


	BHARAT HEAVY ELECTRICAL LIMITED			Enquiry No.	
	UNIT'S ADDRESS: R.C. PURAM - HYDERABAD-32			Due Date :	
	PHONE NOS.			Supplier Qtn.No.:	
	CONTRACT PERSON'S NAME/DESIGN./PHONE NO./ E- MAIL. (FROM PURCHASE DEP'T.)			Date:	

SPECIFICATION CUM COMPLIANCE CERTIFICATE FOR FOUR ROLL PLATE BENDING MACHINE - QTY. 1No.

NOTE:- 1.Vendor must submit complete information against clause no. 39 The offer meeting this clause would only be processed.
2. Inadeqate /incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/ requirements shall be treated as non-compliance, and will be liable ofr disqualification without prior intimation. 3. The offer and all documents enclosed with offer should be in English language only.

ADDRESS OF THE SUPPLIER:			ADDRESS OF THE INDIAN AGENT:	
TELEPHONE NOS:			TELEPHONE NOS:	
FAX NOS:			FAX NOS:	
E-MAIL ADDRESS:			E-MAIL ADDRESS:	

SCOPE: SUPPLY & COMMISSIONING OF FOUR ROLL PLATE BENDING MACHINE - QTY. 1No.

Sl. No.	Description for BHEL Requirement	required	Offered	Deviations	Remarks
1.0	Purpose : The 4-Roll Plate Bending Machine is required for prebending and rounding of cylinders and cones.	Vendor to confirm			
2.0	Surface length of rolls : 3100mm minimum	Vendor to confirm			
3.0	Prebending capacity				
3.1	Max width of the plate to be bend : 3000mm	Vendor to confirm			
3.2	Max.Thickness of the plate to be bend : 100 mm	Vendor to confirm			
3.3	Yield strength of plate : 275 Mpa (280 N/sq.mm.)	Vendor to confirm			
3.3.1	Materials that can be rolled : SA516 Gr 70 & SA387 Gr12 (at max thickness)	Vendor to confirm			
3.4	Plate bending diameter 2000 mm (Minimum dia)	Vendor to confirm			
3.5	Flat end at 100 mm plate thickness : MAX: 150mm	Vendor to specify			
4.0	Rounding at full width of plate and 2000 mm bending diameter - maximum thickness	Vendor to specify			

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5.0	Cone bending capacity:				
5.1	Min and Max angle of cone bending	Vendor to specify			
5.2	Plate thickness and diameter	Vendor to specify			
6.0	Diameter of rolls				
6.1	Top roll	Vendor to specify			
6.2	Bottom roll	Vendor to specify			
6.3	Side rolls	Vendor to specify			
7.0	Smallest possible bending diameter on top roll	Vendor to specify			
8.0	No of rolls : Four	Vendor to confirm			
9.0	Max. force /Load against top roll (at least 2500 T)	Vendor to specify			
10.0	All Rolls : material should confirm to 42CrMo4 and hardness to be specified	Vendor to confirm material specs and specify the hardness values			
10.1	Heat treatment given to rolls.	Vendor to specify			
10.2	All rolls are parellel/cambered /crowned	Vendor to specify			
11.0	No of drive rolls : TWO (top and bottom roll)	Vendor to confirm			
12.0	Rolls drive by Hydro - motors	Vendor to confirm			
13.0	Operating speed shall be in two steps: 2 & 4 m/min	Vendor to specify			
14.0	Automatic speed compensation between top and bottom roll	Vendor to confirm			
15.0	Bottom and side rolls adjustment by Hydraulic	Vendor to confirm			
16.0	Tilting of bottom and both side rolls for cone bending shall be stepless and control from the mobile operators panel	Vendor to confirm			
17.0	Tilting of the hinged front bearing housing by hydraulic	Vendor to confirm			
18.0	Tilting of the top roll by Hydraulic	Vendor to confirm			
19.0	Operators panel shall be at central, mobile and consists of :	Vendor to confirm			
19.1	Indication of the side rolls position : 4 Nos. Digital readouts accuracy of 0.1 mm	Vendor to confirm			
19.2	Indication of the bottom roll position : 2 Nos. Digital readout accuracy of 0.1 mm	Vendor to confirm			
19.3	Push buttons for motor on/off, all rolls linear movements and tilting of bearing & top roll	Vendor to confirm			
19.4	Program switches for rolls rotation, Inch/Continuous and Feed & Rapid	Vendor to confirm			

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19.5	Indication bulbs to be provided wherever necessary	Vendor to confirm			
19.6	Bending pressure selection of bottom roll to be provided on the machine at easily accessible location to the operator.	Vendor to specify			
20.0	Capacity charts for pre-bending, rounding, cone bending and flatness to be fixed on the machine	Vendor to confirm			
20.1	Capacity charts for pre-bending, rounding, cone bending & flatness to be furnished along with the offer	vendor to furnish			
20.2	Geometrical test chart to be submitted along with the offer.	Vendor to furnish			
21.0	Over All Dimensions:				
21.1	Machine (LxWxH):	Vendor to specify			
21.2	Hydraulic unit (LxWxH)	Vendor to specify			
21.3	Control Panel (LxWxH)	Vendor to specify			
21.4	Total weight of the machine	Vendor to specify			
21.5	Total connected load (KVA) / Input of the Machine:	Vendor to specify			
21.6	Painting of Machine / Electrical Panels : RAL 6011 Apple Green (Polyurethane Paint)	Vendor to specify			
21.7	First fill of all fluids in the machine to be supplied by vendor	Vendor to confirm			
22.0	Automatic pressure compensation between top & bottom roll	Vendor to confirm			
23.0	Automatic central lubrication	Vendor to confirm			
24.0	Instant brake for roll rotation	Vendor to confirm			
25.0	Safety device against overload of the machine	Vendor to confirm			
26.0	Electric safety device against tilting of the hinged front bearing housing when bottom roll is under pressure.	Vendor to confirm			
27.0	Electric safety device to avoid bottom roll movement when front bearing housing is tilted.	Vendor to confirm			
28.0	Automatic pressure conversion when an interchangeable roll is used.	Vendor to confirm			
29.0	Details of the Chiller / cooler for hydraulic oil shall be submitted along with the offer	Vendor to confirm			
30.0	The plate shall be firmly clamped between top and bottom rollers throughout the entire rolling operation, including edge setting time.	Vendor to confirm			
31.0	All Four rollers shall be housed with anti-friction spherical Roller bearings.	Vendor to confirm			

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32.0	The Hydraulic system shall provide automatic linear speed compensation between top and bottom roller to achieve the correct internal and external circumferential speed according to the plate thickness of the shell to be rolled.	Vendor to confirm			
33.0	Optionals 33.1 - 33.6 (TO BE QUOTED SEPERATELY)				
33.1	Cone bending attachment	Vendor to quote			
33.2	Extended design of machine suitable to install interchangeable top roll to bend plates to min. diameter of 680 mm	Vendor to specify dia of the additional top roll and quote			
33.3	Interchangeable top roll should have easy accessibility.	Vendor to confirm and give details of interchangeability			
33.4	Upper plate supporting device, hydraulically adjustable in height	Vendor to quote			
33.5	Lateral side support, hydraulically adjustable.	Vendor to quote			
33.6	Archmeter(to measure shell radius) to be quoted as optional	Vendor to quote			
34.0	AMBIENT CONDITIONS & THERMAL STABILITY :				
34.1	Total machine should work trouble free and efficiently under following operating conditions. Power Supply: Voltage: 415 V \pm 10% Frequency: 50 Hz \pm 3% ; No. of phases = 3 Ambient Conditions: Temp = 5 to 45 degree celsius Relative Humidity = 95% max.	Vendor to confirm			
35.0	ELECTRICAL : Tropicalization: All electrical / electronic equipment shall be tropicalized.	Vendor to confirm			
36.0	SAFETY ARRANGEMENTS: Equipment should have adequate and reliable safety interlocks / devices to avoid damage to the equipment, work piece and the operator due to the malfunctioning or mistakes.	Vendor to confirm			
37.0	ENVIRONMENTAL PERFORMANCE OF THE MACHINE				
37.1	415V \pm 10%, 50HZ \pm 3%, 3 Phase AC (3 wire system with out neutral) Power Supply Voltage will be provided by BHEL.	Vendor to specify			
37.2	Maximum noise level shall be < 75 dB.	Vendor to confirm			
37.3	If any safety / environmental protection enclosure is required it should be built in the equipment by the vendor.	Vendor to specify			
38.0	INSPECTION: BHEL Engineers will inspect the equipment at supplier's works prior to despatch of the machine. The vendor shall demonstrate the equipment for its proper functioning.	Vendor to specify and furnish details			

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38.1	DETAILS OF CHECKS TO BE DONE AT VENDORS WORKS DURING PRE-DISPATCH INSPECTION	Vendor to furnish details			
39.0	REFERENCE LIST / QUALIFYING CONDITIONS :	Vendor to specify			
39.1	Only those vendors, who have supplied and commissioned atleast one of similar or higher sizes for similar applications in the past ten years and such machine is working satisfactorily for more than one year, after commissioning 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 vendors for qualification of their offer.	Vendor to specify and furnish details			
39.2	1. Name of the customer / company where similar machine is installed.	Vendor to specify			
	2. Complete postal address of the customer.	Vendor to specify			
	3. Year of commissioning.	Vendor to specify			
	4. Machine capacity / Model no.	Vendor to specify			
	5. Application for which the machine is supplied with details of accuracies achieved on the job.	Vendor to specify			
	6. Name and designation of the contact person of the customer.	Vendor to specify			
	7. Phone, FAX no. and email address of the contact person of the customer.	Vendor to specify			
	8. Performance certificate from the customer shall be submitted.	Vendor to submit			
40.0	DELIVERY PERIOD: (in months)	Vendor to specify			
41.0	SPARES : TO BE QUOTED SEPERATELY Itemised breakup of mechanical, hydraulic, electrical and electronic spares for 2 years operation. In addition the following are to be quoted seperately.	Vendor to specify			
41.1	One spare Pump for each pump used in system.	Vendor to specify and quote seperately			
41.2	One set of pressure regulators/solenoid valves used in the system.	Vendor to specify and quote seperately			
41.4	Spare compensatory valves equal to the quantity used in the system.	Vendor to specify and quote seperately			

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42.0	DOCUMENTATION : Five sets of following documents in English language:	Vendor to confirm			
42.1	Operating manual	Vendor to confirm			
42.2	Maintenance Manual	Vendor to confirm			
42.3	Spare parts catalogue with part numbers	Vendor to confirm			
42.4	Catalogues of all bought out items	Vendor to confirm			
42.5	One set of reproducible tracings for hydraulic electrical circuits.	Vendor to confirm			
42.6	One set of all the above documentation on CD ROM	Vendor to confirm			
43.0	ERECTION & COMMISSIONING : E & C work shall be carried out by Vendor. Civil foundation, crane facility, power input supply will be done by BHEL. For civil works vendor shall submit foundation drawings in detail with in 2 months of order acceptance. If any more facilities required by BHEL vendor shall mention in their offer. Charges, duration, terms & conditions to be furnished in detail separately.	Confirm & specify			
43.1	Training of BHEL operator at BHEL works for 5 days	vendor to confirm			
44.0	MACHINE CALIBRATION :				
44.1	Test to be carried out at supplier's works before dispatch:	Vendor to confirm			
44.2	Geometrical accuracies as per test chart.	Vendor to confirm			
44.3	Demonstration of all features of control system	Vendor to confirm			
44.4	Test to be carried out at BHEL works while commissioning the machine :	Vendor to confirm			
44.5	Geometrical accuracies as per test chart.	Vendor to confirm			
44.6	Demonstration of all features of control system	Vendor to confirm			
44.7	Total 10 plates of various thicknesses, including maximum thickness to be rolled during Prove out of the equipment at BHEL works.	Vendor to confirm			
45.0	TRAINING : One maintenance engineer & One production engineer, are to be trained at supplier's works, for a period of 1 week during Pre-dispatch inspection.	Vendor to confirm			

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46.0	PACKING : SEAWORTHY PACKING TO AVOID DAMAGE DURING TRANSIT BY ANY MEANS OF TRANSPORT.	Vendor to confirm			
47.0	GUARANTEE : 24 months from the date of commissioning. In addition to the breakdown service, the manufacturer's engineers will render free service once in six months irrespective of breakdowns during the warranty period.	Vendor to confirm			
48.0	QUOTATION : Quotation should be submitted with point to point answers . Catalogues/ detailed literature of all accessories and control system to be enclosed to the offer. One copy of the specification sheet is to be duly filled and submitted to BHEL as the party's offer without which the offer will not be considered.	Vendor to confirm			