</li> <li>• Feed UP, DOWN&amp; STOP Pushbuttons</li> <li>• Feed INCHING/ REGULAR selector switch</li> <li>• Tailstock UP/ DOWN &amp; STOP push-buttons.</li> <li>• Feed-rate potentiometer (10 turns- Bourns make) to control manual feed-rate with input 0 to 10 V from PLC analog output.</li> <li>• All the push-buttons are to be mounted on the Electrical panel with LED indicator lamps for informing current status of the machine viz. Temperature in set range, feed in UP/ DOWN direction.</li> <li>• <b>Analog/ Digital Display of actual axis Feed-rate from the drive. This display should work in both Auto and manual mode.</b></li> </ul>				<u>Vendor to comply</u>
<b>1.4</b>	<b><u>TEMPERATURE MEASURING SYSTEM</u></b>				
<b>1.4.1</b>	<p>The existing <b>Online non contact type radiation thermometer</b> has to be replaced with a suitable <b>Online non contact type radiation thermometer</b> of reputed make with the following features:</p>	01 No.			<u>Vendor to provide details &amp; comply</u>

	<ul style="list-style-type: none"> <li>• Range: 500 to 1500 degree C</li> <li>• Accuracy : Minimum +/- 0.5% of measured value</li> <li>• Repeatability: +/- 0.2 degree C or less</li> <li>• Resolution: +/- 0.5 degree or less</li> <li>• D:S ratio: Minimum 50:1</li> <li>• Response time: 10 ms or better</li> <li>• Emissivity: 0.050 to 1.999 (adjustable)</li> <li>• In-built display: 4 digit</li> <li>• Analog output : 4 to 20 mA/ 0 to 10 VDC</li> <li>• Operating temperature: 0 to 100 degree C or more</li> <li>• Power supply: 24 VDC/ 12 VDC to be provided by compatible indicator unit.</li> <li>• In-built Laser spot sighting to be provided with external ON/OFF switch</li> <li>• Computational function for Zero spans adjustment, automatic emissivity computation and output correction to be provided.</li> <li>• Self diagnosis to be provided.</li> </ul>				
<b>1.4.2</b>	<p>Compatible Digital and control unit with the following features:</p> <ul style="list-style-type: none"> <li>• Display: 5 digit data display and three digit mode display</li> <li>• Range: Adjustable to scale of Radiation thermometer by function keys</li> <li>• Emissivity setting signal: 4 to 20 mA DC</li> <li>• Input signal: 4 to 20 mA DC/ RS-485 (Output from radiation thermometer).</li> <li>• Output signal: 4 to 20 mA/ <b>0 to 10 VDC</b></li> <li>• Display accuracy: +/-0.2% +/- 1 digit or better</li> </ul>	01 No.			<u>Vendor to provide details &amp; comply</u>

	<ul style="list-style-type: none"> <li>• Output accuracy: +/-0.2% +/- 1 degree C or better</li> <li>• Alarm output: High and Low independent setting relay output.</li> <li>• Sensor Power source: 24 VDC or 12 VDC as per sensor requirement.</li> <li>• Working temperature: 0 to 50 deg C</li> <li>• Power supply: 100 to 240 VAC</li> <li>• Panel mounting type</li> </ul>				
<b>1.4.3</b>	Accessories for the above: <ul style="list-style-type: none"> <li>• 10 meter shielded cable to connect sensor and indicator</li> <li>• Air purge collar for lens cleaning</li> <li>• Mounting and accessories required for fixed mounting.</li> <li>• Water cooling jacket.</li> </ul>	01 Set			<u>Vendor to comply</u>
<b>1.4.4</b>	Mounting brackets, mounting plates etc. for mounting of <b>Online non contact type radiation thermometer</b> and other items required for ensuring accuracy and repeatability of the temperature measurement.	01 Set			<u>Vendor to comply</u>
<b>1.5</b>	<b>ELECTRICAL FEATURES</b>				
<b>1.5.1</b>	The existing tailstock motor has to be retained. This motor is to be operated by forward/ reverse contactors along with unclamping solenoid. The existing motor details are as below: Type no: 1LA3060-2AA22-Z 220/380 V Star/ Delta, 0.18 KW, 2740 RPM				<u>Vendor to note</u>
<b>1.5.2</b>	It is proposed that the existing electrical cabinets -1 No. (Size: Height: 165 cm, Width: 80 cm, Depth: 40 cm) are to be replaced.	01 Set			<u>Vendor to comply</u>

	The cabinet should not have rear opening. The size should be similar as the existing cabinet with suitable side mounted air-conditioner. No elements should be mounted on the back-side of the panel. Operational Push buttons are to be mounted on the top side of the electrical cabinet at a convenient height for the operator of average height (5.5 feet).				
<b>1.5.3</b>	L&T/Siemens/ABB/ Schneider Electric make MCCB of suitable rating with rotary handle kit for switching on the power supply of panel & machine mounted on the front side of the panel.	01 No.			<u>Vendor to comply</u>
<b>1.5.4</b>	Suitable Semiconductor, HRC fuses, fuse bases of GE/ SIEMENS/ BUSSMAN make for overload protection.	02 Sets			<u>Vendor to comply</u>
<b>1.5.5</b>	All PLC outputs (16 nos.) should be routed through 8 channel Relay boards with individual relay contact capacity of 5A as all outputs (solenoid valves) are 220 V AC based.	03 Nos.			<u>Vendor to comply</u>
<b>1.5.5</b>	The complete LV switchgear of the machine including overloads, relays, contactors, MPCBs etc. is to be supplied & interfaced by the vendor as per existing scheme.	01 Set			<u>Vendor to comply</u>
<b>1.5.6</b>	Electrical Cabinet to be equipped with a) Door limit switch operated panel tube lights with ON/ OFF switch b) 5 Amp 3-pin service socket and switch	01 Set			<u>Vendor to comply</u>
<b>1.5.7</b>	Additional Keys, Push-buttons & Selector switches required on the electrical cabinet for operation of the machine to be provided by the vendor	01 Set			<u>Vendor to comply</u>
<b>1.5.8</b>	DC Regulated Power Supply 24V DC, 20 Amps of Siemens/Phoenix/M-System.	02 Nos.			<u>Vendor to comply</u>
<b>1.5.9</b>	DC Regulated Power Supply 24V DC, 10 Amps of Siemens/Phoenix/M-System for machine elements.	02 Nos.			<u>Vendor to comply</u>

<b>1.5.10</b>	Three tier LED lamps to be provided on the top of the electrical cabinet to display machine status i.e. In cycle, Setting up, Alarm.	02 Nos.			<u>Vendor to comply</u>
<b>1.5.11</b>	Sealed machine light of reputed make for machine illumination (220/24V) to be installed.	02 Nos.			<u>Vendor to comply</u>
<b>1.5.12</b>	Wires for rewiring of the entire machine including Control signal & Power cabling (including Cabling to Spindle & feed motors). The vendor to note that the entire machine has to be rewired. Input Power Supply to the machine will be provided by BHEL. The cables also include the following:	01 Set			<u>Vendor to comply</u>
<b>1.5.13</b>	Vendor should provide the proposed electrical schematic along with bill of material to BHEL for approval prior to pre-dispatch inspection.				<u>Vendor to comply</u>
<b>1.5.14</b>	Terminal boxes, screwed terminal blocks, bus bars, transformers etc. as required per the new electrical scheme should be provided of reputed makes viz. Wago, Phoenix contact etc.				<u>Vendor to comply</u>
<b>1.6</b>	<b>OTHER FEATURES</b>				
<b>1.6.1</b>	Design and supply of intermediate flanges, couplings and any other parts required for motor mounting.	01 Set			<u>Vendor to comply</u>
<b>1.6.2</b>	One additional set of keys for Electrical cabinet & Operator Panel locks	01 Set			<u>Vendor to comply</u>
<b>1.6.3</b>	Lapp make hose pipes, DIN rails (5 meters), cable ducts (5 meters), insulated lugs(0.5, 1.0, 1.5 sq. mm 200 nos. each & 2.5, 4.0 sq. mm 100 nos. each), printed ferrules (0-9 of 1.0 & 1.5 sq. mm 200 each and A-Z of 1.0 & 1.5 sq. mm 100 each) and other material required for the wiring of machine and panel.	01 Set			<u>Vendor to comply</u>
<b>1.6.4</b>	Party shall supply all clamps, fixtures and fasteners required to complete the job.	01 Set			<u>Vendor to comply</u>



1.6.5	Any other material not mentioned above but found necessary to complete the retrofitting job, shall be in party's scope of supply	01 Set			<u>Vendor to comply</u>
2.	<b><u>COMMISSIONING:</u></b>				
2.1.	Party shall undertake commissioning of all the supplied components at HEEP, BHEL, Haridwar. All material required for commissioning of the machines shall be supplied by the party free of cost and obligation. All commissioning materials shall be supplied by party.				<u>Vendor to comply</u>
2.2	Existing machine logic and technological processes have to be retained.				<u>Vendor to comply</u>
3.	<b><u>FINAL ACCEPTANCE:</u></b>				
3.1	<p>Final Acceptance shall be at HEEP, BHEL, Haridwar after:</p> <ul style="list-style-type: none"> <li>a) Upon completion of the scope of supply and scope of work at BHEL.</li> <li>b) Final acceptance shall include clearance of all pending issues related to the work contract.</li> <li>c) Successful Commissioning &amp; Demonstration of various cycles and control functions as envisaged in the technical scope.</li> <li>d) Successful Flame hardening of presently being machined components as mentioned below: <ul style="list-style-type: none"> <li>i. <b>Form 17 (LP3L &amp; LP3R): 2 nos. of each type.</b></li> <li>ii. <b>Form 10.3 (LP3L &amp; LP3R): 2 nos. of each type.</b></li> <li>iii. <b>The blade material, tooling, fixture for flame hardening of the blades will be provided by BHEL.</b></li> </ul> </li> <li>e) After settlement of all pending issues related to work and</li> </ul>				<u>Vendor to comply</u>

	supply, a certificate for Completion of works in all respect shall be released within 15 days by Production and Maintenance personnel of BHEL which will be the referred document for Final Acceptance and final payment to the vendor.				
<b>4.</b>	<b><u>DELIVERY:( IF DELIVERY PERIOD IS NOT OFFERED/ ACCEPTABLE, OFFER WILL BE REJECTED</u></b>				<u>Vendor to comply</u>
	i. Material: 24 weeks from the date of release of the Work order. ii. Work : <b>15 days</b> from date of release of machine for work. The delivery period of work for the purpose of LD as per Clause 11 shall be considered from the date of start of work to the date of start of the machine after carrying out the work and start of the work on the first prove-out component. iii. <b>Vendor to note that early delivery shall be acceptable. Vendor should take BHEL approval before invoking this clause.</b>				<u>Vendor to comply</u>
<b>5</b>	<b><u>DOCUMENTATION</u></b>				
	Following documents shall be supplied by the Party:				
<b>5.1</b>	Technical and Service manuals of the AC servomotors in hard copy.	03 Sets			<u>Vendor to comply</u>
<b>5.2</b>	Commissioning and service manuals of the AC servo drive	03 Sets			<u>Vendor to comply</u>
<b>5.3</b>	Parameter lists of Feed drive on CD.	01 Set			<u>Vendor to comply</u>
<b>5.4</b>	New electrical schematic of the machine	03 Sets			<u>Vendor to comply</u>
<b>5.5</b>	Instructions for data back-up & restoration for Feed drives	03 Sets			<u>Vendor to comply</u>

5.6	All documentation, Feed Drive parameters & back-up on CD	01 Set			<u>Vendor to comply</u>
5.7	Documentation of all bought-out items	03 Sets			<u>Vendor to comply</u>
6	<b><u>SPARE PARTS (TO BE COMPULSORILY QUOTED OTHERWISE OFFER WILL BE REJECTED) :</u></b>				
	Party shall compulsorily quote following spare parts:				
6.1	Sinamics S110 module, CF card, BOP & control unit, HF commutating choke and filter module (as used on the machine)	01 Set			<u>Vendor to comply</u>
6.2	Complete temperature measuring system including Infra-red radiation thermometer, digital temperature indicator and control unit, connecting cables etc. (as used on the machine)	01 Set			<u>Vendor to comply</u>
6.3	TD-200 (as used on the machine)	01 No.			<u>Vendor to comply</u>
6.4	1FK7 motor (as used on the machine)	01 No.			<u>Vendor to comply</u>
7	<b><u>WARRANTY:</u></b>				
	Party shall stand warranty as follows: a) For the material for a period of 18 months from the date of receipt and acceptance of material at BHEL, Haridwar or 12 months from the date of successful commissioning whichever is earlier. b) For the work executed for a period of 12 months from the date of successful commissioning of the machine at HEEP, BHEL, Haridwar.				<u>Vendor to comply</u>
8	<b><u>TRAINING:</u></b>				
8.1	Party shall impart training to BHEL staff, for operation & maintenance of the system supplied by them during installation & commissioning. Party to provide practical training on how to				<u>Vendor to comply</u>

	replace & synchronize the motor encoder using the drive software.				
<b>8.2</b>	Vendor to arrange one week's training for Maintenance & commissioning of Drive system at SIEMENS training centre. Expenses for Boarding & Lodging of BHEL personnel during training shall be borne by BHEL.				<u>Vendor to comply</u>
<b>9</b>	<b><u>VENDOR'S OBLIGATION:</u></b>				
	The Vendor shall bring all tools, tackles and testing equipment with them for successful commissioning of supplied system.				<u>Vendor to comply</u>
<b>10</b>	<b><u>QUALIFYING CONDITIONS</u></b>				
<b>10.1</b>	Average Annual financial turnover during the last 3 years, ending 31st March 2012, should be <b>at least ₹ 6 Lacs</b> . Vendor should submit Audited balance sheets for the last three years.				<u>Vendor to provide details &amp; comply</u>
<b>10.2</b>	<p>The Vendor must have successfully retrofitted machines with S7 PLC or Sinamics Feed Servo drive system during last seven years ending 28<sup>th</sup> February 2013 and should be either of the following:</p> <p>a. Three projects of machines retrofitted with S7 PLC and/ or Sinamics Feed Servo drive system with each project costing not less than ₹ 8 Lacs (exclusive of taxes &amp; duties).</p> <p>or</p> <p>b. Two projects of machines retrofitted with S7 PLC and/ or Sinamics Feed Servo drive system with each project costing not less than ₹ 10 Lacs (exclusive of taxes &amp; duties).</p> <p>or</p> <p>c. One project of machines retrofitted with S7 PLC and/ or Sinamics Feed Servo drive system with the project costing not less than ₹ 16 Lacs (exclusive of taxes &amp; duties).</p>				<u>Vendor to provide details &amp; comply</u>

	The above retrofitted machines should be running satisfactorily for at least 6 months prior to <b>28<sup>th</sup> February'2013</b> . 6 months period will be calculated on the basis of commissioning certificates provided. Vendor to provide P.O. / W.O copies and commissioning/ performance certificates for satisfactory operation of the above retrofitted systems along with name, address & contact details of their customer. BHEL reserves the right to verify the information provided. Vendor is advised to attach only the relevant certificates and not attach papers irrelevant against this clause.				
<b>11</b>	<b><u>LATE DELIVERY PENALTY (LD) CLAUSE:-</u></b>				
<b>11.1</b>	LD @ ½% per week subject to a maximum of 10% of the Material cost including spare parts shall be applicable for delay in deliveries. The time period from invitation date for Pre dispatch inspection from vendor to the date of arrival of Pre Dispatch Team to vendor's works and any other reasons attributed to BHEL will not be accounted for in delivery period. This period will be excluded for the purpose of calculating LD. Vendor should intimate regarding PDI 7 days in advance only				<u>Vendor to comply</u>
<b>11.2</b>	LD @ 2% per week subject to a maximum of 10% of the Commissioning Charges shall be applicable for delay beyond scheduled commissioning date as per Clause 4 ii) for reasons attributed to the party.				<u>Vendor to comply</u>
<b>12</b>	<b><u>PRE-DISPATCH INSPECTION</u></b>				
<b>12.1</b>	Pre-dispatch inspection of all the items covered under Scope of				<u>Vendor to comply</u>

	Supply at Para (1) & Spares at Para (6) shall be carried out by BHEL personnel at party's works.				
<b>12.2</b>	Supplier shall invite BHEL for carrying out pre- inspection.				<u>Vendor to comply</u>
<b>12.3</b>	Deputed BHEL persons shall do pre acceptance of material under scope of supply at vendor works and give dispatch clearance.				<u>Vendor to comply</u>
<b>12.4</b>	Expenses of Boarding and lodging of BHEL personnel during PDI shall be borne by BHEL.				<u>Vendor to comply</u>
<b>13</b>	<b><u>SUBMISSION OF BILL OF MATERIAL (BOM)</u></b>				
	Before inviting BHEL for Pre-dispatch inspection, vendor shall submit to BHEL the Bill of Material (BOM) and proposed electrical drawing/ schematic for scrutiny.				<u>Vendor to comply</u>
<b>14</b>	<b><u>EARNEST MONEY DEPOSIT ( EMD):</u></b>				<u>Vendor to comply</u>
<b>14.1</b>	Vendors have to deposit the ₹ 40,000/- as EMD. EMD may be deposited in cash, through pay order or through demand draft in favor of HEEP, BHEL, Haridwar only.				<u>Vendor to comply</u>
<b>14.2</b>	EMD shall be converted to Security deposit if the work is awarded.				<u>Vendor to comply</u>
<b>14.3</b>	EMD of unsuccessful bidders shall be refunded back normally within fifteen days of acceptance of award of work by the successful tenderer.				<u>Vendor to comply</u>
<b>14.4</b>	EMD shall not carry any interest.				<u>Vendor to comply</u>
<b>14.5</b>	EMD by tenderer will be forfeited as per tender documents if:				<u>Vendor to comply</u>
<b>14.5.1</b>	After opening the tender, the tenderer revokes his tender within the validity period or increases his earlier quoted rates.				<u>Vendor to comply</u>
<b>14.5.2</b>	The tenderer does not commence the work within the period as per LOI/contract.				<u>Vendor to comply</u>

14.6	Offers without EMD will be rejected and will not be considered for evaluation. However in special cases, valid NSIC certificate may be considered at the discretion of BHEL management.				<u>Vendor to comply</u>
15	<b><u>SECURITY DEPOSIT (SD):-</u></b>				
15.1	Successful vendor shall deposit security. The rate of security deposit will be as below:				<u>Vendor to comply</u>
	For work Up to ₹ 10 Lakhs : 10% of work order value				<u>Vendor to comply</u>
	Above ₹ 10 Lakhs upto ₹ 50 Lakhs : ₹ 1 Lakh + 7.5% amount exceeding ₹ 10 Lakhs				<u>Vendor to comply</u>
	Above ₹ 50 Lakhs: ₹ 4 Lakhs + 5% amount exceeding ₹ 50 Lakhs				<u>Vendor to comply</u>
15.2	The security deposit should be submitted before the start of work in the following forms:				<u>Vendor to comply</u>
	i) Cash (As permissible under the Income Tax Act)				<u>Vendor to comply</u>
	ii) Pay Order, Demand Draft in favour of HEEP, BHEL, Haridwar.				<u>Vendor to comply</u>
	iii) Local cheques of Scheduled Banks, subject to realization.				<u>Vendor to comply</u>
	iv) Bank Guarantee from Scheduled Banks/Public Financial Institution as defined in the companies Act. The Bank guarantee format should have the approval of BHEL.				<u>Vendor to comply</u>
15.3	EMD of successful tenderer can be converted and adjusted against the Security Deposit.				<u>Vendor to comply</u>
15.4	Security Deposit shall not carry any interest.				<u>Vendor to comply</u>
15.5	<b>100% of the Security Deposit</b> amount shall be refunded to the vendor after final acceptance of work. <b>SD shall be released after the submission of Performance Bank Guarantee(PBG) by the vendor.</b>				<u>Vendor to comply</u>

<b>16</b>	<b><u>Performance Bank Guarantee (PBG):</u></b>				
<b>16.1</b>	Vendor shall be required to submit a Performance Bank Guarantee (PBG) for 10% of the total work order/ contract value which shall be valid for a period of 12 months from the date of final acceptance of the machine.				<u>Vendor to comply</u>
<b>16.2</b>	The PBG shall be submitted on a non-judicial stamp paper of value not less than ₹ 100/- issued by any one of the nationalised banks.				<u>Vendor to comply</u>
<b>17</b>	<b><u>PAYMENT TERMS:</u></b> <b>(Note : No advance payment shall be made to the vendor.)</b>				
<b>17.1</b>	Part payment will be made after completion of following milestones				<u>Vendor to comply</u>
<b>17.1.1</b>	Payment of 80% of material cost along with 100% of all taxes & duties (Excise duty, CST/VAT as applicable) shall be payable after inspection & acceptance of material at HEPP, BHEL, Haridwar. Vendor to ensure that all relevant documents are submitted.				<u>Vendor to comply</u>
<b>17.1.2</b>	Final payment of balance 20% of material cost, 100% of commissioning charges including service taxes as applicable amount will be made after Final acceptance of the machine (As per Clause 3). The payment shall be made subject to submission of PBG as per "Para 16".				<u>Vendor to comply</u>
<b>17.2</b>	All the payments shall be made through e-payment after submission of following documents along with first bill				<u>Vendor to comply</u>
<b>17.2.1</b>	E-payment form duly filled (Form will be provided by BHEL)				<u>Vendor to comply</u>
<b>17.2.2</b>	Income tax exemption letter( if applicable)				<u>Vendor to comply</u>



<b>17.3</b>	Excise duty & CST/VAT will be paid on material cost and service tax will be paid on commissioning charges at actuals. Related original documents to be submitted for availing MODVAT credit by BHEL.				<u>Vendor to comply</u>
<b>18</b>	<p><b><u>Risk Purchase Clause</u></b> : In case of delays in supplies / defective supplies or non-fulfillment of any other terms &amp; conditions given in the work order the purchaser may cancel the work order in full or part thereof and may also make the purchase of the material / service from elsewhere / alternative source at the risk and cost of supplier.</p> <p>Vendor does not agree to above clause, their offer is liable to be rejected. In case any vendor accepts risk purchase clause initially and subsequently declines to honour the term in the eventuality of RISK PURCHASE, they may be banned for business with BHEL.</p>				<u>Vendor to comply</u>
<b>19</b>	<b><u>GENERAL CONDITIONS:</u></b>				<u>Vendor to comply</u>
<b>19.1</b>	A point wise compliance statement shall be submitted by the party with reference to the above scope of supply against each clause/ sub-clause with relevant details & comments. Non-compliance to any of the clauses & quoting inadequate quantity can lead to dis-qualification of the offer.				<u>Vendor to comply</u>
<b>19.2</b>	The Vendor is advised to inspect the machine prior to quoting ascertain all the relevant details required for successful completion of the work.				<u>Vendor to comply</u>
<b>19.3</b>	The proposed electrical schematic & Bill of material for the				<u>Vendor to comply</u>

	machine shall be provided by the vendor prior to pre dispatch inspection.				
<b>19.4</b>	Specifications such as part no./Model/Type, power, torque, Rated and maximum RPMs, Rated and maximum currents of the motor and drive controllers shall be stated in the offer by the party. Ordering brochure/catalogue should be attached wherever necessary.				<u>Vendor to comply</u>
<b>19.5</b>	Vendor must compulsorily quote the quantity exactly as per the Scope of supply. No reduction in quantity as per the above Scope of supply is permissible.				<u>Vendor to comply</u>
<b>19.6</b>	Vendor must quote the Spare parts separately in the offer otherwise the offer will be rejected.				<u>Vendor to comply</u>
<b>19.7</b>	The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site www.bhel.com				<u>Vendor to comply</u>
<b>19.8</b>	<b>The award of works will be made on basis of the total of Material cost , Spare Parts cost, Commissioning charges and all taxes, duties as applicable ( Cost to BHEL)</b>				<u>Information to vendor</u>
<b>19.9</b>	The Vendor should submit their best price at this stage itself and they will not be allowed to revise the price. Any revision / discount given by the vendor subsequently will be ignored.				<u>Information to vendor</u>
<b>19.10</b>	Check List as per Annexure 'C' must be enclosed with techno-commercial bid				<u>Vendor to comply</u>
<b>20</b>	<b><u>BHEL'S OBLIGATION/ FACILITIES:</u></b>				
<b>20.1</b>	Existing electrical schematic of the machine shall be provided by BHEL to the vendor.				<u>Vendor to comply</u>

<b>20.2</b>	Crane facility along with lifting tackles, trolleys etc. will be made available free of charge while working in BHEL premises only. Any civil work required for the erection of panel shall be done by BHEL.				<u>Vendor to comply</u>
<b>20.3</b>	Facilities of minor welding, brazing, minor machining limited to fitting work /rework etc. will be made available free of cost inside BHEL premises.				<u>Vendor to comply</u>
<b>20.4</b>	Consumables like lubricants, kerosene oil, cotton waste etc. will be supplied free of cost by BHEL during execution of works inside BHEL premises. Contractor should make his own arrangements for all types of hand tools including pneumatic/electrical drill machines, grinders, scraping tools along with the general purpose measuring instruments, straight edges etc.				<u>Vendor to comply</u>
<b>21</b>	<b><u>OFFER :-</u></b> The offer should be submitted in two parts and in following manner.				
<b>21.1</b>	<b><u>Techno-commercial Bid :</u></b>				
<b>21.1.1</b>	The envelop shall contain the Techno-commercial Bid (ANNEXURE 'A') with technical details and commercial terms & conditions along with relevant documents like copies of ESI, PF code, PAN No., Service Tax Regn. No., TIN No., CST No., Experience Certificates, Audited Balance Sheet of last 3 years, P.O copies & Commissioning/ Performance certificates (against Pre-qualifying conditions) , <b>Tender fees, EMD</b> and Check List as per ANNEXURE 'C'.				<u>Vendor to comply</u>
<b>21.1.2</b>	The envelop shall be super scribed with "Techno-Commercial				<u>Vendor to comply</u>

	Bid”, Name of work & NIT No.				
<b>21.1.3</b>	Point-wise compliance of this scope of supply and work is to be given by vendors while submitting their techno-commercial offer in the format provided by BHEL. Each page of the compliance list has to be signed by the vendor.				<u>Vendor to comply</u>
<b>21.1.4</b>	The vendor must note that no prices are to be quoted/ mentioned in the techno-commercial offer. Vendor must include un-priced Price bid.				<u>Information to vendor</u>
<b>21.2</b>	<b><u>Price Bid :</u></b>				
<b>21.2.1</b>	The second envelope shall contain only the price bid with separate price for material, spares, work & applicable taxes & duties on Price Bid Format only as per <b><u>ANNEXURE ‘B’</u></b> .				<u>Vendor to comply</u>
<b>21.2.2</b>	Any other information in the price bid shall not be considered and the quotation is likely to be rejected. Price bid document shall be signed by the bidder at the bottom of the page.				<u>Vendor to comply</u>
<b>21.2.3</b>	The envelope shall be sealed and super scribed with “Price Bid”, Name of work & NIT No.				<u>Vendor to comply</u>
<b>21.2.4</b>	Price bids of techno commercially accepted vendors shall be opened.				<u>Vendor to comply</u>
<b>21.3</b>	Both the above two envelopes shall be kept in another sealed cover. The cover shall be super-scribed with “Quotation for (name of work), NIT No. & due date and shall be submitted in the <b>Tender Box kept in the Tender room of Purchase department at the 4th floor of the Main Administrative Building of BHEL,HEEP,HARIDWAR</b> and it should also contain the Bidder’s address.				<u>Vendor to comply</u>
<b>21.4</b>	In case the date of tender opening happens to be a BHEL declared				<u>Information to vendor</u>

	holiday, tenders shall be opened on the next working day.				
<b>22</b>	<b>Commercial Terms:</b>				
<b>22.1</b>	Prices shall be quoted on “Firm Price” basis only. <b>The prices should be on F.O.R BHEL, Haridwar basis inclusive of Packing &amp; Forwarding, transit insurance &amp; Transportation charges.</b> Applicable % of ED & Sales Tax, Installation/ Commissioning Charges & Service Tax should be clearly indicated in attached Price bid format as per “ <b>Annexure B</b> ”				<u>Vendor to comply</u>
<b>22.2</b>	Validity of offer shall be for a minimum period of 120 days from the date of Tender Opening.				<u>Vendor to comply</u>
<b>22.3</b>	Freight & transit insurance charges from Dispatching station to BHEL, Haridwar shall be borne by the party.				<u>Vendor to comply</u>
<b>22.4</b>	The material will be dispatched to <b>Sr. Engineer (WEX/CNC-TBM, NBS, HT &amp; TR), HEPP, BHEL, Haridwar.</b>				<u>Vendor to comply</u>
<b>23.</b>	<b>Packing:</b>				
	Supplier shall arrange for adequate protection and packing of the consignment so as to avoid loss and damage during transit and also take appropriate measures to prevent metal parts from rusting and corrosion during transit. Handling instructions shall be clearly printed /painted on the packages. Each package should carry a detailed packing slip. Supplier shall be responsible for any loss/damage during transit due to defective/inadequate packing.				<u>Vendor to comply</u>

**ANNEXURE 'B' (PRICE BID FORMAT)**

Name of Work :

NIT No. & Date :

Bidder's Offer No. & Date :

Sl. No.	Description of item	Unit	Qty	Basic Rate (in `)	Excise Duty (in %)	VAT/CST (in%) (VAT with FORM-17 or CST with C-FORM)	Service Tax (in %)	Total Value (in `)
1	Material	Set	01	₹	%	%		₹
2	Spares	Set	01	₹	%	%		₹
3	Installation & Commissioning	Set	01	₹			%	₹
	<b>TOTAL COST (in Figures)</b>							₹
	<b>TOTAL COST (in Words) :</b>							

**Note: Vendor may please note that all relevant columns should be duly filled up and in case any column is left blank it will be considered as inclusive in the prices quoted. All pages to be duly signed and stamped by authorised signatory.**

**Annexure 'C'**  
**CHECK LIST FOR TENDER**

**NIT No. :** \_\_\_\_\_

Vendor shall ensure that following documents / particulars have been enclosed with tender. This check list shall be enclosed with Techno-commercial Bid.

<b>S. No.</b>	<b>Particulars</b>	<b>YES/NO</b>	<b>REMARKS</b>
1.	<b>Sealed Techno-commercial Bid with Un-priced price bid</b> as per Annexure 'A' of NIT		
2.	<b>Sealed Price Bid</b> as per Annexure 'B' of NIT		
3.	<b>Compliance</b> to all the points of the Annexure 'A' of NIT		
4.	<b>Audited balance sheets</b> for the last three years should be submitted i.e, 2011-12, 2010-11, 2009-10 required as per Clause 10.1 of Annexure 'A' of NIT		
5.	<b>P.O. copies and Commissioning/ Performance certificates</b> required as per Clause 10.2 of Annexure 'A' of NIT		
6.	<b>Name, address &amp; contact details of their customer</b> required as per Clause 10.2 of Annexure 'A' of NIT		
7.	<b>Tender Fee</b> enclosed		
8.	<b>Earnest Money Deposit (EMD)</b> required as per Clause 14 of Annexure 'A' of NIT		
9.	<b>Complete specifications</b> such as Part no. / Model / Type of Drive and Servo motors, power, torque, Rated and max. RPMs, Rated and max. currents of servo motors. Ordering brochure/catalogue should be attached required as per Clause 19.4 of Annexure 'A' of NIT		

Sign & Seal