General Description:
The Hills research and pilot fiber extrusion machines provide flexible performance with reliable operations. Both types are built to be simple to use, but versatile and effective. They are currently being used for simulation of production systems, color matching trials, polymer characterization, product development, process development, and the production of specialty yarns and trial lots. Each machine has the capability to convert melt spinnable polymers into finished fibers.

All components of a complete fiber extrusion machine are included, such as: hopper, extruder, metering pump, spinnerets, quench cabinet and blower, finish oil applicators, independently driven heated godets and a winder.

Both are stand alone machines. The research unit is compact and capable of being installed in a laboratory with headroom of 10-1/2 ft. (3.2M).

The pilot unit occupies a larger area and is a two floor unit. Its longer convergence zone allows for in-depth exploration of all fiber products and can be fitted with bicomponent capability. Both machines can quickly be made fully operational with connections of standard utilities and minor wiring.

Hills can provide a wide range of options and customization to meet your needs. (see overleaf)
SPECIFICATIONS

BASIC SPECIFICATIONS:

- Fiber extrusion up to 350 degrees C.
- Extruders, various sizes: 3/4, and 1-1/4 inch, 24:1 30:1 L/D.
- Screw includes Maddox mixing section.
- Direct connection of extruder to spin head.
- Extruder screw removal from rear of extruder.
- Metered polymer stream to spinneret.
- Variable quench air flow rate.
- Even air flow distribution from quench cabinet.
- Heated godets with separator rolls.
- Individual godet drives.
- Wide godet speed range.
- Godet temperatures to 180 degrees C.
- Complete modern instrumentation and controls are included.
- Metering pump and godet motors, independent inverter drives.
- Requires electricity, water and compressed air.

SIZE AND PERFORMANCE TABLE PER EXTRUDER

<table>
<thead>
<tr>
<th>Extruder Diameter</th>
<th>Metering Pump Capacity</th>
<th>Instantaneous Throughput Range</th>
<th>Polypropylene</th>
<th>Nylon</th>
<th>Polyester</th>
<th>Extruder</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4 (18) inch (mm)</td>
<td>1.20 cc/rev</td>
<td>3/4 HP</td>
<td>1.0-5.7 Lbs/hr</td>
<td>1.2-6.6</td>
<td>1.5-7.6</td>
<td>3 HP</td>
</tr>
<tr>
<td>1&quot; (25)</td>
<td>2.92</td>
<td>1&quot; HP</td>
<td>2.8-13.8</td>
<td>3.2-16.2</td>
<td>3.7-18.5</td>
<td>3</td>
</tr>
<tr>
<td>1-1/4&quot; (32)</td>
<td>5.50</td>
<td>1-1/4 HP</td>
<td>5.2-26.1</td>
<td>6.1-30.5</td>
<td>7.0-34.9</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approximate Size</th>
<th>Research Machine</th>
<th>Pilot Machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>108 (2740) / in (mm)</td>
<td>240 (6096) / in (mm)</td>
</tr>
<tr>
<td>Depth</td>
<td>60 (1525)</td>
<td>195 (4953)</td>
</tr>
<tr>
<td>Height</td>
<td>132 (3350)</td>
<td>228 (5790)</td>
</tr>
<tr>
<td>Weight</td>
<td>3500 (1600) / lb (kg)</td>
<td>7000 (3200) / lb (kg)</td>
</tr>
</tbody>
</table>

OPTIONS:

- Dryer to process PA or PET
- Various Hopper sizes
- Various extruders L/D
- Various extruder screws
- High heat head, to 450 C.
- Non-circular spinneret orifices
- Detachable extruder deck
- Heated shroud
- Quench air cooling coil
- Quench air temp 10 to 40 C.
- Extended Quench Length
- Water bath quench
- Kiss roll finish application
- Induction heated godets
- High heat godets, to 250 C
- Extended godet speed range
- Gang control of godet drives
- Ambient godets
- Dual canted godet pairs
- Various winder types
- Supervisory control system with data logging
- Aspirator
- Pack cleaning apparatus
- Hot knives
- Inspection microscope
- Doffing sticks
- Denier reel
- Tensile test machines
- Bobbins
- Bi-component research machinery