

	<u>BHARAT HEAVY ELECTRICAL LIMITED</u>			Enquiry No. :		
	<u>UNIT'S ADDRESS:</u>			Due Date :		
	<u>UNIT'S PHONE NOS.</u>			Supplier Qtn. No.:		
	<u>CONTACT PERSON'S NAME/DESIGN./PHONE NO./E-MAIL (FROM PURCHASE DEPTT.)</u>			Date :		
<u>SPECIFICATION CUM COMPLIANCE CERTIFICATE FOR FLATTENING MACHINE</u>						
NOTE:-						
1. Vendor must submit complete information against clause no. 22.0 The offer meeting this clause would only be processed.						
2. The "Offered" Column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Vendor and 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.						
3. The offer and all documents enclosed with offer should be in English language only.						
ADDRESS OF THE SUPPLIER :				ADDRESS OF THE INDIAN AGENTS :		
TELEPHONE NOS.:				TELEPHONE NOS.:		
FAX NOS.:				FAX NOS.:		
E-MAIL ADDRESS :				E-MAIL ADDRESS :		
SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / CONFIRMED BY	OFFERED	DEVIATIONS	REMARKS	
1.0	PURPOSE & WORKPIECE MATERIAL:					
1.1	Purpose: Two Column traveling Gantry type Straightening Press for straightening large plates, castings or weldments of mild steel , alloy steel and stainless steel..	Vendor to Confirm				

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2.0	SPECIFICATION:				
2.1	MACHINE CONFIGURATION	Vendor to Confirm			
2.1.1	Maximum Force: Suitable to straighten 25 mm (Min.) thick mild /alloy steel at specified points	Vendor to Confirm			
2.1.2	Press Force - 100 T (min.), Stroke $\geq$ 600 mm	Vendor to Confirm			
2.1.3	Pressing Speed:	Vendor to Specify			
2.1.4	Return Speed:	Vendor to Specify			
2.1.5	Ram Longitudinal movement: 12000 mm (min)	Vendor to Confirm			
2.1.6	Ram Transverse movement: Sufficient to ensure plate straightening of 3000 mm width	Vendor to Confirm			
2.1.7	Ram Longitudinal travel speed	Vendor to Specify			
2.1.8	Ram Transverse travel speed	Vendor to Specify			
2.1.9	Electric ram positioning system to control the ram down travel	Vendor to Specify			
2.1.10	The ram movements must be precisely control to position the rams accurately on plate.	Vendor to Specify			
2.1.11	Positioning accuracy	Vendor to Specify			
2.1.12	Back Stop System to limit the backward travel during the pressing cycle and give only the stroke necessary for the straightening operation.	Vendor to Confirm			
2.2	CAPACITY & SIZE of WORKPIECE				
2.2.1	Maximum Plate thickness: 25 mm (min.) of mild / alloysteel	Vendor to Confirm			
2.2.2	Maximum Plate width: 3000 mm	Vendor to Confirm			
2.2.3	Maximum plate length: 12000 mm	Vendor to Confirm			

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2.2.4	Work Piece Material: Steel plates of 345 N/sq. mm yield point.	Vendor to Confirm			
3	HYDRAULIC EQUIPMENT				
3.1	High pressure, variable delivery, piston pumps are utilised to ensure high efficiency and long life	Vendor to Offer			
3.2	Hydraulic pumps and valves contained in a single unit, base mounted adjacent to the machine or on gantry. The pumps to be driven directly by electric motors. The solenoid / pilot operated control valves etc. to be mounted on manifold blocks and controlled electrically. The use of 'block hydraulics' to reduce the number of pipe connections and the risk of oil leakage in the system and makes for easier maintenance.	Vendor to Offer			
3.3	Unit should be with complete plug in test pressure connections at various points throughout the hydraulic circuit to facilitate fault finding. Tell tale indicator lamps visible on the outside of the unit to indicate when solenoids are activated	Vendor to Confirm			
3.4	Main ram and servo oil pressure indicated by gauges mounted on the hydraulic unit.	Vendor to Offer			
3.5	The oil system to be continuously cleaned by high efficiency replaceable element filters with warning lamp indication for replacement. If necessary due to ambient conditions as specified, an air glass cooler is fitted to maintain the hydraulic oil at a satisfactory temperature. Similarly, electric immersion heaters to be fitted in the oil tank to maintain a satisfactory minimum temperature for starting in cold conditions.	Vendor to Offer			

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3.6	All hydraulic rams to be ground; hard chrome plated forged steel, and operated within cylinders fitted with replaceable phosphor bronze liners. The main cylinders should be sealed by high pressure multi lipped type 'V' ring packings/composite seals, split for ease of replacement 'insitu'. All rams should be protected by efficient scraper rings within the glands	Vendor to offer			
3.7	Hydraulic system to be fully protected against any unintentional overload conditions which could damage the machine or interchangeable rollers.	Vendor to Confirm			
3.8	Indigenous (Indian) source or Indian/ International equivalent and specifications of oils/ greases are also to be provided by the vendor.	Vendor to Confirm			
3.9	The main hydraulic pumps to be driven by high efficiency, totally enclosed AC induction motors, in accordance with IEC 34-5 IP55 protection standards and Class 'F' insulation to IEC34-1. These motors should start on no load by push button operated star delta starters with automatic sequence for multiple motors. The motors should be protected by thermal and electro-magnetic overload breakers.	Vendor to Offer			
4	CONSTRUCTION:				
4.1	Vendor to furnish details of material, hardness & constructional details, including explanatory drawings, of various components/assemblies like Column, Cross Rail, Ram head, Table, Guideways/slides, Feed Transmission system, Ram, Hydraulic and Lubrication system, Feedback system etc .of the machine.	Vendor to Confirm			
4.2	Video images on CD and / or hard copy explaining the technical features / Literature with photographs, drawings explaining the technical features should be enclosed with the offer	Vendor to Confirm			
5	OPERATION AND CONTROL SYSTEM:				

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5.1	Complete control of the machine is effected from a portable desk type control console on the floor area adjacent to the machine. The console is mounted on wheels and connected to the electrical panel by an armoured type trailing cable, thereby allowing operator mobility and unrestricted view of the working area. The face of the control console has an engraved legend plate with all operating features depicted in colour coded international sign language	Vendor to Offer			
5.2	An auxiliary pendant control station is fitted on the opposite side of the machine with selected duplicate controls.	Vendor to Confirm			
5.3	The control voltage for push buttons is 24V DC and for contactors, solenoids, etc. shall be 110 volts AC. All limit switches have 'tell tale' indicator lights.	Vendor to Confirm			
6	MACHINE LIGHTS: All light fittings, consumables, adapters/receptacles should have compatibility with Indian / International equivalents.	Vendor to Confirm			
7	ELECTRICAL :				
7.1	415V + 10% / -10%, 50HZ +/-3 HZ, 3 Phase AC (3 wire system with out neutral) 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. Requirement of grounding/earthing with required material details is to be informed by vendor well in advance so that same could be incorporated during construction of foundation.	Vendor to Confirm			

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7.2	Tropicalisation: All electrical / electronic equipment shall be	Vendor to Confirm			
7.3	All electrical control gear should be housed in a lockable steel enclosure to I.P.55 protection standard which is mounted on the machine. A 3 phase door interlocked circuit breaker is provided for the connection of incoming power.	Vendor to Confirm			
7.4	All electrical & electronic control cabinets & panels should be dust and vermin proof	Vendor to Confirm			
7.5	All electrical and electronic panels including operator's panel should be provided with fluorescent lamps for sufficient illumination and power receptacles of 220Volts, 5/15 Amp AC. All adapters/receptacles should have compatibility with Indian equivalents.	Vendor to Confirm			
7.6	Motors shall conform to IEC or Indian Standards	Vendor to Confirm			
7.7	All cables moving with traversing axes should be installed in caterpillar / Drag chain. Additionally, all the cable trays required for laying of cables should be included in the offer.	Vendor to Confirm			
7.8	Vendor should ensure the proper earthing for the machine and its peripherals.	Vendor to Confirm			
8	SAFETY ARRANGEMENTS: Following safety features in addition to other standard safety features should be provided on the machine:	Vendor to Confirm			
8.1	Machine should have adequate and reliable safety interlocks / devices to avoid damage to the machine, workpiece and the operator due to the malfunctioning or mistakes. Machine functions should be continuously monitored and alarm / warning indications through lights/ alarm number with messages (on display and panels) should be available.	Vendor to Confirm			

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8.2	The electrical control circuits should be so arranged that in the event of power failure or interruption the press cannot inadvertently restart or make any uncontrolled movements.	Vendor to Confirm			
8.3	Emergency stop buttons of the turn to release type should be positioned on both sides of the machine in addition to one on the control desk and the integrity of the emergency system is continually monitored in compliance with recognised safety standards.	Vendor to Confirm			
8.4	A detailed list of all alarms / indications provided on machine should be submitted by the supplier.	Vendor to Confirm			
8.5	All the pipes, cables etc. on the machine should be well supported and protected. These should not create any hinderance to machine operator's movement for effective use of machine.	Vendor to Confirm			
8.6	All the rotating parts used on machine should be statically & dynamically balanced to avoid undue vibrations.	Vendor to Confirm			
8.7	Emergency Switches at suitable locations as per International Norms should be provided.	Vendor to Confirm			
9	ENVIRONMENTAL PERFORMANCE OF THE MACHINE :				
	The Machine shall conform to following factors related to environment :				
	(a) If any safety / environmental protection enclosure is required it should be built in the machine by the vendor.	Vendor to Confirm			
	(b) Paint of the machine should be oil / coolant resistant and should not peel off and mix up with coolant.	Vendor to Confirm			
10	LEVELING & ANCHORING SYSTEM: Complete anchoring system including foundation bolts, anchoring materials, fixators, leveling shoes etc should be supplied	Vendor to Confirm			

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11	TOOLS FOR ERECTION, OPERATION & MAINTENANCE: Special 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.for operation and maintenance of the machine should be supplied. List of such tools should be submitted with offer	Vendor to Confirm			
12	SPARES:				
12.1	Itemised breakup of mechanical, hydraulic, electrical and electronic spares used on the machine in sufficient quantity as per recommendation of Vendor for 2 years of trouble free operation on three shifts continuous running basis should be offered by vendor. The list to include following, in addition to other recommended spares: (Unit Price of each item of spare should be offered)	Vendor to Confirm			
12.1.1	Mechanical & Hydraulic Spares: All types of Pumps, Valves, Pressure Switches, Transducers, Flow Switches, Filters, Seals, O-rings, Hydraulic Hoses etc.	Vendor to Confirm			
12.1.2	Electrical /Electronic / Spares: All types of Relays, Contactors, Proximity Switches, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers, Main Power Switch, Encoders, e, Operator's panel with Display Unit, PLC, Motors for Feed Drives.	Vendor to Confirm			
12.2	All types of spares for total machine and accessories should be available for atleast ten years after supply of the machine. If machine or control is likely to become obsolete in this period, the vendor should inform BHEL sufficiently in advance and provide drawings of parts / details of spares & suppliers to enable BHEL to procure these in advance, if required	Vendor to Confirm			

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12.3	Recommended set of spares for all attachments are to be offered with details.	Vendor to Confirm			
12.4	Vendor to confirm that complete list of spares for machine and accessories, along with specification / type / model, and name & address of the spare supplier shall be furnished along with documentation to be supplied with the machine	Vendor to Confirm			
13	DOCUMENTATION : Five sets of following documents (Hard copies) in English language should be supplied along with the machine	Vendor to Confirm			
13.1	Operating manuals of Machine system	Vendor to Confirm			
13.2	Detailed Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts including Electrical / Pneumatic/ Hydraulic circuit diagrams. All Assembly/ Sub Assembly Drawings shall be supplied with the part list also	Vendor to Confirm			
13.3	Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable.	Vendor to Confirm			
13.4	Detailed specification of all rubber items and hydraulic/lube fittings	Vendor to Confirm			
13.5	PLC program print-outs with comments in English.	Vendor to Confirm			
13.6	Complete Master List of parts used in the machine shall be submitted by the vendor.	Vendor to Confirm			
13.7	One additional set of all the above documentation on CD ROM, wherever possible.	Vendor to Confirm			
14	TRAINING				

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14.1	BHEL Persons should be trained at supplier's Works for mutually agreed period in the area of (a) Technology, Use of all Features, Systems & supplied accessories etc. (b) Electrical & Electronic maintenance for machine & other supplied equipments (c) Mechanical & Hydraulic maintenance of the machine & other supplied equipments (d) Operation of the machine & other supplied equipments.	Vendor to Confirm			
14.2	Air-fare, boarding & lodging for the trainees shall be borne by BHEL.	Vendor to Confirm			
14.3	Competent, English speaking experts shall be arranged by the vendor during training for satisfactory & effective training of BHEL personnel.	Vendor to Confirm			
14.4	Vendor to quote for training on man / week basis	Vendor to Confirm			
15	FOUNDATION :				

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15.1	Vendor shall submit the preliminary layout drawing giving details viz. static / dynamic load details etc for getting BHEL's comments, within one month from the date of Letter of Intent (LOI) / P.O. whichever is earlier. Final Layout drawings shall be submitted by the supplier within three months after getting BHEL's approval. The layout should consist of all requirements pertaining to complete machine including space requirement for Voltage Stabilizer, Isolation Transformer, Air compressor, Chip Bin & any other accessories. Design of foundation shall be carried out by BHEL and concurred by the Vendor. BHEL shall construct complete foundation for the machine under supervision of supplier and at supplier's responsibility. Vendor should arrange equipments required for the testing of foundation, if required by the vendor. The vendor shall also indicate detailed specifications of grouting compound and Grouting procedure etc. for foundation bolts of the machine	Vendor to Confirm			
16.0	ERECTION & COMMISSIONING				
16.1	Supplier to take full responsibility for carrying out the erection, start up, testing of machine, it's control & all types of other supplied equipment , machining of test pieces etc. 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. Other requirements like crane and helping personnel shall also be provided by BHEL. Details of these requirements should be informed by vendor in advance.	Vendor to Confirm			
16.2	Successful proving of BHEL components by the supplier shall be considered as part of commissioning. All tests, as mentioned at clause 20 (Machine Acceptance) shall form part of the commissioning activity.	Vendor to Confirm			

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16.3	Commissioning spares, required for commissioning of the machine within stipulated time, shall be brought by the supplier on returnable	Vendor to Confirm			
16.4	Portion, if any, of the machine, accessories and other supplied items where paint has rubbed off or peeled during transit or erection should be repainted and merged with the original surrounding paint by the vendor.	Vendor to Confirm			
16.5	Schedule of Erection and Commissioning shall be submitted with the offer	Vendor to Specify			
16.6	Charges, duration, terms & conditions for E&C should be furnished in detail	Vendor to Specify			
17 AMBIENT CONDITIONS & THERMAL STABILITY :					
17.1	Total machine and all supplied items should work trouble free and efficiently under following operating conditions and should give specified accuracies. Power Supply: Voltage: 415 V - 10%, +10% Frequency: 50 Hz +3%, - 3% No. of phases = 3 Ambient Conditions: Temperature = 5 to 45 degree celsius Relative Humidity = 95% max. (Vendor to confirm that machine is suitable for above and details of provisions on the machine for the same are to be furnished by Vendor)	Vendor to Confirm			
17.2	Weather conditions are tropical, Atmosphere may be dust laden during some part of the year. Machine shall be kept in the normal shop floor condition. Max. temperature variation is up to 25 deg Celsius in 24 hours. (Vendor to confirm that machine is suitable for above and details of provisions on	Vendor to Confirm			

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17.3	Thermal Stability of the complete machine keeping in view specified Ambient Conditions and accuracy requirements of BHEL components and trouble free operation of the machine should be ensured by vendor. (Confirm that machine is suitable for above and details of provisions on the machine for the same should be furnished)	Vendor to Confirm			
17.4	The machine, including attachments and accessories, should be suitable for 24 hrs. continuous operation to its full capacity. Vendor to ensure and confirm the same.	Vendor to Confirm			
18.0	MACHINE ACCEPTANCE: (Tests/Activities should be Performed by Vendor)	Should be accepted & confirmed by Vendor			
	Tests/Activities should be carried out at supplier's works on the machine before dispatch :	Vendor to Confirm			
18.1.1	Dimensional accuracy of the flattened component as per BHEL drawing.	Vendor to Confirm			
18.1.2	Demonstration of all features of the machine, control system &	Vendor to Confirm			
18.2	Tests/Activities should be carried out at BHEL works while commissioning the machine :				
18.2.1	Dimensional accuracy of 2 mm / 1000 mm to be checked.	Vendor to Confirm			
18.2.2	Full load test to demonstrate the maximum power & bending capacity of the machine.	Vendor to Confirm			
18.2.3	Demonstration of all features of the machine, control system & accessories to the satisfaction of BHEL for efficient and effective use of	Vendor to Confirm			
18.2.4	Supervision of independent operation of machine by BHEL after job proveout	Vendor to Confirm			

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18.2.5	Training of BHEL machine operators in operation of complete machine & accessories etc by the supplier's experts / engineers during their stay at BHEL works	Vendor to Confirm			
18.2.6	Demonstration by actual use of all supplied attachments and accessories to their full capacity.	Vendor to Confirm			
19.0	PACKING: Sea worthy & rigid packing for all items of complete machine, CNC System, 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 Confirm			
20.0	GUARANTEE: 18 months from the date of acceptance of the machine or 24 months from the date of shipment, whichever is earlier.	Vendor to Confirm			
21.0	GENERAL :				
21.1	Machine Model				
21.2	Total connected load (KVA):	Vendor to Specify			
21.3	Floor area required (Length, Width, Height) for complete machine & accessories	Vendor to Specify			
21.4	Painting of Machine / Electrical Panels : RAL 6011 Apple Green (Polyurethane Paint)	Vendor to Specify			
21.5	Total weight of the machine	Vendor to Specify			
21.6	Weight of heaviest part of machine	Vendor to Specify			
21.7	Weight of the heaviest assembly / sub-assembly of the Machine	Vendor to Specify			
21.8	Dimensions of largest part/ sub-assembly/ assembly of the machine	Vendor to Specify			
21.9	Vendor to submit, along with offer, reference list of customers where similar machines have been supplied mentioning broad specifications of the supplied machine.	Vendor to Specify			

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21.10	Detailed catalogues , sketch/ photographs of the m/c and accessories/ attachments should be submitted with the offer.	Vendor to Specify			
21.11	Hydraulic, Pneumatic & oil pipings should be preferably metallic except places where flexible pipings are essential.All the pipes required for the same shall be included in the standard scope of the machine.	Vendor to Specify			
22.0	REFERENCE LIST / QUALIFYING CONDITIONS :				
22.1	Only those vendors, who have supplied and commissioned at least one hydraulic press of same type, same or higher capacity for similar applications in the past ten years (on the date of opening of tender) and such machine is presently working satisfactorily for more than one year after commissioning (on the date of opening of tender) , should quote. However if such machine(s) has/had been supplied to BHEL, then such machine should be presently working satisfactorily for more than six months after its commissioning and acceptance (on the date of opening of tender) in BHEL should quote. The following information should be submitted by the vendor about the companies where similar machines have been supplied. This is required from all the vendors for qualification of their offer.	Vendor to Specify			
22.1.1	Name of the customer / company where similar machine is installed.	Vendor to Specify			
22.1.2	Complete postal address of the customer.	Vendor to Specify			
22.1.3	Month & Year of commissioning.	Vendor to Specify			
22.1.4	Application for which the machine is supplied .	Vendor to Specify			
22.1.5	Name and designation of the contact person of the customer.	Vendor to Specify			
22.1.6	Phone, FAX no. and email address of the contact person of the customer.	Vendor to Specify			
22.1.7	Performance certificate from the customers regarding satisfactory performance of machine supplied to them in original.	Vendor to Specify			

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22.1.8	BHEL reserves the right to verify information provided by vendor. In case the information provided by vendor is found to be false/incorrect, the offer shall be rejected.	Vendor to Specify			