


	<b><u>BHARAT HEAVY ELECTRICAL LIMITED</u></b>	<b>Indent No.:</b>	
		<b>Dated:</b>	
	<b>UNIT'S ADDRESS:</b> HEEP, RANIPUR HARIDWAR - 249403 UTTARANCHAL, INDIA	<b>Enquiry No. :</b>	
		<b>Due Date :</b>	
		<b>Supplier Qtn. No.:</b>	
	<b><u>CONTACT PERSON FROM PURCHASE DEPTT.:</u></b> <b><u>NAME: MR. A.SANYAL</u></b> <b><u>DESIGNATION: Dv. General Manager (PPX-CAP)</u></b> <b><u>PHONE NO.: 0091 - 1334 - 285291</u></b> <b><u>E-MAIL: asanyal@bhelhwr.co.in</u></b> <b><u>FAX NO. : 0091 - 1334 - 226462</u></b>	<b>Date :</b>	
<b><u>SPECIFICATION CUM COMPLIANCE CERTIFICATE FOR ABRASIVE BELT POLISHING MACHINES-Qty 6 NoS.</u></b>			
	<b>NOTE :-</b>		
	<p>1. Vendor must submit complete information against clause at Sl.No. 19 of specification. The offers complying this clause, would only be considered.</p> <p>2. The vendor should fill the "Offered" Column in compliance to specified requirements and also "Deviations" Column, where there is deviation from the requirement. Duly filled specification cum compliance certificate should be submitted along with the offer. Inadequate, incomplete, ambiguous or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance.</p> <p>3. The offer and all documents enclosed with offer should be in English language only.</p>		
	<b>ADDRESS OF THE SUPPLIER :</b>	<b>ADDRESS OF THE INDIAN AGENT(S) :</b>	
	<b>TELEPHONE NOS.:</b>	<b>TELEPHONE NOS.:</b>	
	<b>FAX NOS.:</b>	<b>FAX NOS.:</b>	
	<b>E-MAIL ADDRESS :</b>	<b>E-MAIL ADDRESS :</b>	

SCOPE:	SUPPLY, ERECTION & COMMISSIONING OF ABRASIVE BELT POLISHING MACHINES AS PER SPECIFICATON FURNISHED BELOW : No of Machines : 6 Nos..				
SL. NO.	DESCRIPTION OF BHEL REQUIREMENT	REQUIRED	OFFERED	DEVIATION	REMARKS
1.0	<b>Purpose:</b> Abrasive Belt Polishing Machines are to be used for polishing of turbine blades of various sizes using abrasive belts of different grits. In turbine blade concave and convex airfoil will be ground and polished using rubber contact rolls of suitable diameters. The blade materials proposed to be polished in this machine are mainly high temperature and creep resistant alloy steel hot rolled in material grade X22CrMoV12.1 and X20Cr13 having tensile strength up to 1050 N/MM <sup>2</sup> and hardness up to 300 BHN. The machine should be capable to ground tougher material also.	Vendor to confirm			
2.0	<b>Broad Design Features:</b> The machine should be of rigid construction. The convex profile of turbine blade will be ground and polished with contact roll of diameter 300 mm and a separate attachment shall be provided to mount smaller diameter contact rolls starting from 25 mm diameter for grinding and polishing of concave profile of steam turbine blades. The attachment should be easily replacable. The machine should be well guarded from front and side for safety of operators. The machine should be connected to dust collector of suitable capacity so that all the grinding dusts are exhausted from the working zone.	Vendor to confirm			
3.0	<b>Technical Specification:</b>				
3.1	Abrasive Belt Size:	2500 mm long X 50 mm wide (Endless)			
3.2	Drive Motor	3.7 kW, 2 Speed			
3.3	Motor Speed	1400 & 2800 RPM			
3.4	Speed Change Arrangement	Vendor to intimate the arrangement			
3.5	Contact Wheel Size	Dia 300 mm X 45 mm Wide with angular serration			
3.6	Working Height	Approximately 1000 mm. However, it is to be finalized after seeing the construction details of machine to be submitted with the offer.			
3.7	Machine should have following accessories for safe and trouble free working:				
3.7.1	Easily operating Belt Tensioning System	Vendor to comply			
3.7.2	Easily operating Belt Tracking System	Vendor to comply			
3.7.3	Belt Guard to prevent any injury to operator	Vendor to comply			
3.7.4	Side Guard to prevent any injury to operator	Vendor to comply			
3.7.5	Sutiably located Exhaust Hood for connecting the machine to dust exhaust system.	Vendor to comply			

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3.7.6	Starter for motor located at suitable location	Vendor to comply			
3.7.7	Harden Drive and Idler Rollers for extended life	Vendor to comply			
3.8	Dust Collector	Vendor to comply			
3.8.1	Vacuum and down draft type dust collector of reputed make shall be offered. Offered dust collector should have filtration first through wire mesh screen and then through cotton screen cartidge.	Vendor to intimate details.			
3.8.2	Capacity	15 Liters or more			
3.8.3	Air displacement	1600 Cubic Meter per hour or more			
3.8.4	Power	5 HP or more			
3.9	Concave Profile Milling Attachment				
3.9.1	Attachment suitable for independently fixing different diameter contact rollers from diameter 25 mm to 125 mm as per attached sketch STB-90/5 shall be offered with each machine. The fixing should be through dia 15 h8 guided hole and M12 nut.	Vendor to offer			
4.0	Tooling				
4.1	Contact wheel assembly suitable for diameter 300 mm X 45 mm contact roll as per attached sketch STB- 94-04	Vendor to offer			
4.2	Contact rolls assembly diameter 25mm, 35 mm, 40mm, 45 mm, 50 mm, 55 mm, 65 mm, 70 mm, 80 mm & 90 mmas per attached sketch STB-90/5.	Vendor to offer			
4.3	Abrasive Belt 50 X 2500 X 80 grit and 50 X 2500 X 120 grit of reputed make	Vendor to offer			
5.0	Colour of the machine shall be apple green. RAL 6011	Vendor to offer			
6.0	Tools and Equipment required for erection of the machine shall be brought by the vendor. Necessary tools like Torque Wrench, Spanners, Keys, grease guns etc. required for operation and maintenance of the machine should also be supplied by the vendor. List of such tools should be submitted with offer.	Vendor to offer			
7.0	<b>ERECTION &amp; COMMISSIONING</b>				
7.1	Erection & Commissioning: Supplier to take full responsibility for carrying out the erection, start up, testing of machine, it's control & all types of other supplied equipment for polishing of blades. Service requirement like power, air & water shall be provided by BHEL at only one point to be indicated by supplier in their foundation/layout drawings. The equipment is to be located in a room where crane of only 5 MT is existing. In case crane of higher capacity is required, it is to be arranged by vendor by hiring mobile crane from local sources. Helping personnel shall be provided by BHEL for erection and commissioning activities. Details of these requirements should be	Vendor to confirm & offer			
7.2	Broad Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to submit			
7.3	Charges, duration, terms & conditions for Erection & Commissioning should be furnished in detail separately by vendor	Vendor to offer			
7.4	Portion, if any, of the machine, accessories and other supplied items where paint got rubbed or peeled off during transit or erection should be repainted and matched with the original adjoining paint by the vendor before final acceptance.	Vendor to offer			
8.0	<b>SPARES:</b> Following spares shall be offered for 2 years trouble free operation of the machine: Bearings all types - 10 Nos each, Idler Rollers all types- 10 Nos each, Spring for belt tensioning- 10 Nos, Cotton cartidge for dust collector- 10 Nos, Exhaust Suction Pipe- 6 Nos, Starter for motor- 2 Nos, Main Motor-1No.	Vendor to offer			
9.0	<b>Documents &amp; Manuals:</b> 5 sets of all operational and maintenance manuals of machine and dust collector unit containing all assembly/ sub assembly drawings, circuit diagrams of the machine and electrical system shall be supplied. The manuals should also contain detailed spare part list along with specification, part number and address of manufacturers.	Vendor to offer			

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10.0	<b>Training &amp; Pre -dispatch Inspection :</b> Training of BHEL personnel for mutually agreed period in the field of operation, mechanical and electrical maintenance shall be offered. Also BHEL training will do pre-dispatch inspection by witnessing accuracies, verification of all machine functions polishing of job. Dispatch clearance will be given after full satisfaction by B.H.E.L.	Vendor to offer			
11.0	<b>FOUNDATION</b>				
11.1	<b>Foundation Design:</b> In case any special foundation is required for installing the machine, detailed foundation drawings to be offered. The vendor should agree to supply 5 copies of machine layout and foundation drawings with one month of Placement of LOI /	Vendor to offer			
12.0	<b>Prove out and acceptance:</b> After successful erection and commissioning at BHEL, Hardwar supplier shall carry out prove out by polishing at least 100 Nos mutually agreed blades on each machine. Also representative of vendor will supervise one weeks ( 6 working days) routine production after satisfactory commissioning. Final acceptance shall be made by BHEL at BHEL, Hardwar after successful completion of erection, commissioning accuracy	Vendor to comply			
13.0	<b>OPERATING CONDITION:</b>	Vendor to accept & confirm.			
13.1	Supply condition: All machine electrical, controls and paint shall be suitably tropicalized. The machine should work trouble free in the following conditions: Power Supply : 3 Phase AC 415V (+10/ 15%) 50Hz +/-3%, 3 wire system Compressed Air : 4-6 Kg/Cm <sup>2</sup>				
13.2	Power Supply Voltage will be provided by BHEL at a single point near the machine, as per layout recommended by Vendor. All types of cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the machine/control cabinets, shall be the responsibility of vendor. Vendor should ensure the proper earthing for the equipment and its peripherals/accessories. Any material requirement for the same should be informed with foundation design/drawings so that same could be incorporated during construction of foundation. The vendor can take earthing connection from the nearest available location of the production shop.				
14.0	<b>OTHER TECHNICAL DETAILS:</b> Following technical details/ features are to be quoted/ submitted with the technical offer:	Vendor to confirm and submit necessary details.			
14.1	Arrangement of lubrication of all moving/ rotating parts.				
14.2	The construction details of all machine assemblies/ sub-assemblies and all major machine elements/ accessories.				
14.3	The total connected load of the machine and peripherals.				
14.4	Total machine weight and maximum weight of sub-assembly(s) to be handled during commissioning.				

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14.5	Floor space requirement, over all size and height of the machine/ equipment.				
14.6	Maximum noise level in full load condition, it should be well within the specified limits of regulatory body.				
14.7	Detailed catalogues, sketch/ photograph of the machine accessories/ attachments.				
15.0	<b>TROPICALISATION</b>				
15.1	All electrical / electronic equipment shall be tropicalized.	Vendor to confirm			
15.2	All motors shall conform to IEC or Indian Standards	Vendor to confirm			
16.0	<b>SAFETY ARRANGEMENTS</b>				
	Following safety features in addition to other standard safety features should be provided on the machine:	Vendor to confirm and comply			
16.1	All the rotating parts used on machine should be statically & dynamically balanced to avoid undue vibrations & noise.	Vendor to confirm and comply			
16.2	Emergency Switches at suitable locations should be provided.	Vendor to confirm and comply			
16.3	Automatic over load protection	Vendor to confirm and comply			
16.4	Adequate protection for all moving and rotating parts to be ensured	Vendor to confirm and comply			
17.0	<b>PACKING:</b>				
17.1	Rigid packing be made for all items of complete machine, all accessories and other supplied items to avoid any damage/loss in transit. When machine is despatched in containers, all small loose items shall be suitably packed in boxes.	Vendor to offer			
18.0	<b>GUARANTEE:</b>				
18.1	Guarantee for complete machine, control system and all supplied accessories/equipments for 24 months from the date of final acceptance of the machine. Any spare required during guarantee period shall have to be arranged by the vendor free of cost and duty levied (if any) have to be borne by the vendor.	Vendor to offer			
19.0	<b>Qualifying Criteria :</b>				
	Only those vendors should quote, who have supplied & commissioned at least one no. Abrasive Belt Polishing Machine of same or higher sizes with respect to belt size and Power mentioned at clause nos. 3.1 and 3.2 respectively in the past ten years(on the date of opening of Tender) and referred machine is presently working satisfactorily for more than one year (on the date of opening of Tender) after commissioning , should quote.. However , if referred machine(s) has / had been supplied to BHEL , then sthe machine should be presently working satisfactorily for more than six months(on the date of opening of Tender) after its commissioning and acceptance in BHEL. The following information should be submitted by the vendor about the companies where referred machine (s) have been supplied. This is required from all the vendors for qualification of their offer.	Vendor to accept & confirm.			

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19.1	Name of the customer / company, where such machine is installed.	Vendor to inform			
19.2	Complete postal address of the customer.	Vendor to inform			
19.3	Month & Year of Commissioning.	Vendor to inform			
19.4	Parameters of machine supplied with respect to belt size and power and application for which the machine is supplied.	Vendor to inform			
19.5	Name and designation of the contact person of the customer.	Vendor to inform			
19.6	Phone , FAX no. and email address of the contact person of the customer.	Vendor to inform			
19.7	Performance Certificate from the customer regarding satisfactory performance of the machine supplied to them.	Vendor to submit			
19.8	BHEL reserve the right to verify information submitted by vendor. In case the information is found to be false/incorrect, the offer shall be rejected.	Vendor to accept and confirm			