



An ISO 9001
Company

Bharat Heavy Electricals Limited
(High Pressure Boiler Plant)
Tiruchirappalli – 620014, TAMIL NADU, INDIA
CAPITAL PURCHASE / MATERIALS MANAGEMENT / MANUFACTURING

ENQUIRY	Phone: +91 431 257 75 75 Fax : +91 431 252 07 19 Email : rrmanohar@bheltry.co.in Web : www.bhel.com
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	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
	2620600028	20.05.2006	04.07.2006

Your 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

Item	Description	Quantity	Delivery Schedule
10	3 Ton Semi Gantry Crane as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com)	6 Nos.	24.05.2007

Note:

- (1) The detailed Technical Specification along with technical point-by-point confirmation, Commercial Terms & Conditions applicable for this Enquiry, Confirmation of acceptance for BHEL commercial terms & conditions and Price Bid formats have been posted in BHEL Corporate web site www.bhel.com under Enquiry reference “2620600028”. Your offer should be based on all the above documents.
- (2) Also, you are requested to fill in the Supplier Registration formats available in www.bhel.com (under Advancement – Supplier Registration) and send it along with your offer.

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 Dy. Genl. Manager / Capital Purchase / MM / Manufacturing
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PART A.**QUALIFYING CRITERIA FOR THE SUPPLY OF
SEMI-GANTRY CRANES****SECTION – I**

The BIDDER / VENDOR has to necessarily provide the following details, for making an assessment of the firm's capability and competency :

[The BIDDER is expected to give complete details against each clause in the table given below and wherever necessary an additional sheet may be attached (giving clear reference number) to cover the required details]

S.No.	PARTICULARS	VENDOR's RESPONSE
1.0	Number of Years of Experience of the BIDDER / VENDOR in the CRANES Field [Design, Manufacture & Supply]	
2.0	Number of Semi-Gantry Cranes supplied, erected & commissioned till date - Classification based on CAPACITY, SPAN and LIFT	
3.0	Number of Semi-Gantry Cranes supplied, erected & commissioned till date for the following category of CUSTOMERS : a) Central Government Organisations b) Public Sector Enterprises c) Private Sector Companies [Large Scale Industries]	
4.0	Details of Manufacturing Facilities for Crane Structures and Components : a) Fabrication Facilities b) Machining Facilities c) Crane Assembly & Testing Facilities	
5.0	Details on Heat-Treatment Facilities	
6.0	Details on Shopfloor / Outer-Yard Handling Facilities	
7.0	Comprehensive Details on Load Testing - - SWL & O/L (Safe Working Load & Over Load @ 25%) Facilities	
8.0	Details of Quality System followed	
9.0	Details on Stages of Internal Inspection and Inspection by External Agencies [other than Customer Inspection]	

S.No.	PARTICULARS	VENDOR's RESPONSE
10.0	Details of NDT Facilities – like X Ray, MPI and Ultrasonic Testing	
11.0	Details of Electrical Panel Manufacturing and Testing Facilities	
12.0	The Areas of Sub-Contracting Works and the Percentage of Sub-Contracting Works	
13.0	Type of Quality Audit and Routine Inspection Procedures for jobs loaded on the Sub-Contractors	
14.0	Details on AFTER-SALES-SERVICE Set-Up	
15.0	Any Additional Data to supplement the manufacturing capability of the BIDDER	

SECTION – II

The BIDDER / VENDOR has to compulsorily meet the following requirements to get qualified for submitting an offer for the CRANES :

S.No.	REQUIREMENTS	VENDOR's COMMENTS
16.0	The BIDDER / VENDOR shall have a minimum of FIVE Years of Continuous Experience of in the CRANES Field [Design, Manufacture & Supply]	
17.0	The BIDDER / VENDOR might have supplied atleast one number of 3 Ton Semi-Gantry Crane with a SPAN not less than 12 Mtrs. in the last TWO Years.	
18.0	The bidding FIRM should have 'in-house' or 'self-owned' facility for FABRICATION and TESTING at 125 % of the rated capacity	
19.0	Reference List of Customers and Performance Certificate from CUSTOMERS (minimum 2 Customers) with details of CONTACT PERSON, for whom Semi-Gantry CRANES of Capacity 3 Tons and above might have been supplied	
20.0	The BIDDER / VENDOR should have sound financial position and should furnish the Finance Statements (Summary of P & L Statement and Balance Sheet) for the immediate past three years.	
21.0	In case of short listing by the Purchaser, the BIDDER / VENDOR has to co-ordinate for the visit of Assessing Team, to the WORKS of the BIDDER / VENDOR with a notice period of 10 Days.	

SECTION – III

The BIDDER / VENDOR has to comply with the following, for accepting the Technical Offer for scrutiny by the Purchaser :

S.No.	REQUIREMENTS	VENDOR's COMPLIANCE
22.0	The BIDDER / VENDOR shall submit the offer in TWO PARTS - Technical & Commercial and Price Bid. The Technical Offer shall be in line with the BHEL Technical Specifications and the Guidelines or Annexures mentioned, wherever applicable.	
23.0	The Technical Offer shall contain a comparative statement of Technical Specifications given by BHEL and the Offer Details submitted by the Bidder, against each clause of the specifications.	
24.0	A just 'CONFIRMED' or 'COMPLIES' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement may lead to disqualification of the Technical Offer .	
25.0	The Technical Offer shall be supported by Product Catalogue and Data Sheets in ORIGINAL and complete technical details of 'Bought-Out-Items' with copies of Product Catalogue and Selection Criteria	
26.0	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	
27.0	The reference List of Customers shall be accompanied with the details (Phone Number/E-Mail ID) of the CONTACT PERSON for cross reference	

REFERENCE DOCUMENTS :

- 1) ANNEXURE –1 CRANE CONSTRUCTION SPECIFICATIONS – GENERAL
- 2) ANNEXURE – 2 WHEEL ASSEMBLY GUIDELINES
- 3) TENDER SPECIFICATIONS – PART B

PART B.**TECHNICAL SPECIFICATIONS FOR 3 TON SEMI – GANTRY CRANE**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's TECHNICAL OFFER (With Complete Details)
1.0.0	APPLICATION	<p>a. The subject crane is meant for the purpose of handling small to medium (within the lifting capacity of the crane) components, in a heavy and large steel fabrication shopfloor.</p> <p>b. The crane will be put to use for 365 Days' continuous duty with CT, LT and Hoist movements, which may occur simultaneously (within the operating parameters specified under Clause Nos. – 3.1.0, 3.4.0 and 3.5.0).</p> <p>c. The shopfloor environment will be dust prone, humid, welding fume filled and ambient temperature going upto 60 to 65 ° C. , due to pre-heating of jobs.</p>	
2.0.0	SCOPE OF SUPPLY	<p>a. Basic Design as per the Tender Specifications given under PART-B</p> <p>b. Detailed Design and Manufacture as per BHEL GENERAL SPECIFICATIONS, given as ANNEXURE-1.</p> <p>c. Assembly and Testing before Despatch</p> <p>d. Supply in Modules / Sub-Assemblies</p> <p>e. Commissioning and Performance Prove-Out at BHEL Works</p> <p>f. Performance Guarantee for 12 months, from the date of commissioning.</p>	<p><u>SPECIAL NOTE to BIDDER :</u></p> <p><i>The SUPPLIER has to abide by the clauses applicable for selection of materials and crane construction, and those clauses irrelevant for semi-gantry crane manufacture may be ignored.</i></p>

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's TECHNICAL OFFER (With Complete Details)
3.0.0	TECHNICAL SPECIFICATIONS		
3.1.0	CAPACITY	Lifting Capacity	
3.1.1	Main Hoist	3 Metric Tonnes	
3.1.2	Auxiliary Hoist	NO AUXILIARY HOIST	
3.2.0	SPAN	Wheel Centre to Wheel Centre Dimension	
3.2.1	Long Travel (LT)	14,000 mm	
3.3.0	LIFT of HOIST	Lift of Hoist	
3.3.1	Height of Lift	6,000 mm	
3.3.2	Rail to Rail Height	5,600 mm (Rail on Floor to Rail on Side Bracket)	
3.4.0	DUTY CYCLE	Related to Drive Motor & Mechanisms	
3.4.1	Hoists	40 % E D	
3.4.2	Long Travel	40 % E D	
3.4.3	Cross Travel	40 % E D	
3.5.0	SPEED	Operating / Working Speed [Maximum]	
3.5.1	Main Hoist	5.0 mtrs./minute.	
3.5.2	Cross Travel (CT)	15.0 mtrs./minute.	
3.5.3	Long Travel (LT)	30.0 mtrs./minute.	
3.6.0	MOTOR RATINGS	Electric Drive Motor Ratings & Frame Sizes	
3.6.1	Main Hoist	5.0 kW ; Frame Size – 160 M / 6 Pole	
3.6.2	Cross Travel (CT)	2.0 kW ; Frame Size – 112 M / 6 Pole	
3.6.3	Long Travel (LT)	2 x 3.0 kW ; Frame Size – 132 M / 6 Pole	
3.7.0	GEAR BOX	Gear Box Sizes	
3.7.1	Main Hoist	HR 450	
3.7.2	Cross Travel (CT)	VR 270	
3.7.3	Long Travel (LT)	VR 400	
3.8.0	HOIST ROPE DETAILS	Size and Number of Falls of Rope	
3.8.1	Hoist	Dia. 10 mm ; Falls - 4	

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's TECHNICAL OFFER (With Complete Details)
3.9.0	CONTROL	Cabin Operation Only	
3.10.0	Type of Control	Master Control	
3.11.0	Control Voltage	110 V AC	
3.12.0	Input Power Supply	415 \pm 10% Volts , 50 \pm 3% Hz, 3 Phase- AC	
3.13.0	Duty Class	Class – 3 [Indoor Service]	
3.14.0	Mechanism Group Classification	M 6	
3.15.0	DESIGN STANDARD	IS – 807 & 3177 / 1999	
3.16.0	Runway Rail Size		
3.16.1	Cross Travel (CT)	ISR 60 Lbs./Yard	
3.16.2	Long Travel (LT)	ISR 90 Lbs./Yard	
3.17.0	Wheel Size		
3.17.1	Cross Travel (CT)	Dia. 250 mm	
3.17.2	Long Travel (LT)	Dia. 400 mm	
3.18.0	Brake Drum Size	Hoist Brake Drum Sizes	
3.18.1	Hoist	Dia. 200 mm	
3.18.2	Cross Travel (CT)	Dia. 100 mm	
3.18.3	Long Travel (LT)	Dia. 160 mm	
4.0.0	MAIN FEATURES	Crane Operational Features	
4.1.0	Control System	Master Control for all motions	
4.2.0	Crane Operation	Through Cabin Control and with Push Buttons	

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's TECHNICAL OFFER (With Complete Details)
5.0.0	STRUCTURAL FABRICATION	Crane Structure Constructional Details	
5.1.0	Bridge / Girder	Box type Construction for Girders	
5.2.0	Raw Material	Only steel plates, tested and certified for quality by reputed inspection authorities, shall be used. Test Certificates to be produced for BHEL verification and form part of the documentation.	
5.3.0	Welded Joints	To be followed for Girder Fabrication	
5.3.1	Number of Joints	Maximum Two Joints only allowed	
5.3.2	Welding Electrodes	a. For all Horizontal Welding E 7018 Electrode only should be used. b. For all Vertical Welding E 7048 Electrode only should be used.	
5.3.3	Welded Joint Testing	All Butt Welded Joints (both compression / tension and flanges / web joints) shall be subjected to 100% X-Ray Testing and X-Ray Films to be produced for BHEL evaluation and form part of the documentation.	
5.4.0	Splice Joints	NO SPLICE JOINT IS ALLOWED IN GIRDER FABRICATION [Girder has to be of SINGLE PIECE only].	
5.5.0	Platform on Girders	The Platforms provided on both the Girders shall be fixed through BOLTED JOINTS only.	
5.6.0	Wheel Assembly	The Wheel Assembly coming for Cross Travel (CT) and Long Travel (LT) shall be of LIVE AXLE SYSTEM with L-Type Bearings. [Refer to BHEL Drawing No. 3-M-02R-0011993 for the Wheel Assembly Details. Drg. Dimensions are to be strictly followed for the manufacture. Drg. enclosed and given as ANNEXURE -2].	

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's TECHNICAL OFFER (With Complete Details)
5.7.0	Heat Treatment & NDT Examination	The Fabricated Trolleys shall be Stress Relieved by thermal heat-treatment process after welding & NDT examinations. All welding shall be tested by NDT means [MPI, LPI & RT] after Stress Relieving operation.	
5.8.0	Machining Operation	All mechanical mating surfaces and wheel seating areas are to be machined to the required finish and protected	
5.9.0	Surface Cleaning	Both the Girders and the Trolleys are to be shot blasted or chemically treated for surface cleaning, after completion of all operations but prior to painting.	
5.10.0	Painting	The crane parts are to be painted as follows : a. One coat of Primer with 25 μ of DFT (Dry Film Thickness) and 48 hours of compulsory curing after painting. b. Two coats of Enamel Paint (Colour – International Tractor Orange) each with a DFT of 25 μ and intermittent curing of 16 hours.	
6.0.0	MECHANICAL ELEMENTS		
6.1.0	Gears	Gears in all the Stages shall be helical in design and to be of machined & ground and hardened.	
6.2.0	Gear Box Casing	Shall be of fabricated type and stress relived by thermal heat-treatment process, prior to machining.	

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's TECHNICAL OFFER (With Complete Details)
6.3.0	Rope Drum	Shall be of fabricated type and stress relieved. The circumferential weld joints shall be tested by 100 % X-Ray for quality assurance.	
6.4.0	Type of Coupling	Only GEARED COUPLING to be used a. between Electric Motor and Gear Box b. between Gear Box and Rope Drum c. between Gear Box and Trolley Wheels	
6.5.0	Trolley Wheels	The Trolley Wheels shall be of Die-Forged and Wheel Tread hardened to 300/350 BHN. Wheels shall be fitted with L-Type Bearings	
6.6.0	Trolley Wheels	Forged Wheels hardened to 300 - 350 BHN on tread with L-type Bearing shall be provided.	
6.7.0	Mechanical Joints	Fit Bolts for all joints coming in main members	
6.8.0	Pulley Dimension	Rope Pulley diameter shall be 23 times that of Rope diameter	
6.9.0	Lifting Hook	Hook Latch shall be provided for the Hook	
6.10.0	Limit Switches	Hoist shall be provided with Rotary and Counter-Weight limit Switches	
7.0.0	ELECTRICAL ELEMENTS		
7.1.0	Operational Controls	The Crane shall be provided with the Cabin Control [Master Control] - Push Button Type	
7.2.0	Control Voltage	110 V AC	
7.3.0	Type of Brakes	a. Hoist - Thruster Brake b. Cross Travel - Thruster Brake c. Long Travel - Thruster Brake	

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's TECHNICAL OFFER (With Complete Details)
7.4.0	Protection	All Panels, Limit-Switches and Motors shall have IP 54 protection.	
7.5.0	Electric Motors	All Electric Motors shall be as per IS-325 and IS-1231.	
7.6.0	Electric Contactors	All Panels shall have only SIEMENS Contactors and shall be suitable for AC3 Duty Class.	
7.7.0	Contactors Rating	The rating of all Contactors shall be atleast 50% higher than the respective electric motor full load current, at the specified duty cycle.	
7.8.0	Electrical Design	All Electrical Elements shall be so selected, that they withstand 25% overloading of the crane, at any time of operation.	
7.9.0	Long Travel Motion	A Dual Drive Mechanism shall be provided for LT (Long Travel) Motion.	
7.10.0	Controller Steps	A 4-Step Controller has to be provided for a. Main Hoist b. Long Travel c. Cross Travel	
7.11.0	Crab Wiring	The CRAB shall be fully wired with junction box.	
8.0.0	SELECTION of BOI and COMPONENTS	The makes of Components or Bought-Out-Items shall be strictly as per the list given below.	
8.1.0	Hoist Hooks	HERMAN MOHTTA / HERCULES / SILPA UDYOG / SMRITI FORGINGS / KARACHIWALA	
8.2.0	Wire Rope	USHA MARTIN / FORT WILLIAM / RA WIRE ROPE	

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's TECHNICAL OFFER (With Complete Details)
8.3.0	Electric Motors	GEC / BHARAT BIJLEE / SIEMENS / KEC	
8.4.0	Thruster Brake Unit	ELECTROMAG / SPEED-O-CONTROL / OMEGA	
8.5.0	Limit Switch (Gravity Type)	SIEMENS / INDUSTRIAL SYNDICATE / BCH / SKC / SOC	
8.6.0	Contactors	Only SIEMENS make	
8.7.0	Over-Load-Relay	SIEMENS (THERMAL TYPE)	
8.8.0	HRC Fuses	ENGLISH ELECTRIC / L&T /SIEMENS	
8.9.0	Rotary limit switch	SIEMENS / OMEGA / SOC / INDUSTRIAL SYNDICATE	
8.10.0	Switch fuse unit	ENGLISH ELECTRIC / SIEMENS / GEC	
8.11.0	Moulded case C.B	SIEMENS / L&T	
8.12.0	Pneumatic Time Delay	Only BCH make	
8.13.0	Push - Buttons	SIEMENS / L&T /AIRON	
8.14.0	Connectors	Only ELMAX make	
8.15.0	Couplings	WMI / FENNER / ALFEX	
8.16.0	Bearings	SKF / NBC / ZKL	
8.17.0	Cables	Reputed Makes & ISI Approved	
8.18.0	[Other Elements]	[Bidder to Specify Item and Makes]	[For Additional Details]

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
9.0.0	DOCUMENTS/DETAILS for APPROVAL	The following documents and details are to be submitted for BHEL Approval, prior to taking up the manufacture of the crane.	
9.1.0	Drawings and Documents	<ul style="list-style-type: none"> a. GA Drawing of the Crane. b. GA Drawing of Crab with Trolley c. GA Drawing of Individual Mechanisms. d. Drawings of Bridge, End-Carriage, Leg and their connection. e. Sub-Assembly Drawing for Wheels, Hook Blocks, Gear Boxes & Hoist Drums. f. Calculations for Selection of Electric Motors, Gear Reducers, Brakes, Couplings, etc. g. Calculations for Bridge Girder, Crab, End - Carriage and their connections. h. Wiring Diagram with Logic Circuits. i. Cable Selection based on Current Rating. 	
9.2.0	Technical Details	<ul style="list-style-type: none"> a. Total Weight of the Crane including all Electrical Equipment b. Total Weight of Trolley including all Electrical Equipment c. Weight of each Bridge assembled and ready for erection with and without Mechanical and Electrical Equipment. d. Weight of each End - Carriage assembled and ready for erection e. Total Weight of Structural, Mechanical and Electrical Equipment and indicated separately also. 	

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
10.0.0	INSPECTION	The following Schedule of Stage Inspections is to be strictly adhered to, prior to dispatch from the Supplier's Works	
10.1.0	STAGE – I	<ul style="list-style-type: none"> a. Verification of Test Certificate for Raw Materials used for Girders, End-Carriages, Trolleys, Gear Box Casings, etc. b. Verification of X-Ray Report of Butt-Joints coming in the Girders and Random Testing on the Welds, by physical examination. c. Box Girder setting before closing of the Bottom Flanges – for inspecting the quality of welding and presence of waviness d. Trolley Frame Fabrication before setting the Mechanisms e. End – Carriage Fabrication 	
10.2.0	STAGE – II	<ul style="list-style-type: none"> a. Inspection of Bridges and End – Carriages with Wheel Assembly and Alignment checking b. Verification of Span & Diagonal Dimensions, Checking of Wheel Alignment, Mechanical Assemblies and Total Alignment. c. Free running of the all the Mechanisms. 	
10.3.0	STAGE – III [Final Inspection]	<ul style="list-style-type: none"> a. Measurement of CAMBER in the Bridges. b. Full / Rated Load Test and Deflection Test. c. Deflection and Permanent Set Measurement. d. 25% OVER-LOAD Lifting Ability Check. 	

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
11.0.0	CRANE ERECTION & COMMISSIONING		
11.1.0	Mechanical Erection	Erection of the Crane will be done by BHEL, as per the guidelines furnished in the Erection Manual given by the Supplier	
11.2.0	Crane Commissioning	Commissioning of the Crane and Performance Prove –Out for the Crane's Capacity and Smooth Functioning of the Crane (at BHEL Works) shall be the RESPONSIBILITY of the supplier.	
12.0.0	O & M MANUALS	Each Crane shall be provided with THREE Copies of Erection, Operation & Maintenance Manual, containing the following technical details	
12.1.0	Drawings & Details	<ul style="list-style-type: none"> a. Crane GA Drawing b. Crab Assembly Drawing c. Total Crane Wiring Schematics d. Detailed Wiring Diagrams for Sub-Systems / Panels e. Wheel Assembly Drawings f. Bottom Block Assembly Drawing g. Gear Box Assembly Drawings h. Coupling Drawing and Details i. Specifications/Ratings of All Bought-Out-Items j. Warranty / Guarantee Card for all Bought-Out-Items k. Trouble Shooting Chart for Main and all Sub-Systems 	
13.0.0	PERFORMANCE GUARANTEE	The Performance of the Total Crane and/or the Components / Sub-Assemblies / Bought-Out-Items shall be guaranteed for a minimum period of twelve months from the date of performance acceptance at BHEL Works.	