INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
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(PR: 1000022422) **RFx. No.6100001284**

Technical Specification

Fabrication of
Extrusion Plant or Recycled Polymer Composite Plant (RPCP)

The RPCP should consist of a shredder, Mixer, Extruder, and hot plate press units. The plant should be able to produce an output of 1800- 2000kg/8hr shift.

The details of each setup are as follows:

1. Shredder: To cut the mixed plastics of sizes varied from 500 mm to 5-15 mm. The shredder should be able to cut all types of soft and hard plastics.
2. Mixer: Mix shredded plastic with inorganic fillers like the soil of up to 1 mm. The mixer should also provide sufficient heat 80-90 °C to remove the moisture present in the plastics or filler, if any.
3. Extruder: Preferably twin screw with a maximum operating temperature of 350°C, L/D ratio of 20 (minimum), the compression ratio of 3 (minimum). It Should be able to resist abrasion offered by the fillers and provided with a gas venting system. The clearance between the screw and barrel should be less than 1 mm. The system should be automated with PLC device.
4. Hot plate press: Maximum temperature 300°C, Plate sizes 300*300mm. Clearance between plates should be between 0 and 250 mm. The tonnage of the press should be 50 tonnes. Two moulds of size 100*100*10 mm and 200*100*100 mm should be provided with the plant.
5. Conveyer consists of PLC input-output, LPM controlled relay output, Hotwire cutter assembly with transformer & pneumatic cylinder, Pneumatic press cylinder, press location proxy, Conveyor motor, Conveyer VFD, Box sensor, FRL, Press cylinder control value, PLC with touch screen HMI, Conveyor motor line choke, Panel, Reduction gearbox for conveyor motor, Cutter cylinder, Dye.
6. Chiller plant to cool the extruder and hot plate press during operation.
7. All mechanical equipment should come with safety/protection layers.

Terms and conditions:

1. Engineering drawings (AutoCAD) for all parts of the setups should be provided by the fabricator.
2. All the instruments should be provided with covers/shields to protect the working personnel from thermal/electrical shock.
3. **The delivery of the plant should be made at Hindalco Industries, Belgavi, Karnataka, India.**
4. **All the parts of the equipment should be covered under warranty for a minimum of 12 months after the installation of the plant at Hindalco Industries, Belgavi, Karnataka, India.**
5. A vacuum pump should be provided by the vendor if required for the removal of gases from the extruder.
6. Transportation, Insurance, and other charges for the equipment until delivery, installation, demonstration and acceptance of the equipment by the Indentor should be taken care of by the fabricator.
7. Equipment should be delivered within 12 weeks from the PO's release date.
8. No advance will be given for this PO.
9. The payment will be made based on the progress in the fabrication and against the invoice submission for each stage. The payment terms are
    a. 20% against the submission of Drawings
    b. 20% against the fabrication of the shredder
    c. 20% against the fabrication of the mixer and the hot plate press
    d. 15% against fabrication of the extruder and
    e. 25% against the delivery, installation, and successful demonstration of the complete setup at the Belgavi site.
10. The vendor should train the workers at the Belgavi site for plant operation for four days after the demonstration.
11. The vendor should be available to visit the plant during the warranty period if any issue arises.