



An ISO 9001
Company

BHARAT HEAVY ELECTRICALS LIMITED

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT/ MATERIALS MANAGEMENT

ENQUIRY	Phone: +91 431 257 7421/7833 Fax : 431 257 6826 Email : vkarna@bhel.in : vijayak@bhel.in Web : www.bhel.com
NOTICE INVITING TENDER	

TWO PART BID	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
Tender to be submitted in two parts	2622000020	18.09.2020	12.10.2020

You are requested to quote the Enquiry number, date and due date in all your correspondences. 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 is reaching physically our office before 14.00 hrs. on the Date of tender opening.

Item	Description	Qty.	(Indigenous Vendors) Matl. Will be Delivered to
10	Procurement of 2.5 Ton capacity Manipulator for Inside Butt Welding of Nozzles as per the technical specification, BHEL commercial terms & conditions applicable (to be downloaded from web site www.bhel.com and https://eprocure.gov.in)	1 No.	FOR, BHEL, Stores, High Pressure Boiler Plant, Trichirappalli - 620014

Important points to be taken care during submission of offer

1. Material shall be delivered to (By indigenous vendors): As stated above.
2. Delivery required 4 Months (Including PDI) from the date purchase order.
3. Erection & Commissioning period required 3 Weeks from the date of intimation by BHEL to vendor for deputation of their Engineers for E&C.
4. EMD for this Tender will be (INR): 40,000.00.
5. Compliance Form. ATP TRY/IND/03A to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.
6. 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 /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 Central Public Procurement Portal website <https://eprocure.gov.in> under Enquiry reference "2622000020".

Note: this is not an E-tender, hence Vendors are requested to ensure that the offer is reaching physically at our office before 14:00 Hrs. on the date of tender opening.

Tenders should reach us before 14:00 hours on the due date Tenders will be opened 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  V. KARUNAKARAN Dy. General Manager Capital Equipment / MM BHEL / Tiruchirappalli - 620 014
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**2.5 TONS CAPACITY MANIPULATOR (TILTING ROTARY TABLE) FOR INSIDE BUTT
WELDING OF NOZZLES, Qty. 1 no.**

Part A - Qualifying Criteria

S. No	BHEL Requirement	Bidder's Response
1.0	QUALIFYING CRITERIA	
1.1	Only those Bidders / OEMs, who have supplied and commissioned a minimum of 1 number of Manipulator (Tilting turn table) of capacity 2.5 Tons or higher in the past 5 years (as on the first date of opening of Tender) are eligible to quote	
1.2	Bidder has to submit at least ONE Performance Certificate from their customer, for satisfactory performance of the equipment specified in 1.1 and meeting the following conditions a) The Equipment must have been supplied within the last 5 years as on the first date of tender opening. b) The Equipment must have performed satisfactorily for at least one year during this period. For obtaining the Performance certificate, a suggestive format is provided in Annexure.	
1.3	BHEL reserves the right to verify the information provided by the Bidder. In case the information provided is found to be false/ incorrect, the offer is liable for rejection.	
2.0	INFORMATION TO BE PROVIDED BY BIDDER	
2.1	Bidder shall provide contact details (phone no & email id) including the address of his Agents / Service Centres in India	
2.2	Job Manipulators supplied to other BHEL units if any	
2.3	The BIDDER to furnish Reference List of Customers(max 10 customers) including Contact details(phone no & email id).	
3.0	The BIDDER to note:	
3.1	The BIDDER shall submit the offer in Two Parts – 1. Technical [with PART A & PART B] & 2. Commercial and Price Bid.	
3.2	The Bidder's offer against each clause in PART A & B of the offer should be filled by the BIDDER compulsorily with complete details.	

S. No	BHEL Requirement	Bidder's Response
3.3	The BIDDER shall assure a continuous support for Spares and Service for Ten Years, from the date of commissioning of the equipment at BHEL Works.	
3.4	The Technical Offer shall be supported by Product Catalogue and Data Sheets in original and complete technical details / literature on the quoted model of equipment.	
3.5	The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation.	

Suggestive Format of Performance Certificate:

The performance certificate to be produced **on Customer's Letter Head.**

PERFORMANCE CERTIFICATE

1	Description of the equipment	
2	Make & Model No of the equipment	
3	Month & Year of Commissioning	
4	Capacity of the manipulator in Tons:	
5	Job tilting arrangement is available: (Strike off whichever is not applicable)	YES/ NO
6	Job Rotating arrangement is available: (Strike off whichever is not applicable)	YES/ NO
7	Performance of the equipment (Strike off whichever is not applicable)	Satisfactory / Not Satisfactory
8	Service support after sales (Strike off whichever is not applicable)	Satisfactory / Not Satisfactory
9	Any Other remarks	
10	This performance certificate was issued on:	(DD/MM/YYYY)
Authority		Signature & Seal of the Issuing the Performance Certificate

Contact details of issuing authority

Name & Designation:

Office No/ Mobile no:

Email ID:

2.5 TONS CAPACITY MANIPULATOR (TILTING ROTARY TABLE) FOR INSIDE BUTT WELDING OF NOZZLES, Qty. 1 no.

Part B – Technical Specification

S No.	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With Technical Details)
1.0	Purpose: The tilting rotary table with Step less variable speed control for table rotation is intended for holding various sizes of nozzles in the required position/orientation for Butt welding. Maximum Job weight: 2.5 Tons. The Centre of gravity of the Nozzle (Job) shall be at a height of 375 mm with reference to the bottom resting plane/rotary table surface and at an eccentric distance/offset of around 5 – 10 mm from the table centre	Bidder to note
2.0	Configuration: The manipulator (tilting rotary table) should comprise of tilting and rotating. The positioner shall be a robust fabricated all steel construction. Fully machined table provided with concentric rings and slots to hold the work pieces. The positioner should have a self-locking worm gear drive.	Bidder to note
3.0	TILTING ROTARY TABLE FEATURES:	
3.1	Table Diameter: Minimum 1500mm.	Bidder to specify
3.2	Weight Carrying Capacity: 2500 Kg (2.5 Tons). Bidder to provide the graphical representation for permissible load on the manipulator vs Distance of centre of gravity of the job.	Bidder to confirm
3.3	Table Rotation about its axis: 360 Deg bidirectional	Bidder to confirm
3.4	Tilting arrangement about the horizontal axis: Minimum 135 Deg	Bidder to confirm
3.5	Table Tilt Angle Range about the horizontal axis: 0 Deg (Table horizontal) to 135 Deg . An angular scale graduated with least count of 0.5 degrees and pointer shall be fitted to indicate the angle of tilt. Smooth rotation (with load) should be possible even in maximum tilted position.	Bidder to confirm
3.6	It should be possible to position the Table at any angle between 0 to 135 Deg. While the manipulator is with load, in rotation, tilted to 90°	Bidder to confirm.

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S No.	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER (With Technical Details)
	with eccentric load, in the event of power the manipulator should stay in the same tilted position failure and should not freely fall/rotate.		
3.7	Positional stability: The Turn table should be stable at any tilted position of the table with the Job mounted condition.	Bidder to confirm	
3.8	Table Rotation Speed – Step less variable speed from 0.05 rpm to 1 rpm. Rotation should be uniform and without any jerk / interruption.	Bidder to confirm	
3.9	Tilting shall be motorized and can be with fixed slow speed. Tilting speed and torque of the table to be specified	Bidder to confirm and provide details	
3.10	The type of mechanism for tilting arrangement offered shall be specified along with drawing / sketch	Bidder to specify	
3.11	Minimum 8 radial T-slots for M36 bolts on the face of table	Bidder to confirm	
3.12	Hole at table centre: Min. Dia. to be specified	Bidder to specify	
3.13	Maximum Height of table surface from floor level (Less than 1.6 metres) when table is horizontal	Bidder to confirm and provide details	
4.0	OPERATOR CONTROLS:		
4.1	The Main Control Panel shall have the following features: a) A suitable capacity Main switch such as MCB for total on/off of the machine. The main switch shall be operable without opening the control panel. b) Emergency stop push button. c) Panel / Remote key selector switch. d) Light indication for 3 phase main input supply, drive trip, control on. e) Auto / Manual selector switch. f) Forward / Reverse / Off - selector switch for rotation g) Forward / Reverse / Off - selector switch for table tilting h) On / Off push buttons i) Single turn Potentiometer with graded scale for varying the rotational speed. j) Digital RPM indicator to display Table rotational speed k) Panel lighting should be provided for maintenance purpose l) Floor surface inside the panel should be free from mounting of any	Bidder to specify	

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S No.	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (With Technical Details)
	components/instruments	
4.2	A remote pendant with cable length of around 15 m to vary the speed shall be provided. The remote pendant shall have plug & socket type connection and shall have the following provisions: a) Emergency push button b) Forward / Reverse / Off - selector switch for rotation c) Forward / Reverse / Off - selector switch for table tilting d) Auto / Manual selector switch e) On / Off push buttons f) Single turn Potentiometer with graded scale for varying the rotational speed. g) Programmable Digital RPM meter to display Table rotational speed. h) The remote cable shall be provided with flexible, braided protective hose to avoid mechanical damage.	Bidder to provide details
5.0	ELECTRICAL & OTHER POINTS	
5.1	Input power supply: 415 V $\pm$ 10%, 50 Hz $\pm$ 3 Hz, 3 Phase AC (3 wire system without neutral). Power Supply will be provided by BHEL at a single point near the Manipulator, as per layout recommended by Bidder.	Bidder to confirm
5.2	All types of cables (including the power cable required for extending power supply to the main control panel), connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the table/control boxes, shall be the supplied by the bidder. The control voltage shall be 24V AC/DC.	Bidder to confirm
5.3	Wiring: All electrical motors, limit switches etc., on the machine shall be wired using PVC sheathed cable running in conduits to common terminal block. All cables, wires shall be neatly routed and fixed with proper identification.	Bidder to confirm
5.4	All the cable trays required for laying of cables should be included in the offer.	Bidder to confirm

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5.5	Standard slewing ring/suitable arrangement is to be provided and to be protected from damage due to welding current by providing suitable earthing arrangement. The maximum welding current to be carried is 1200A.	Bidder to confirm
5.6	Variable Frequency Drive for rotation motor	Bidder to confirm
5.7	Power rating of the rotation motor in kW	Bidder to specify
5.8	Power rating of the tilting motor in kW	Bidder to specify
5.9	The tilting motor shall have in-built / external brake.	Bidder to confirm
5.10	Motors shall conform to IEC or Indian Standards. Preferred makes of motors are SIEMENS/ABB or any other reputed make acceptable to BHEL	Bidder to confirm
5.11	The drives shall be of SIEMENS/ABB or any other reputed make acceptable to BHEL	Bidder to confirm
5.12	BHEL prefers to have standard reputed gear boxes used in the machine. Gear boxes shall be of RADICON / GREAVES / BONFIGLIOLI or any other reputed make acceptable to BHEL.	Bidder to confirm
5.13	The bearings of table and Slewing rings shall be of reputed makes of SKF/ FAG/ TIMKEN or any other reputed make acceptable to BHEL.	Bidder to confirm
6.0	CONSTRUCTION	
6.1	Framework and table should be of rigid steel construction. Bidder to specify the details of thickness of various structural members of the table/frame	Bidder to provide details
6.2	The job placed on the manipulator shall be subjected to flame heating (preheating/postheating to a temperature max. 300 Deg C) during welding on a continuous basis for many hours till the completion of the welding activity. The structure especially the table and frame of the manipulator shall be suitably designed with material of construction to withstand the continuous heating without any deformation.	Bidder to note and provide details
6.3	Base structure to be extended such that while tilting the job to 135 Deg, should have sufficient safety provision and safety factor. The	Bidder to confirm

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	manipulator should not topple when it is in maximum tilting position.	
6.4	There should not be any vibration and noise level should be less than 85 dB within a distance of 1 m.	Bidder to confirm
6.5	Suitable lifting hooks shall be provided on the tilting table for shifting it from one place to another place by using EOT crane.	Bidder to confirm
7.0	Spares: Itemized break-up of Mechanical, Electrical, Electronic Spares used on the machine in sufficient quantity as per recommendation of BIDDER for 2 years of trouble free operation on three shifts continuous running basis should be offered by BIDDER.	Bidder to furnish
8.0	DOCUMENTATION	
8.1	The following documents shall be furnished along with the offer:- a) GA drawing of the offered turn table with dimensions b) Turn table rotation, tilting & clamping mechanism. c) Makes of the bought-outs d) Constructional features	Bidder to furnish
8.2	3 sets of the following documents shall be furnished during inspection and supply:- a) GA drawing with BOM b) The operator instruction manual c) Electrical Circuit with BOM d) Maintenance instruction manual e) Guarantee / warranty cards of all bought-outs f) Programming manual of supplied VFD drive g) Sub-assembly / Arrangement drawings with bill of materials and critical dimensions for the following: • Table rotation / clamping arrangement. • Table rotation drive arrangement. • Table Tilting drive arrangement.	Bidder to furnish
8.3	The bidder shall submit the GA drawings with major dimensions, BOM and Electrical circuit with BOM for BHEL approval within 1 month from	Bidder to note and confirm

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S No.	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER (With Technical Details)
	date of receipt of PO. BHEL shall approve the drawings within 2 weeks' time.		
9.0	GENERAL		
9.1	Tilting Turn table Make and Model:	Bidder to specify	
9.2	Total connected load (kVA):	Bidder to specify	
9.3	Floor area required (Length, Width, Height) for complete turn table:	Bidder to specify	
9.4	Total weight of the turn table	Bidder to specify	
9.5	Painting: All non-working surfaces and control panels shall be given a primer coat & two coats of paint with SYNTHETIC ENAMEL GLOSSY FINISH APPLE GREEN PAINT AS PER IS 5/1994. Shade: (ISC) NO-281. All unpainted surfaces shall be protected from rust during transit.	Bidder to confirm	
9.6	PACKING – The turn tables shall be packed rigidly to avoid any transit damage and dispatched	Bidder to confirm	
10.0	Predispatch Inspection (PDI): The turn table shall be offered for inspection by BHEL at vendor works prior to dispatch. PDI cost if any shall be separately indicated in the offer.	Bidder to confirm	
11.0	Installation, commissioning and training at BHEL – Installation, commissioning and training on operation and maintenance of the turn tables at BHEL shall be in the scope of vendor. During commissioning the bidder should demonstrate all features of the equipment	Bidder to confirm	
12.0	PERFORMANCE GUARANTEE: 12 months from date of commissioning of the equipment at BHEL works or 18 months from dispatch whichever is earlier.	Bidder to confirm	



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