TENDER DOCUMENT

NIT No.- DLI / C&E / WI-665 / 754

FOR

Tender for ‘Design, Engineering, Supply, Supervision of Installation, Testing & Commissioning of ‘METAL DETECTOR’ for the project of “Augmentation of Raw Material Receipt and Handling Facilities with new OHP Part- B (Package- 061) of Bhilai Steel Plant (SAIL)”.

VOLUME- 2B

(Scope of Work & Technical Specification)

ENGINEERING PROJECTS (INDIA) LIMITED
(A GOVT. OF INDIA ENTERPRISE)
Core-3, Scope Complex, 7, Institutional Area,
Lodhi Road, New Delhi-110003
TEL NO: 011-24361666   FAX NO. 011- 24363426
Scope of Work – Metal Detector

The scope of work of the bidder for Metal Detector shall include (but not limited to) design, engineering, manufacture, fabrication, assembly, testing and inspection at works, packing dispatch, transportation, delivery FOR site, supply of commissioning and start-up spares, special tools and tackles, Getting approval of drawings & documents from BSP/MECON before manufacturing and supply, supervision services at site during installation, testing & commissioning of Metal Detector (4 nos) as specified in technical specification, providing drawings & documents, datasheets in requisite sets, quality assurance plan, internal test reports, As built drawings, demonstration of performance guarantee testing, final painting and handing over to Bhilai Steel Plant. Including all electrics/electronics/microprocessors and standard accessories of Metal Detector.

The scope of the bidder shall be deemed to include all such items which although are not specifically mentioned in the specification, but are needed to make the equipment complete in all respect for its safe, reliable, efficient and trouble free operation.

Any modifications/deletions/additions/alteration in design/drawings/documents as required by BSP/MECON/EPI for proper execution of the system at site till completion and handing over of the project to BSP shall be in the scope of bidder.

1 Phase, 230 V +10% & -15%, 50 Hz +4% & -6% power supply shall be provided by purchaser near the local control panel of Metal Detector. Further distribution of power to all the components of Metal detector as required shall be in the scope of bidder.

The scope of supply and services of the bidder shall include the following:

a) Mechanical
   - Each equipment shall be complete in all respect including its drive units, cables, safety switches, structural, mechanical and other standard accessories.
   - Provision of necessary fixtures, supporting angles and brackets required for mounting and supporting the equipment.
   - All mounting accessories for the Metal Detector system.
   - The bidder shall also include supervision services at site during installation, testing and commissioning of the equipment supplied by them.

b) Electricals
• All Fixing bolts and nuts including foundation bolts shall be included in the scope of supply of bidder.
• Commissioning spares as required during testing and commissioning of the equipment.
• Required quantity of initial fill of oil, grease, lubricants, hydraulic fluid etc. and other consumables which are necessary for cleaning/flushing including erection, testing and commissioning of the equipment shall be in the scope of supply of bidder.
• Necessary tools and tackles for equipment required for maintenance, testing or inspection of the equipment.
• Statutory approval wherever required shall be taken by the bidder for the equipment being supplied by them from relevant state/central authorities.
TECHNICAL SPECIFICATION FOR METAL DETECTOR

General:

Metal Detector shall be provided at specified location to detect metallic objects.

Quantity : 04 Nos

Location : Conv. Z1C1 (MD-1), Conv. Z1C2 (MD-2), Conv. Z2C1 (MD-3), Conv. Z2C2 (MD-4)

Codes & Standards:

The design, manufacture, inspection and testing of Metal Detectors shall comply with all the currently applicable statues, regulations and safety codes in the locality where the equipment is to be installed. The Metal Detectors shall conform to the latest edition of standards/codes, which ensure equal or higher performance than those specified, shall also be accepted. Nothing in this specification shall be construed to relieve the bidder of the required statutory responsibility.

Equipment Specification:

Metal Detectors shall have reliability with enough sensitivity to detect 25 mm aluminum sphere below the burden of material. It shall also detect other metals like brass, copper, stainless steel, manganese steel, bars, scraps etc.

The equipment shall have provision for automatic static calibration with adjustable sensitivity.

Metal detectors shall be completely solid state using latest state of art technology. It shall be suitable for 50degC ambient and RH of 100%. The search sensor shall be protected from rain and direct sunlight by means of a non metallic covering other than wood. Control unit shall have adjustable controls for sensitivity, ON/OFF push buttons, reset table operation counter, audio-visual alarms local remote selector switch and all other necessary controls for trouble free operation of metal detector. It shall be suitable for mounting on wall, column, structure, etc with IP-65 degree of protection. It shall be constructed from FRP of thickness not less than 2 mm.

The Metal Detectors shall also have the following features:

i) The coils shall be protected against being struck by an oversized material/coal.

ii) In order to counteract interference from external sources such as motors, lighting and radio-transmitters, and to nullify the effect of climate changes/aging, dual receiver coils are to be used.

iii) In order to allow passing of metal belt fasteners without giving alarm and at the same time detection tramps, suitable arrangements shall be provided.
iv) In case a few non-magnetic idlers or non magnetic deck plates are required, the vendor shall provide these. However, these shall be metallic. Wood is not to be used.

v) LED display of COAST COUNT to indicate the number of pieces of tramp iron detected since last reset shall be provided so that the operator is alerted for the pieces of tramps, if any, between tramp marker and coil before restoring conveyor.

vi) TOTAL COUNT, which is not resettable, shall also be provided on the same LED display on demand.

vii) The location of tramp metal pieces shall be indicated by liquid colour spray.

viii) Construction Requirement

Fiber glass enclosure (with IP-65 degree of protection) shall be provided for all type of coils.

Suitable tramp metal markers shall be provided.

Local control panel shall be provided with IP-65 degree of protection.

Metal detector shall be provided with the following:

Power supply for panel : 230V + 10% & -15%, 50 Hz +4% & -6%

Control panel output : Potential free output contacts 2NO+2 NC for each status, Rating 10 A at 230V , 50 Hz (Out put terminal suitable for 2.5 sq mm wire/cable)

Cables : As required

Indication on local panel : Metal Detector ‘ON’, fault indications etc..shall be provided

Potential free O/P contacts: For Metal Detector ‘ON’, ‘Metal Detected., ‘Metal Detector Fault’, Local/Remote Selection etc. shall be provided.

Conveyor Data:

1. Type of Belt : Nylon

2. Material to be handled: Iron ore/Lime stone/Dolomite/Quartzite/manganese ore

Size of Raw Material –

Lump Iron Ore : - 40mm

Iron Ore Fines : - 8mm
<table>
<thead>
<tr>
<th>Material</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lime Stone (BF/SP grade)</td>
<td>60mm</td>
</tr>
<tr>
<td>Dolomite (BF/SP grade)</td>
<td>60mm</td>
</tr>
<tr>
<td>Quartzite</td>
<td>50mm</td>
</tr>
<tr>
<td>Lime Stone (SMS grade)</td>
<td>25mm</td>
</tr>
<tr>
<td>Dolomite (SMS grade)</td>
<td>25mm</td>
</tr>
<tr>
<td>Pellets</td>
<td>18 mm</td>
</tr>
<tr>
<td>Manganese Ore</td>
<td>25mm</td>
</tr>
<tr>
<td>Coke Breeze</td>
<td>25mm</td>
</tr>
</tbody>
</table>

3. Temp. of Material : Ambient


5. Rated Capacity : 1500 TPH

6. Design Capacity : 1800 TPH

7. Belt Width : 1400 mm

8. Belt Speed : 1.6 m/s

9. Idler Toughing Angle : 35 degree

10. Carrying Idler spacing : 1000 mm

11. Return Idler spacing : 3000 mm

12. Conveyor Inclination : 9 degree (max)

13. Burden Depth : 300 mm
**Questionnaire:**

- Type & Name of Supplier
- Senstivity
- Enclosure
- Control
- Calibration
- Tramp metal markers

**Documentation submission:**

1. **List of drawings/ data to be submitted along with offer**
   
   a) General arrangement drawing with bill of material of equipment showing overall dimension and details.
   
   b) Supplier's name for components & catalogues for these items.
   
   c) List of commissioning and start up spares to be supplied with equipment.
   
   d) List of recommended spares for two years of trouble free operation and maintenance of equipment.
   
   e) List of tools and tackles to be supplied with the equipment.
   
   f) Duly filled up questionnaire.
   
   g) Description of system operation
   
   h) Technical literature on offered model.
   
   i) Reference list of customers for the similar supply of item.
   
   j) Duly signed Unpriced copy of priced schedules.

2. **List of drawings/ data to be submitted by the successful bidder for approval/reference.**

   a) General arrangement drawing with bill of material of equipment showing overall dimension and details.
   
   b) Supplier’s name for components & catalogues for these items.
   
   c) Metal Detector's detailed specification.
d) Description on system operation.

e) System Installation drawings

f) List of commissioning spares

g) List of recommended spares for two years maintenance of equipment along with itemized price.

h) List of tools and tackles to be supplied with equipment.

i) Wiring Diagram and termination details.

j) Internal test reports/certificates.

k) Pre-requirements for Installation of equipment.

l) Installation, Commissioning, Operation and maintenance manuals.

m) Detailed technical literature on Metal Detector.

n) Quality Assurance Plan.

o) Drawings/Documents as per the requirement of BSP/MECON during detailed engineering and drawings/documents as per manufacturer’s recommendation.