



ISO 9001 Company

**Heavy Engineering Corporation Limited**  
(A Govt. of India Enterprise)  
**Heavy Machine Building Plant**  
**CRANE EXECUTION DIVISION**

**Tender Enquiry No HMB/CED/PUR/99/06/11/012/LTE-3543**

**Dtd 24.11.12**

To,

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We request you to submit your most competitive offer for manufacture and supply of following items as Technical instructions therein and with schedules as given below.

**A. Technical Specifications**

Sl no.	Description	Qty. per Crane	Total Qty
1.	Rectangular lifting magnet, Ø 1440 x 460 mm.	1 set (4 magnets)	5 Sets
2.	Transformer- rectifier panel	1 no.	5 Nos.
3.	Magnet control panel	1 no.	5 Nos.
4.	Master controller	1 no.	5 Nos.
5.	Junction box with 4 numbers of compatible socket	1 set	5 Sets
6.	5M EPR insulated flexible copper cable with plug and socket	4 nos.	20 Nos.
7.	Battery backup with battery charger.	1 set	5 Sets
8.	Discharge resistance box	1 no.	5 Nos.
9.	Commissioning spares	1 set	5 Sets

**Note: The items shall be as per the technical specification (DAP No 148/11M) which is enclosed herewith.**

**B. Schedule of Tender**

1. **Receipt of Tender**                      **16.12.2012**    **up to 1:00 PM**
2. **Opening of Tender on**              **16.12.2012**    **at    3:00 PM**

**This enquiry consists of 2 parts as under:**

- (1) **Schedule I –**                      Terms and conditions
- (2) **Schedule II –**                  Technical specification



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### Schedule I

#### Terms & Conditions

1. The rate quoted shall be Inclusive of all packing & forwarding, Freight charges and Transit insurance charges on FOR Destination basis only.
2. The Price quoted by the tenderer should be exclusive of Sales Tax / VAT. The rate and nature of sales tax applicable should be shown separately. Tax will be paid to the seller at the rate at which it is liable to be assessed or has actually been assessed on the date of supply provided the transaction of sale is legally liable to sales tax and within the delivery period. Any change on the taxes & duty structure beyond the delivery period will not be considered by HEC.
3. The rates quoted must be firm and the offers made must remain open for acceptance for three months from the due date of opening of the tender.
4. Quotations erased or over written are likely to be rejected unless all corrections are authenticated with the tenderers signature.
5. Delivery date offered must be specified and guaranteed as per clause no 14.
6. Payment-90% payment alongwith 100% taxes and duties will be made within 60 days of the receipt of supplies at destination duly inspected.  
Balance 10% payment will be made against submission of PBG amounting 10% of contract price as per clause no 19.
7. Full particulars specifications, literature and / or drawing wherever applicable should be submitted along with the quotation. The brand and 'Make' name must be indicated.
8. The Corporation does not pledge itself to accept the lowest or any tender and reserves to itself the right of accepting the whole or any part of tender or portion of the quantity offered and you shall supply the same at the rate quoted.
9. Supplies will be subject to inspection by our Inspection wing/or Inspection agencies prescribed by us.
10. Order placed as a result of this tender will be subject to the Corporation's General Terms and Conditions of contract, which can be down loaded from our web site [www.hecltd.com](http://www.hecltd.com).
11. Corporation reserves the right to call for and examine at any time the books of accounts and other documents and papers of the firm for the purpose of ascertaining whether any excess payments has been made or the firm likely to be received/ received undue benefit out of execution of the particular contract.
12. Earnest Money- Earnest money to the extent of 2% of the total value to be deposited by demand draft on the State Bank of India, Ranchi Hatia Branch, in favour of Heavy Engineering Corporation Ltd. Ranchi-4 along with the offer. EMD will be converted to security deposit in case of successful bidder. **Offer without EMD/Documents for exemption if any will not be considered.**
13. Security Deposit- The firm has deposit a sum equal to a 5 percent of the total value of the contract as Security Deposit for the due fulfillment of the contract within 14 days after placement of order. Failing this the contract will be cancelled at the risk & expense of the supplier. This will be in addition to other remedies available to the purchaser for the successful completion of the contract. The validity of the security deposit shall be up to the receipt of the last consignment.  
**Note:-**Incase the EMD is converted into security deposit the firm will have to deposit 3% amount of the total value (5% of the total value – 2% of the converted value)
14. **Delivery- Our delivery schedule for all items is -within 3 months from the date of drawing approval / manufacturing clearance.** The date of delivery of the Stores stipulated in the acceptance of tender shall be deemed to be the essence of the contract and delivery must be completed not later than the dates specified therein. Otherwise:
  - (a) **LD Clause:** - The purchaser to recover from the contractor a sum of 0.5 % per week ( completed week) of the price any stores (up to maximum 10%) as liquidated damages, which the contractor has failed to deliver as aforesaid or



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- (b) The purchaser may procure the un deliver stores/ similar items from elsewhere, without notice to the contractor at the risk of the contractor without canceling the contract in respect of the consignment not yet due for delivery or,
- (c) To cancel the contract or a portion thereof.
15. Income Tax Clearance Certificate- All tenderers shall submit along with their tender an Income Tax Clearance Certificate duly countersigned by the Income Tax Officer of the Circle concerned under the seal of the office. Copy of permanent A/c no. (PAN) (of income tax) to be enclosed with the bid.
16. There is no obligation on our part to accept delayed / late tenders received after the due date of opening and there are liable to be summarily rejected.
17. The rates quoted shall also be inclusive of embossing on the material. The Ownership namely "HMBP" at a predominant place of the material to a size/thickness depending upon the volumes of the material.
18. Guarantee-The stores supplied shall be guaranteed for a period of 12 months from the date of commissioning or 18 months from the date of supply which ever is earlier against defective materials or bad workmanship.
19. Performance Bank guarantee- Performance Bank guarantee amounting to 10% of the contract price is to be submitted in HEC's Format issued by any Nationalized Bank (Preferably State Bank of India) valid till guarantee period.
20. **SPECIAL INSTRUCTIONS**

The tender is to be submitted in three parts. Part- I, Part – II & Part – III

- (a) Part I - Tender comprising Techno Commercial offer which shall cover all technical part as well as commercial terms & conditions except the prices and EMD (Earnest Money Deposit).
- (b) Part II - The Tender shall comprise Price Bid only as per price format given herewith.
- (c) Part III – The tender shall comprise Demand Draft of EMD (Earnest Money Deposit) as per clause 12 of the enquiry.

Offer without Part III above will not be considered and will be rejected. The price bids and EMD (Earnest Money Deposit) shall be opened only after the Techno Commercial terms are settled and accepted.

Part I, Part II & Part III offers shall be in separate sealed covers. The tenderers are to clearly super scribe on the top of each envelope the relevant part number and description along with tender reference number and date of opening.

All the envelopes (Part I, Part II & Part III) shall be enclosed in one envelope. This envelope shall also be super scribed on the top with tender reference number and date of opening of enquiry, indicating that all the three parts (i.e. Part I, Part II & Part III) are enclosed in the envelope.

- (d) The complete and sealed tender is to be submitted by 1:00 PM of scheduled date in the tender box at the office of the MM Division, Ground Floor, HMBP ADM Building, HEC Ltd, Ranchi 4.



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If the tender is bulky & voluminous the tenders are to be handed over to the following persons against receipt date & time:

1. Sri Upendra Nath  
Sr. DGM / Purchase/EL/HMBP
2. Sri K.K. Das  
Jr. Manager/ Pur /EL/HMBP

If the offer is not submitted as per the above instructions the same can be rejected.

Regards

**Upendra Nath**  
**Sr DGM / Purchase/EL/HMBP**



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### Schedule II

Work Order No.	Capacity	Qty.
0039.002-006.150	20T x 37.5M	5 nos

#### 1.0 OPERATING CONDITIONS:

Ambient	:	60°C
Humidity	:	100% (Maximum temperature & maximum humidity not occurring simultaneously)
Atmosphere	:	Hot & dusty (conductive dust)
Vibration	:	Severe shocks & vibration as encountered by rail mounted EOT crane

#### 2.0 POWER SUPPLY:

Main Supply	:	415V ± 10%, 50Hz ± 5%
Control Supply	:	240V ± 10%, 50Hz ± 5%, 1 phase.
Fault level	:	50 KA for 1 sec

#### 3.0 STANDARDS :

The equipment shall be designed, assembled & tested in accordance with latest IS & IPSS.

IPSS: 1-10-001-07 (Latest version) for lifting magnet.

IPSS: 1-10-007-06 (Latest version) for DC power pack.

IPSS: 1-04-037-99 (Latest version) for magnet panel.

Indian electricity rules & regulation

#### 4.0 GENERAL TECHNICAL SPECIFICATION: -

1. Ambient temperature: 60°C.
2. The magnet shall be oil & weather proof, shall conform to IPSS: 1-10-001-07 / relevant International Standards. A non linear type discharge device shall also be included as part of magnet supply.
3. The lifting capacity of each magnet shall be 5 MT for handling solid blooms at 300°C.



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4. The magnet shall be suitable for handling material having temperature 300°C to 450°C.
5. Four nos. of magnet shall be mounted on a spreader beam and combined lifting capacity with four number of magnets on spreader beam shall be 20 MT, handling solid blooms at 300°C.
6. Suitable junction box with 4 nos. compatible socket shall be mounted on the spreader beam.
7. Successful bidder to demonstrate the lifting capacity of magnet at site.

### 5.0 TECHNICAL SPECIFICATION OF ELECTRO MAGNET:-

1. The magnet shall conform to IPSS-1-10-001-07 / International Standards.
2. The magnet shall have **copper** coil with **type-C** insulation.
3. The magnet shall be hermetically sealed and water, steam, fume and oil proof.
4. The duty factor shall be 75% on 10 minutes duty class.
5. Suitable for handling solid blooms at 300°C.
6. The lifting capacity of magnet shall be with working voltage of 220 V DC with +10% & -15% variations.
7. Suitable surge suppresser shall be provided for each magnet. Surge suppressor shall be compact, non linear resistor, silicon carbide, thyrector, variator or metrosil type. Each magnet shall have surge suppressor box and separate terminal box with adequately rated 3 pin plug for feeding power to magnet.
8. Heat insulation shall be inserted between magnet coil and pole plate.
9. Each magnet shall be supplied with 5 M EPR insulated flexible copper cable with adequately rated plug 3 pin at one end and 3 pin socket at other end of the cable. **One earth terminal on the magnet shall be provided for connection to spare core in magnet cable.**
10. Magnet body shall be as per IPSS.
11. A ribbed double bumping plate of high manganese non- magnetic alloy shall be provided.

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12. One no. junction box complete with following devices shall be supplied loose.
  - a. Terminal blocks mounted inside the box.
    - i) Rated 150 A – 8 Nos.
  - b. 4 nos. of 3 pin sockets rated for carrying current of individual magnet fitted on two sides of the junction box. This socket shall be matching with the plug fitted on flexible cable to be supplied with the magnet.

### 6.0 CONSTRUCTIONAL FEATURES OF THE CONTROL PANELS:-

- 6.1 Free standing, floor mounting type, sheet steel enclosed, dust, moisture and vermin proof housing the associated power and control equipment. Minimum sheet thickness shall be 2 mm. Panels shall have lockable, hinged and gasketed lift off type doors. Cable entry to the panels shall be from bottom. The paint shade shall be communicated later. Panel shall have degree of protection IP54.
- 6.2 Panels shall be front wired with readily accessible terminal blocks for making external connections. Panels shall be prewired up to the terminal blocks. Single core multi strand, HR PVC insulated copper conductor cables of minm. size 2.5 mm sq. shall be used for control circuit wiring in the panels. The bottom most equipment mounted inside the panel shall be at least 250-300 mm above the bottom cover of the panels so as to facilitate inspection and repair. Electrical clearance in air among all live parts of different polarity and voltage and between live parts and earth shall be min. 25 mm.
- 6.3 All power wiring shall be carried out with single core 1100V grade, HRPVC insulated cables with stranded copper conductors of adequate size or laminated copper strips insulated with HRPVC sleeve.
- 6.4 Power and control terminals shall be segregated. All power terminals shall be of stud type. All control terminals shall be of open type. Terminal blocks shall have 20% spare terminals.
- 6.5 All the foundation and other fixing bolts, nuts, washers and other hardware necessary for panel fixing shall be supplied as part of the panels and shall be cadmium plated or zinc passivated.



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- 6.6 Panels shall have adequate no. of lifting lugs & plug and socket for maintenance purposes. Panel internal lighting shall be provided.
- 6.7 An earth bus-bar made of copper strip shall be provided near the bottom of the panel and shall run for its entire length. Earthing terminal studs as per IER shall be provided.
- 6.8 Schematic drg. shall be pasted inside door of the panel.
- 6.9 Constructional features of the panels shall conform to IPSS: 1-04-037-99 (latest revision).

### 7.0 TRANSFORMER RECTIFIER PANEL:

Transformer for DC supply to magnet shall be dry type, naturally air cooled rated for feeding power to four numbers of the magnets simultaneously and suitable for  $415V \pm 10\%$ ,  $50 \text{ Hz} \pm 5\%$  and 50 KA fault level for 1 sec. Transformer shall be double wound with copper conductor impregnated, continuously rated with Class F insulation and off load tap changing shall be provided at  $\pm 5\%$  and  $\pm 10\%$  on the primary side.

Rectifier shall be natural air cooled, double way connected (3 Ph bridge), silicon diodes rated for minimum recurring reversing voltage of 800V and capable of withstanding accidental over loads within the limit permitted by protective devices incorporated in the equipment. Suitable Heat sink and cooling arrangement with RC snubber circuit shall be provided.

Protection and switching:

- a. MCCB both on AC and DC side with short circuit and over load protection.
- b. Contactor both on AC and DC side with suitable Thermal protection for AC only
- c. HRC fuse shall be provided on DC side additionally.
- d. Suitable DC voltmeter and Ammeter shall be provided at the panel.

Panel shall be sheet steel enclosed made of 2 mm thick CRCA sheet with IP 54 degree of protection. All components shall be front mounted, front Removable and front wired. Internal wiring shall be done with HR PVC insulated stranded copper cable of minimum size 2.5 sq. mm.

### 8.0 MASTER CONTROLLER:





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Joy stick type master controller with Lift – Off – Drop position. It shall be supplied loose. It shall have spring return from “Drop” position to “Off” position.

### 9.0 BATTERY BACK UP UNIT:

- a On-line emergency power supply (battery backup unit & battery charger) to be used in conjunction with offered lifting magnets to supply immediate battery power (220V DC) to lifting magnets that shall safely hold load in the event of the power failure for at least 20 minutes.
- b An alarm system for instant warning that the magnet system is operating on battery power in both audible and visual display shall be provided.
- c The main features of the battery backup unit shall be as given:
  - Instant transfer of power to load.
  - Nickel-cadmium industrial batteries in IP-65 enclosure.
  - Battery charger from main power rectifier.
  - Battery disconnect switch with fault sensing.
  - Alarm contact for battery low indication shall be provided for indication on ACU. Magnet circuit healthy indication shall also be provided in the ACU for which potential free contact shall be made available.

### 10.0 SCOPE OF SUPPLY:-

Sl. No.	Description	Item code	Qty per crane.	Total Quantity
1	Rectangular lifting magnet, size - 1440 x 460mm. Four nos. of such magnet to be mounted on a spreader beam.	5533309410	1 set ( 4 magnets)	5 sets
2	Transformer- rectifier panel	5533309411	1 no.	5 nos.
3	Magnet control panel	5533309412	1 no.	5 nos.
4	Master controller.	5533309413	1 no.	5 nos.



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5	Junction Box with 4 numbers of compatible socket	5533309414	1 set	5 sets
6	5 M EPR insulated flex. Copper cable with plug and socket	5533309415	4 Nos.	20 nos.
7	Battery backup with battery charger	5533309430	1 set	5 set
8	Discharge resistance box	5533309431	1 no	5 nos.

### 11.0 LIST OF COMMISSIONING SPARES.

**List of commissioning Spares per crane:** Total quantity shall be 5 sets for 5 nos. of cranes.

Sl. no.	Item description	Qty.
1	Power Contactor	1 no. of each type & size
2	Fixed and moving contacts for Contactor of each type	1 set of each type & size
3	Power Contactor Coil	1 no. of each type & size
4	Auxiliary contactor	1 no. of each type & size
5	Auxiliary Contactor Contacts, fixed & moving	1 set of each type & size
6	Auxiliary Contactor Coil	1 no. of each type & size
7	Power fuses	5% of each rating for each type & size

Sl. no.	Item description	Qty.
8	Control fuses	10% of total quantity for each type & size
9	Indicating lamp with holder	1 no. each type & size

**12.0 Essential Spares** – Item wise prices for these spares are to be furnished. Supply of these spares is not included in the scope of supply. The prices shall be valid for a period of 1 year.

**List of essential Spares for two years of operation per crane:**

Sl. no.	Item description	Qty.	% of total equipment



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1	Power Contactors	1 no. of each rating	-
2	Fixed and moving contacts for Contactor of each type	Minimum 1 set for each	25%
3	Contact set for auxiliary contactors	Minimum 1 set for each	25%
4	Coils for Power Contactors	Minimum 2 nos. for each type	50%
5	Coils for Auxiliary Contactors	Minimum 1 no. for each type	25%
6	Pneumatic Timers	Minimum 2 nos.	15%
7	Auxiliary Contactor	Minimum 1 no. of each type	25%
8	Indicating lamp with holder	Minimum 2 nos.	25%
9	Fuses		
	a) Power circuit fuses	Minimum 1no of each rating	100%
	b) Power circuit fuse base	Minimum 1 no. of each type	25%
	c) Control fuse	Minimum 4 nos. of each rating	25%
	d) Control fuse base	Minimum 1 no. of each type	25%

### 13.0 LIST OF PREFERRED MAKES OF ELECTRICAL PARTS

The make of the equipments shall be as per the preferred make list of DSP. Makes of item not included in the list shall be subject to approval by MECON / DSP.

### 14.0 INSPECTION AND TESTS:

- a. Manufacturer's routine and Type Test certificates as per applicable National / International standards shall be furnished before dispatch.
- b. Routine and Type test as per relevant standards.

### 15.0 INFORMATION TO BE FURNISHED ALONG WITH THE OFFER:-

Following technical information shall be furnished along with the offer -

- 15.1 Pointwise confirmation of the enquiry specifications clearly indicating



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deviations if any.

- 15.2 Overall dimensions and mounting dimensions of transformer rectifier panel, magnet control panel, battery backup unit with details of battery used, master controller etc.
- 15.3 Calculation for battery sizing.
- 15.4 Ampere rating of battery with duty.
- 15.5 Type & size of the magnet selected with technical catalogues indicating dimensions & other relevant parameters.
- 15.6 Recommended size of flexible cables for feeding four nos. magnets simultaneously.
- 15.7 Maximum power demand for the system.
- 15.8 B.O.M of magnet control panel & Transformer Rectifier panel.
- 15.9 Details and catalogs of the master controller.
- 15.10 Degree of protection for the enclosure of each item.
- 15.11 Lifting capacity at 40%, 50% and 75% CDF.
- 15.12 Lifting capacity at 40 °C, 60°C, 200 °C, 300°C and 500°C.

### **16.0 DRGS. AND DOCUMENTS:-**

- 16.1 10 copies of the following drgs. shall be submitted for approval / reference within 4 week's of the placement of order.
  - a. GA drg. & BOM of transformer rectifier panel, magnet panel, master controller.
  - b. GA drg. & BOM of battery back up unit.
  - c. Panel wiring diagram and terminal plan.
  - d. Data sheet of the magnet and battery.
  - e. Schematic diagram for transformer rectifier unit.
  - f. Schematic diagram for magnet control panel.



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- 16.2 Corrections to be incorporated in the commented drgs, if any, and the corrected drgs are to be resubmitted within one week.
- 16.3 Soft copy of the drgs. and data sheet prepared in Auto CAD package on CD.
- 16.4 The following information shall be supplied prior to commissioning.
- a. Ten sets of all the approved drawings
  - b. Ten sets of “As built drgs.”
  - c. One set of reproducible
  - d. Five sets of operation and maintenance manual containing
    - i. Instruction for erection
    - ii. Instructions for pre-commissioning check-up.
    - iii. Operation abnormal conditions.
    - iv. Write-up on control & interlocks.
    - v. Recommended inspection points.
    - vi. Schedule of preventive maintenance.
    - vii. Ordering information for all replacement parts.
    - viii. Electrical schematics.
    - ix. Consolidated list of electrical equipment, indicating make, type, rating settings
    - x. 5 sets of inspection reports and test certificates in the form of a book.
    - xi. Any other special features.