



An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirapalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY

NOTICE INVITING TENDER

Phone: +91 431 257 7421

Email : vkarna@bhel.in

spsy@bhel.in

Web : www.bhel.com

TWO PART BID

Tender to be submitted in two Parts

Enquiry

Number:

2601800010

Enquiry

Date:

30.05.2018

Due date for submission

of quotation:

25.06.2018

You are requested to quote the Enquiry number date and due date in all your correspondence. 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 should reach physically on or before 14.00 Hrs(IST) on the Date of tender opening. Tenders received after 14.00Hrs (IST) will not be considered for evaluation.

Item	Description	Quantity	(Indigenous Vendors) Matl. Will be Delivered to
10	Battery Powered Transfer Trolley 20 Tons as per the technical specification & commercial conditions applicable(To be downloaded from web site www.bhel.com or http://tenders.gov.in)	1.00 No.	FOR, BHEL,Stores, PPPU, Thirumayam, Pudukkottai Dt.

Important points to be taken care during submission of offer

- 1) Material shall be delivered to (By Indigenous vendors): As stated above.
- 2) By Foreign Vendors: CFR Chennai Seaport / Airport
- 3) Delivery required 10 weeks from the date of purchase order.
- 4) Erection & Commissioning period required 2 Weeks from the date of intimation by BHEL to vendor for deputation of their Engineers for E&C.
- 5) EMD for this Tender will be (INR): 40,000
- 6) Compliance Forms. TRY/IMP/03 & TRY/IND/03A to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.
- 7) 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 / 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 the Government tender website <http://tenders.gov.in> (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference .

Tenders should be submitted before 14.00Hrs (IST) 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**

for DGM / Capital Equipment / MM

S.PARTHASARATHY
MANAGER
CAPITAL EQUIPMENT / MM
BHEL, TRICHY-620014.

Technical Specification Part – A

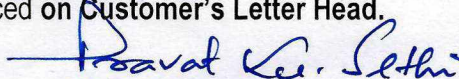
Battery Operated Material Transfer Trolley

SL.No	BHEL Specification	Vendor's Offer
1.0	QUALIFYING CRITERIA	
1.1	The BIDDER / VENDOR (OEM) shall have at least FIVE Years of Experience in the Design, Manufacture & Supply of "Battery Operated Material Transfer Trolley".	
1.2	Only those vendors (OEMs), who have Manufactured, supplied and commissioned at least ONE Battery Operated Material Transfer Trolley, similar to the machine specified under Part B, in the last Ten years [as on date of this tender opening(first date)] should quote.	
1.3	Vendor has to submit at least ONE Performance Certificate from their customer, for satisfactory performance of Battery Operated Material Transfer Trolley supplied to them and such equipment is working satisfactorily for a minimum period of one year [as on date of this tender opening (first date)]. For obtaining the Performance certificate, a suggestive format is provided at the end of part-A.	
1.4	BHEL reserves the right to verify the information provided by the Vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.	

2.0	INFORMATION TO BE PROVIDED BY VENDOR	
2.1	Vendor shall provide contact details (phone no & email id) including the address of his Agents / Service Centres in India.	
2.2	Details of Supplying and Battery Operated Material Transfer Trolley supplied to BHEL units, if any. (Year of commissioning, Application, Type)	
2.3	Number of Battery Operated Material Transfer Trolley supplied and commissioned till date (to quote the equipment supplied during the last three years only)	
2.4	The BIDDER/VENDOR to furnish Reference List of Customers (max 10 customers) including Contact details (phone no & email id).	

Suggestive Format of Performance Certificate:

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


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PERFORMANCE CERTIFICATE

- 1 Supplier of the machine
- 2 Make & Model of the M/C
- 3 Month & Year of Commissioning
- 4 Application for which M/C is used
- 5 a. Weight of the machine

6 Performance of the Machine
(Strike off whichever is not applicable)

Satisfactory / Not Satisfactory

7 After sales service
(Strike off whichever is not applicable)

Satisfactory / Not Satisfactory

8 Any Other remarks

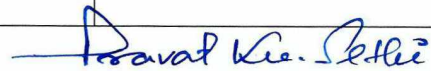
Performance certificate issued date:

Signature & Seal of the Authority
Issuing the Performance Certificate

Contact details of issuing authority
Name & Designation:
Office No/ Mobile no:
Email ID:

Technical specification for battery powered transfer car
[Carrying Capacity: 20 tons]

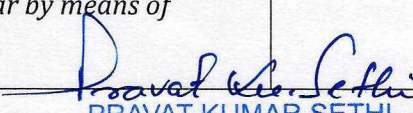
Sl. No	PARTICULARS / BHEL SPECIFICATIONS	VENDOR's OFFER
1.0.0	APPLICATION a) The proposed Transfer Car is intended for material handling within a large and heavy fabrication industry, on steel rails embedded in the shop floor. b) The Transfer Car will be put to use for continuous duty [three shifts in a day and for all the 365 days in an year]. c) The shop floor environment will be dust prone, humid, welding fume filled and ambient temperature going upto 50° C.	
2.0.0	SCOPE OF SUPPLY a. Design and Manufacture as per BHEL Tender Specifications. b. Assembly and Running Test before Despatch, at Supplier's Works. c. Supply in Modules / Sub-Assemblies d. Commissioning and Performance Prove-Out at BHEL Works e. Mechanical & Electrical Spares	
3.0.0	TECHNICAL SPECIFICATIONS	
3.1.0	Pulling Capacity 20,000 kg	
3.2.0	Rail Track Gauge 1676 mm [Broad Gauge]	
3.3.0	Trolley Platform Length 6500 mm	
3.4.0	Trolley Platform Width 2500 mm	
3.5.0	Height from Rail Level 900 mm [Loading Platform Level]	
3.6.0	No of Axles Two	
3.7.0	Distance between Axles Minimum 3500mm	
3.8.0	Wheel Tread Diameter 500 mm	
3.9.0	Motor DC SERIES MOTOR 3.5 HP 1700 RPM 36V	
3.10.0	Haulage Speed Upto 30 mtrs. / min.	
4.0.0	CONFIGURATION & CONSTRUCTION	
4.1.0	Basic Design The transfer car shall be configured to run on BG [Broad Gauge] track with a sturdy steel structure, powered with a suitable DC motor (in conjunction with a gearbox and battery) and provided with controls, operator console, battery charger, etc., as per the details given under the following clauses.	



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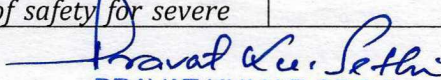
Technical specification for battery powered transfer car [Carrying Capacity: 20 tons]

SI. No	PARTICULARS / BHEL SPECIFICATIONS	VENDOR's OFFER
4.2.0	TRANSFER CAR CARRIAGE <i>a. The under frame shall be fabricated out of steel rolled beams and sections by welding.</i> <i>b. The top shall be covered with steel plates of adequate thickness (not less than 8 mm) to withstand load capacity of the transfer car.</i> <i>c. The main members shall be adequately reinforced to withstand shock loads encountered in service.</i>	
4.2.1	Raw Material <i>a. Only steel materials, tested and certified for quality by reputed inspection authorities, shall be used.</i> <i>b. Test Certificates to be produced for BHEL verification and form part of the documentation.</i>	
4.2.2	Welding Electrodes <i>a. For all Horizontal Welding E 7018 Electrode only should be used.</i> <i>b. For all Vertical Welding E 7048 Electrode only should be used.</i>	
4.2.3	Welded Joint Testing <i>All Butt Welded Joints (if carried out/though not preferred by BHEL) shall be subjected to 100% X-Ray Testing and X-Ray Films to be produced for BHEL evaluation and form part of the documentation.</i>	
4.2.4	Bottom Clearance <i>The bottom most part of the components mounted under the trolley carriage shall have a minimum ground clearance of 100 mm.</i>	
4.2.5	Suspension system <i>The transfer car frame shall rest on the axle box through a suspension system with helical coil springs to eliminate shocks being transferred from rail to the under frame during operation.</i>	
4.2.6	Battery Compartment <i>Battery compartment shall be protected from damage using guard plates</i>	
4.2.7	Attachments <i>The below listed attachments are to be compulsorily provided with the Transfer Car.</i>	
4.2.8	Buffers <i>Two each of spring-loaded buffers with rubber pads shall be provided at both ends of the transfer car.</i>	
4.2.8.1	Coupler <i>Hook type couplers are to be provided at both ends, for shunting purposes.</i>	
4.2.8.2	Lifting Hooks <i>Adequate number of lifting hooks shall be provided for transporting / lifting the transfer car by means of overhead cranes</i>	


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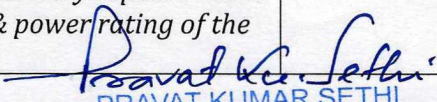
Technical specification for battery powered transfer car [Carrying Capacity: 20 tons]

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4.2.8.3	Side Supports <i>3 Nos. of support pockets with inside dimension of 75mm x 75 mm shall be provided on each side of the trolley to accept side-support pipes</i>	
4.2.8.4	Step Ladder <i>One step ladder for climbing to be provided in the front and back</i>	
4.3.0	DRIVE SYSTEM <i>a. The drive shall consist of DC Series motor coupled to the totally enclosed gearbox and drive the wheel through axle-mounted heavy duty gearbox. b. Motor & Gearbox to be mounted on the same frame. c. Suitable arrangement may be provided to avoid damage to motor & gearbox assembly due to jerking at start & stop. d. The power to the motor shall be supplied from the batteries mounted on the trolley itself.</i>	
4.3.1	Motor <i>a. DC Series motor of suitable capacity having adequate starting torque shall be used. b. The motor shall be totally enclosed. c. The speed control shall be through armature resistance control. d. Three-step speed in either direction shall be provided. e. DC magnetic brake shall be provided.</i>	
4.3.2	Traction Motor Make <i>Motor make shall be of reputed make. BIDDER to specify make and rating.</i>	
4.3.3	Track Rail Size <i>ISR 90 Lbs./Yard</i>	
4.3.4	Brake <i>Fail safe electro-magnetic brake shall be provided for instantaneous stopping.</i>	
4.3.5	Gear-Box <i>a. The gearbox casing shall be fabricated out of steel plates. b. The housing shall be stress relieved after fabrication to eliminate the internal stresses developed during welding and also to maintain the dimensional accuracy in service. c. The housing shall be of split design to facilitate easy assembly & maintenance d. The mating joint faces shall be of accurate finish, blue matched & lapped together to ensure leak proof joint. e. The gears shall be made out of alloy steel forging. f. The gear tooth size and face width shall be ample design with adequate factor of safety for severe</i>	


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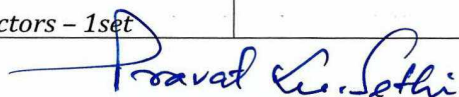
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	<i>shocks while in service during stall condition of motor as while braking under load.</i>	
4.3.6	Wheel and Axle a. <i>Cast steel wheels as per IS 2707 Gr II of defect free and finish machined on running tread, flange and bore shall be provided.</i> b. <i>The tread shall be induction hardened to 300 to 350 BHN.</i> c. <i>Axles shall be of forged steel.</i>	
4.4.0	CONTROL SYSTEM a. <i>DC Motor shall be used with resistance for speed and torque control.</i> b. <i>The resistance value shall be selected so that the motor delivers required torque while starting and current is kept within the permissible safe limit.</i> c. <i>Heavy-duty electromagnetic contactors shall be used to include and remove the resistance in the circuit.</i> d. <i>The control shall be by push buttons mounted in the control console.</i> e. <i>The driver console shall be provided with cover and lock and key to avoid unauthorized operation.</i>	
4.4.1	Main Control <i>Master controller with Dead-Man handle mounted at the driver's platform at one end of the trolley.</i>	
4.4.2	Remote Control <i>Pendant type hand held Remote Control Unit with 5 mtr. long cable with quick-fix end connectors.</i>	
4.5.0	BATTERY a. <i>Battery shall be accommodated in the transfer car suitably for easy maintenance, charging & replacement.</i> b. <i>Battery shall be Iron clad, heat sealed polypropylene classic motive power battery and assembled in steel trays duly FRP lined, including inter cell connectors, terminal take off, charging socket and harness, complete with all components, conforming to IS: 5154 of 1980 & Amendment-1.</i>	
4.5.1	Battery Charging <i>Supplier shall charge the battery at site. Sufficient quantity of electrolyte and suitable Charger shall also be supplied along with the battery.</i>	
4.5.2	Battery Power Rating <i>36V DC, 300 AH 5 Hr rating Storage Type, Traction Duty, Ni-Cd maintenance free Battery</i>	
4.5.3	Battery Make <i>Storage Battery shall be of internationally reputed make only. BIDDER has to specify make & power rating of the Battery.</i>	


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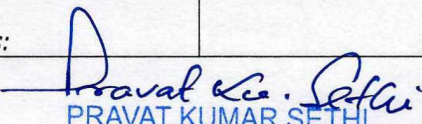
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4.6.0	BATTERY CHARGER <i>Suitable for 36 V, 300 Ah lead acid battery.</i> <i>Charger shall have the following features:</i> <i>Constant current equalizing facility with auto cut-off.</i> <i>Protection for reverse battery, over current and short circuit.</i> <i>Free standing, self – compensating, and 100% automatic charging.</i> <i>Charging current and charging voltage indication.</i> <i>On delay start.</i>	
4.6.1	Input Electric Power <i>The battery charger shall be suitable for input electric supply through a 415VAC $\pm$ 10%, 50Hz $\pm$ 3% from 3 Phase, 3 Wire System. [No neutral conductor]</i>	
4.6.2	Power Cable <i>10 mtr. long charging cable of adequate size, with end connectors, shall be supplied</i>	
4.7.0	SAFETY PROTECTIONS <i>The following safety protections shall be compulsorily provided:</i> <i>Overload Protection.</i> <i>Short Circuit Protection.</i> <i>Dead Man Control.</i> <i>Key Switch.</i> <i>Hooter.</i> <i>Charger Isolation.</i> <i>Reverse Interlock.</i> <i>Over Speed Protection.</i> <i>Emergency Stop.</i>	
4.8.0	SURFACE CLEANING <i>All the fabricated parts shall be de-rusted and degreased (by shot blasting or chemical treatment for surface cleaning), after completion of all operations but prior to painting.</i>	
4.9.0	PAINTING <i>The Steel fabricated parts are to be painted as follows.</i> <i>One coat of Primer with 25 microns of DFT (Dry Film Thickness) and 48 hours of compulsory curing after painting.</i> <i>Two coats of Enamel Paint (Colour – Golden Yellow) each with a DFT of 25 microns and intermittent curing of minimum 16 hours.</i> <i>The front and rear portions shall be painted yellow and black strips.</i>	
5.0.0	SPARES <i>The bidder has to supply the items listed below along with main item</i> <i>Heavy-duty electromagnetic contactors – 1set</i>	



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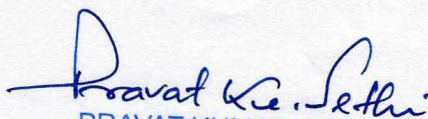
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	2. Master controller - 1number 3. Dead-Man Switch - 1number 4. Male Female connector for battery charging – 1set Also, The BIDDER has to compulsorily list down the Mechanical, Electrical and Electronic Spares with Unit Rate, which are to be procured for three years of continuous operation of the Transfer Car with the Remote Control Unit in addition to the above mentioned 4 items	
6.0.0	DOCUMENTS/DETAILS for APPROVAL The following documents and details are to be submitted for BHEL Approval, prior to taking up the manufacture of the Transfer Car.	
6.1.0	Drawings and Documents a. GA Drawing of the Transfer Car / Trolley. b. Trolley Dimensional Drawing. c. Sub-Assembly Drawing for Wheel & Axles, Gear Boxes, etc. d. Calculations for Selection of Electric Motor and Gear-Box. e. Electrical Drawings. f. Schematic Drawing of Trolley Controls. g. Battery Charger Schematic Drawing. h. Total Weight of the Transfer Car including all Electrical Equipment.	
7.0.0	O & M MANUALS Each Transfer Car shall be provided with a. Complete set of Tools required for Operational Maintenance, b. 3 Copies of Operation & Maintenance Manual hard copy & one soft b) copy in CD, [containing the following technical details, given under Clause Sl. No. 7.1.0]	
7.1.0	Drawings & Details a. Trolley General Arrangement Drawing b. Assembly Drawing for Wheel & Axle, Gear-Box Assembly, etc. c. Electric Wiring Schematics d. Detailed Wiring Diagram for Sub-Systems / Control Panels e. Battery Charger Schematic Drawing. f. Specifications / Ratings of All Bought-Out Items g. Warranty / Guarantee Card for all the Bought-Out Items h. Trouble Shooting Chart for all Systems i. List of Spares – both Mechanical and Electrical	
8.0.0	INSPECTION Schedule of Inspection at supplier's works:	


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Sl. No	PARTICULARS / BHEL SPECIFICATIONS	VENDOR's OFFER
	a. Verification of Test Certificate for Raw Materials used for fabrication. b. Verification of X-Ray Report of Butt-Joints and Random Testing of the Welds, by physical examination. c. Verification of Transfer Car Dimensions, Checking of Wheel Alignment, Mechanical Assemblies and Total Alignment. d. Speed / Traverse Motion Testing without load. Schedule of Inspection at BHEL: a. Full / Rated Load Test. b. 10% OVER-LOAD Carrying Ability Check.	
9.0.0	ERECTION & COMMISSIONING	
9.1.0	Mechanical Erection /Assembly Erection / Assembly of the Transfer Car has to be done by the Representative of the Supplier, at BHEL Works	
9.2.0	Commissioning Commissioning of the Transfer Car and Performance Prove -Out for the Trolley's Capacity and Smooth Running (at BHEL Works) shall be the RESPONSIBILITY of the supplier.	
9.3.0	Guarantee Vendor shall provide a guarantee for a period of 12 months from the date of commissioning of the equipment or 18 months from the date of dispatch, whichever is earlier.	


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