TENDER DOCUMENT
TENDER NO.: DLI/C&E/WI-675/284

FOR

Tender for Supply of “Fluid Coupling” for the project of “Augmentation of Fuel and Flux Crushing Facilities (Package No. 064) of Bhilai Steel Plant (SAIL)”

VOLUME – 2B

TECHNICAL SPECIFICATION
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GENERAL

The following Technical Specification shall be read in conjunction with General Specification. If there are any provisions in this Technical Specification, which are at variance with the provisions of General Specification, the provisions in this Technical Specification shall take precedence.

1.0 DOCUMENTS/INFORMATION TO BE FURNISHED ALONGWITH OFFER

(i) Clear Scope of supply.

(ii) Exclusions, if any.

(iii) Price Schedule for supply as per the format enclosed.

(iv) Catalogues/Leaflets and O&M Manuals.

(v) Reference list of your Customers for the similar supply of items.

(vi) Quality Assurance Plan.

(vii) Un-priced Copy (Furnish un-priced copy of Price Schedule alongwith the Technical Bid).

(viii) Type and quantity of oil, lubricants & consumables for initial fill till successful commissioning of equipment.

(ix) List with unit rates of special tools and tackles, if any required.

(x) List of recommended spare parts for 2 years trouble free operation and maintenance alongwith unit rates as per the format enclosed in price schedule.

(xi) Weight of the coupling in Kgs.
2.0 SCOPE OF SUPPLY

The scope of the supply includes manufacture, testing and inspection at manufacturer’s works, packing, dispatch, transportation, delivery to site, receipt (Bhilai Steel Plant, SAIL/EPI) of ‘Fluid Coupling’ as per specifications and scope defined in tender documents complete with all accessories, which are not mentioned specifically but are required for the efficient and trouble free operation of the equipment.

a) **Following items are also included in bidder’s scope**

   (i) Fluid Coupling shall be selected as per the details given in the specifications.

   (ii) Getting approval of drawings & documents related to the Fluid Coupling from BSP/MECON/EPI.

   (iii) Supply of start-up spares, if any required is in bidder’s scope.
3.0 **TECHNICAL SPECIFICATION OF “FLUID COUPLING”**

Traction type fluid coupling shall be used between motor and gear-box for drives of 30 kW to 100 kW, Delay fill Chamber type fluid coupling for LT motor above 100kW and Scoop controlled fluid coupling (Air cooled type) for HT motor to be used. All coupling bolts shall be replaceable without shifting of drive components. Tolerance for alignment of all coupling shall be ±0.025mm.

For material of Fluid Coupling, refer IPSS No. 1-01-008-83.

4.0 **SCHEDULE OF FLUID COUPLING**

a) **HS COUPLING**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Conveyor No.</th>
<th>Qty.</th>
<th>Min. Rated Torque (Kg-m)</th>
<th>Motor Rating (kW)</th>
<th>Shaft Dia of Motor at Coupling (mm)</th>
<th>Shaft Length of Motor at Coupling (mm)</th>
<th>Shaft Dia of Gear Box at Coupling (mm)</th>
<th>Shaft Length of Gear Box at Coupling (mm)</th>
<th>Brake Drum Dia (mm)</th>
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<tbody>
<tr>
<td>1</td>
<td>Y7-12</td>
<td>2</td>
<td>36.2</td>
<td>55</td>
<td>65</td>
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<td>50</td>
<td>110</td>
<td>300</td>
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<tr>
<td>2</td>
<td>Y7-13</td>
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<td>59.2</td>
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<td>55</td>
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<td>29.82</td>
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<td>60</td>
<td>140</td>
<td>45</td>
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<td>110</td>
<td>35</td>
<td>80</td>
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<td>55</td>
<td>110</td>
<td>35</td>
<td>80</td>
<td>250</td>
</tr>
</tbody>
</table>

* Starting Torque will be 2 times of the rated torque.
5.0 SPARES, CONSUMABLES AND TOOLS & TACKLES

5.01 Commissioning Spares and Insurance Spares

Supply of commissioning spares and insurance spares as required shall be in the scope of supply of the Contractor along with the equipment. The list of commissioning spares has been indicated in ANNEXURE - C of Commercial Volume.

It shall cover requirements of erection, cold tests, startup and initial operation of the plant till integrated testing & commissioning and commencement of commercial production up to a period of six months. Any leftover commissioning spares shall be the property of the Employer. Any commissioning spares required over and above the list given by the Contractor shall have to be provided by the Contractor free of cost up to the commissioning & commencement of commercial production of the plant and equipment. The Contractor shall supply adequate insurance spares to ensure smooth operation and maintenance of the plant.

5.02 Consumables

The Contractor shall supply all consumables such as initial fill of lubricants, oils, grease, chemicals, refractories, resins etc. as required to complete the plant till commissioning and shall have a shelf life of minimum one year. The scope of consumables shall include electrodes, shims, packings, bolts, nuts, gaskets, rivets, washers etc. The Contractor shall also fulfill the entire requirement given in ANNEXURE – A-2 of Commercial Volume.

The Contractor shall also furnish Indian equivalent of oils, lubricants, refractories and other consumables alongwith necessary specifications, drawings, catalogues etc. to enable the Employer to procure them from indigenous sources.

The Contractor shall indicate the annual requirement of all such consumables.

5.03 Operating, Maintenance and Two Years Spares

5.03.01 The Contractor shall ensure the interchangeability of the parts wherever possible. The Contractor shall furnish an itemized list of interchangeable spares as given in Commercial volume.

5.03.02 The list of spares as necessary and recommended by the respective manufacturer for two years’ of reliable and trouble free operation and maintenance of all equipment under this package has been listed in ANNEXURE – D of Commercial Volume. The Contractor shall furnish complete specification of the same.
5.03.03 Spares list giving complete list of the replaceable parts, fully illustrated, shall be supplied. The list shall include the following information.

- Item designation
- Reference drawings
- Quantity installed
- Quantity recommended for two years’ normal operating including the insurance spares
- Weight of each spare part
- Supplier or sub-supplier’s catalogue number
- Recommended minimum stock
- Expected replacement time
- Installation instruction in detail shall be supplied both for original installation and future, for replacement of major electrical equipment, circuit wiring diagram shall be provided

5.04 General Erection/ Maintenance Tools and Tackles

5.04.01 The Contractor shall supply a complete and unused set of all the special tools and tackles including required number of toolboxes as required for erection, maintenance, overhaul or complete replacement of the equipment and components required for the plant. The Contractor has furnished a list of such special erection and maintenance tools and tackles which is enclosed as Annexure- B2 of Commercial Volume. All the tools shall be supplied in separate containers clearly marked with the name of the equipment for which they are intended.

05.04.02 All the tools shall be supplied in separate containers clearly marked with the name of the equipment for which they are intended.

05.04.03 The Contractor shall indicate list of construction machineries, handling equipment and other facilities including tower crane or equivalent for erection at high elevation required for the execution of work based on their previous experience, considering site conditions and other considerations of work and furnish resource deployment plan. The Contractor shall mobilize these equipment at site for the execution of work and this is an important requirement of the project. The availability of required facilities shall be ensured for completeness of the project in time.

05.04.04 For any fabrication/ control assembly (necessary for erection) work to be done in the plant premises the plan shall be indicated by the Contractor. The necessary equipment such as plate bending machines, special purpose welding machines, fixtures, tools & tackles and other equipment required for fabrication shall be arranged by the Contractor.
05.04.05 The Contractor shall carry out the testing of welded joints by radiographic and ultrasonic methods. They must have only qualified/certified welders with them for completing all the welding jobs.

05.04.06 All the measuring instruments shall be calibrated having reference to NPL (National Physics Laboratory).

05.04.07 All tools and tackles, apparatus, special instruments required for erection, testing, commissioning and establishment of the Performance Guarantee Test, measurements required for establishing the pollution control norms and such other instruments, as required, shall be arranged by the Contractor. After commissioning, the Contractor shall handover all the special tools & tackles to the Employer as per the requirement given in Commercial volume.

05.04.08 The Contractor shall supply all required consumables, initial fill, oil, lubricants, construction and erection materials including but not limited to shims, packing plates, joining compounds, kerosene, solvents, sealing compounds, tapes, connectors, brazing and soldering materials, welding and brazing gases and rods, electrodes and wires, erection bolts, nuts, rivets, piano wire, packing sheet and packing compounds, temporary supports, spacer templates, jute and cotton waste cloth, sand and emery paper etc. for the commissioning of the plant.

05.04.09 For load testing of handling equipment, loads shall have to be arranged by the Contractor. Electrical/operation tests, as per standard practice, shall also be arranged and completed by them.

05.04.10 All materials, equipment, tools, tackles etc. brought at site by the Contractor within the plant area shall not be removed without the written permission of the Employer. Similarly, all enabling works built/erected and/or acquired by them within the plant premises shall not be dismantled and removed without the written permission of the Employer.