

## Technical specification for 25mm Twin Screw Lab Extruder

- Extruder : 25mm Twin Screw Extruder mounted on sturdy MS frame .
- Screw : 25mm dia., L/D 30:1, parallel, counter rotating with close intermesh for high performance.
- Barrel : Split type barrel suitable for above twin screws.  
MoC : same as above for longer life. Water jacket has to be provided for feed head cooling. Vent to be provided to the barrel to escape unwanted gases. The max. temp. can be 450°C.
- Heaters : In SS covers. Heating load approx. 5 KW.
- Hopper : In SS sheet Capacity 1 Kg.
- Drive : 3 HP through Gear Boxes (Primary and Secondary).
- Panel : 5 Zones PID Control Panel ( Accuracy  $\pm 1\%$  ), ammeters, indicating lamps, switches and other electrical outfits. 3 HP VFD fitted in the panel.
- Pressure Transducer : Measurements for Melt temp., Melt pressure are to be provided.
- Safety Measures: Electrical / electronic safety, mechanical safety & emergency stop button are to be provided to protect the machine from major damage / break down.
- Screw rpm : 10 - 60 max.
- Output : 1 – 3 kg / hr depending upon polymer, additives and operational parameters.
- Feeder** : Twin Screw Volumetric feeder with 0.50 HP VFD. Capacity 1 to 3 Kg./ hr. **Cast Film**

### Attachment :

- Die Assembly : 150 mm 'T' die (flat die to form a melt curtain / cast film) with flange, adapter & heaters.
- 2 Roll Assembly : 2 rolls, each roll in SS 316, dia. approx. 150 mm , length 150 mm .
- Drive : 1 HP VFD.
- Nip Roll Assembly : With 0.5 HP VFD .
- Winder : 0.5 HP Torque winder with winding shaft.
- Pelletizer : 75 mm Pelletizer with cooling tank.

- Cutter : Helical type, 100 mm dia. x 75mm L
- Feed Roll : In SS
- Guide Roll : Rubber coated.
- Die : Single strand with flange, adaptor and heater
- Drive : 0.50 HP VFD.

- Cooling Tank : In SS fitted on castor wheels.  
Tank size 150 mm width x 150 mm deep x 1500mm Long

**1. Documentation requirement**

**The following documentations should be provided (one set of each in English)**

- 1.1. Operation manual
- 1.2. Software instruction manual
- 1.3. Maintenance, troubleshooting and safety guidelines manual
- 1.4. Manuals to handle accessories and guidelines
- 1.5. Occupational Health and Safety (OHS) guidelines and warnings.

**2. Warranty and Annual Maintenance Contract requirements**

- 2.1. A 2 year warranty should be provided from the date of installation.

**3. Inspection, installation, commissioning and training**

- 3.1. All the essential requirements ensuring a ready-to-use set up at IIT Madras should be supplied.
- 3.2. Comprehensive training for five research fellows/students should be imparted upon installation.

**4. Spares, consumables, mandatory accessories and standard samples**

- 4.1. Bidder should offer a list of essential spare parts and accessories with their part numbers for a continuous operation for three years.

**5. Additional mandatory conditions**

- 5.1. A continuous operational support to IIT Madras should be provided without any additional cost during the warranty period (at least two years from the date of installation).
- 5.2. There should be a minimum of two visits per year by the service engineer and application engineer of the equipment supplier (preferably from OEM).
- 5.3. The total cost of the system should be inclusive of these visits.
- 5.4. The bidder must either be OEM or legal representatives of the OEM in India. The bidder and the legal representatives should have ISO certification for quality standards (a copy of ISO certification should be attached with the technical bid).
- 5.5. The bidder should have supplied at least one machine to IITs/NITs/other CFTIs/National laboratories/government organisations.
- 5.6. A global reference list as well as user list in India should be enclosed.
- 5.7. The operational status of all the equipment in India should be provided.
- 5.8. Personnel safety accessories (goggles, masks etc.)
  - 5.8.1. Special design/provision should be made to prevent accidents while in operation.
  - 5.8.2. "Emergency Stop" button(s) should be provided at convenient and easily accessible location.
  - 5.8.3. Safety manuals and charts should be provided.
  - 5.8.4. Supplier should provide safety training at the time of installation.
- 5.9. Flow diagrams and electrical line diagrams

**6. A detailed compliance statement to above mentioned specifications should be provided along with technical and financial quotes.**