

## Annexure-I

**Supply, installation and commissioning of waste plastic pyrolysis plant to process 50 kg plastic waste per batch and convert it into crude oil at Amrawati, CRPF Group Centre, Durgapur, West Bengal 713214**

**1 End user:**

The waste plastic pyrolysis plant will be installed in Amrawati, CRPF Group Centre, Durgapur, West Bengal 713214.

**2 Detailed specification:**

**a) Waste plastic pyrolysis plant**

| Sl. No. | Name of component   | Description of item   | Quantity |
|---------|---------------------|---|----------|
| 1       | Pyrolysis reactor   | Configuration: Horizontal stainless steel (SS304 grade with 8 mm thickness) reactor with tray type feeding mechanism. The outer insulation is jacketed with 80 mm thick ceramic wool and clad with stainless steel sheets for protection<br>Reactor capacity: 50 kg plastic waste<br>Volume: 1.0 m <sup>3</sup><br>Furnace at the bottom for heating<br>Thermocouple for temperature measurement at reactor door and furnace<br>Thermocouple for temperature measurement within the heating zone.<br>Automatic Pressure Release Valve<br>Arrangement for Nitrogen / CO <sub>2</sub> Purging for safety purpose<br>Full door opening for feeding material using tray feeder<br>With Mixing Geared Motor 3 hp 415V AC | 1 no.    |
| 2       | Heating system      | Dual fired with two independent burners. One pyrolysis oil/LDO burner and one hydrocarbon gas burner. Pyrolysis oil/LDO burner will be provided with pumping unit comprising of 2 hp gear pump along with filter and a 20 L oil tank with intermediate piping   | 1 set    |
| 3       | Condenser assembly  | Shell and tube type heat exchanger with nozzles for vapor line and water from cooling tower (Inlet /Outlet)<br>Oil receivers mounted on stand connected for oil collection<br>All fabrication in MS and seamless tube of Sch. 40  | 1 set    |
| 4       | Oil Water Separator | Capacity: 50 L (min)<br>MOC: MS 5 mm Thickness. IS2062<br>Safety device to prevent flashback into the reactor   | 1 no.    |

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|----|--|--|-------|
| 5  | Hydrocarbon gas collection tank          | Buffer tank to safeguard pressure build up with pressure relief valve and diversion to use the gas in reactor heating or flaring system<br>Capacity: 100 L (min)<br>MOC: MS 5 mm Thickness. IS2062 | 1 no. |
| 6  | Oil Receiver tank                        | Capacity: 100 L (min)<br>MOC: MS 5 mm Thickness. IS2062  | 1 no. |
| 7  | Cooling Tower                            | Capacity 25 TR<br>Fibre-reinforced plastic body<br>0.5 hp Water Pump for Cooling Tower of Crompton/Kirloskar Make<br>0.5 hp, 3Φ Circulation fan  | 1 no. |
| 8  | Chimney                                  | ERW C Class Heavy duty pipe with bottom cone with diameter 150 mm, height 5 m and thickness 5 mm with canopy   | 1 no. |
| 9  | Control Panel                            | Manually operated with push button for burners, pumps, cooling tower fan, water pumps, flare unit ignition and digital meters for temperature and pressure monitoring.                             | 1 no. |
| 10 | Plastic Shredder                         | Capacity: 50 kg/h<br>Input material: Polyethylene bags, pet bottles, tetra pack etc.<br>Motor: 5 hp, 3 phase with DOL starter switch<br>Shredding size: 10 mm × 10 mm<br>Blade: 2 set (additional) | 1 no. |
| 11 | Flaring system for burning exhaust gases | Burner system with blower  | 1 no. |
| 12 | Oil filtration system                    | Filtration rating: 5 microns in 3 stages<br>Capacity: 5 Lpm  | 1 no. |
| 13 | Diesel (Initial fill)                    |  | 200 L |

### 3 Scope of supply & incidental services:

#### a) Waste plastic pyrolysis plant

Detailed specification as Provided in Section 2 above.

The supplier shall be required to perform the following services:

- Installation & Commissioning, Supervision and Demonstration of the goods;
- Providing required jigs and tools for assembly required for the completion of the installation;
- Cabling from main panel to all instruments and devices;
- Onsite training to Scientists/Technical Officers/Staffs is to be provided by Supplier for operation and maintenance of the equipment to the complete satisfaction of the user department;
- All safety requirements are to be incorporated.

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### 4 **Inspection and Acceptance Tests required:**

Trial run and full load test will be conducted for 3 days to the complete satisfaction of the end user in the presence of Scientists/Technical Officers from CSIR-CMERI.

### 5 **Minimum Pre-Qualification Criteria:**

None

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NA  
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