Xplore
Xcelerate your polymer innovation

Fibre Spinning & Conditioning

Fibre Development | Lab-Scale Spinning, Winding and Drawing

Fibre Development Solution

The Xplore Fibre Spinning & Conditioning Platform **brings laboratory-scale fibre spinning, winding and conditioning together in a flexible workflow**. Combine spinning dies with an Xplore Micro-Compounder and Winding Unit to develop melt-spun fibres or use the Conditioning Unit independently with existing fibres. Select individual components or a complete setup to suit your research.

Platform Advantages

- **Efficient Formulation Screening:** Minimal material requirements conserve costly polymers and additives, while fast cleaning saves time between spinning trials.
- **Direct Melt Delivery:** Xplore micro-compounders control the melt flow to the spinning die, eliminating the need for a separate spinning pump.
- **Controlled Fibre Collection:** Adjustable take-up, torque-controlled winding and a programmable traverse guide manage spool build, while a slow start-up sequence helps prevent breakage.
- **Flexible Drawing Studies:** Separate bench-top spinning and drawing units allow fibres from the same as-spun spool to be drawn at different ratios, temperatures and speeds to investigate the effect of drawing on fibre properties.

Monofilament Spinning

An interchangeable die for different diameters forms a single filament from the polymer melt.

Multifilament Spinning

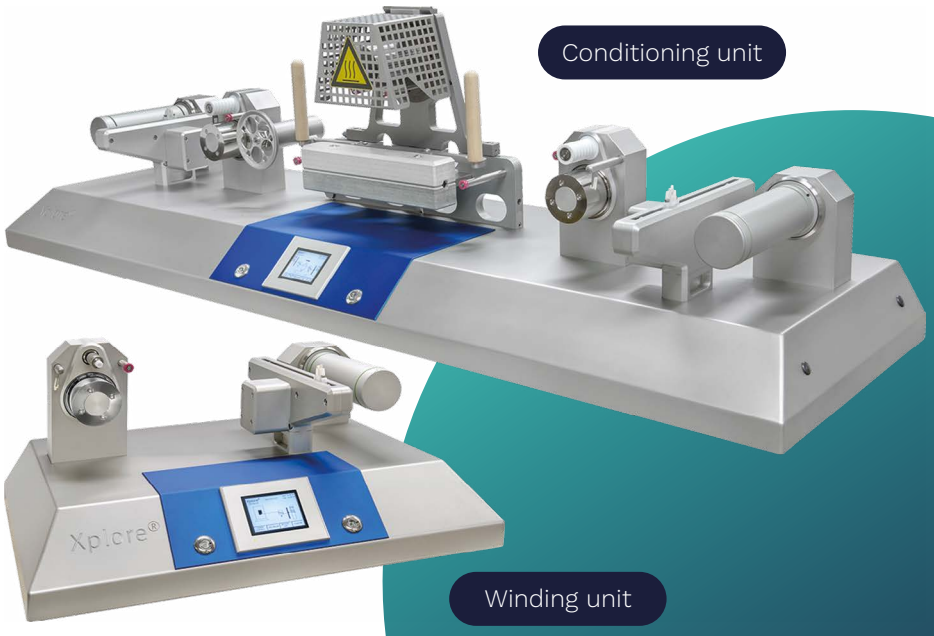
A multifilament die forms multiple filaments, while a quench box with an inert gas connection provides adjustable cooling. The setup includes a wetting unit and a pigtail guide as standard.

Winding Unit

The stand-alone winding unit collects fibres directly from an Xplore micro-compounder. An integrated touchscreen controls the entire process, and an optional inline laser micrometer provides real-time diameter measurement.

Conditioning Unit

The stand-alone conditioning unit supports both hot and cold fibre drawing. Individually speed-controlled godets set the draw ratio, with drawing performed under heat via hot-shoe or hot-pin heaters. Repeated drawing passes in alternating directions allow multi-stage drawing studies that mimic industrial drawing sequences.



Scan for more info





Laser micrometer

Spinning Dies

- Monofilament die diameter: 0.1–2.0 mm
- Multifilament die: 12 holes as standard, up to 48 on request
- Maximum die temperature: 425°C

Winding Unit

- Winding speed: 5–200 m/min, controlled
- Godet diameter: 75 mm cardboard bobbins
- Traverse pitch: 0.1–4.0 mm, in 0.1 mm steps
- Winding width: 10–150 mm, in 1 mm steps
- Winding torque: Electronically adjustable in 250 steps
- Power supply: 208-240 Vac / 50-60 Hz, 1 phase, 16 A
- Dimensions (L × W × H): 67 cm × 50 cm × 34 cm
- Weight: Approximately 35 kg

Conditioning Unit

- Drum winders: Two, godet drum diameter 75 mm
- Speed: 0.5–90 m/min, in 0.01 m/min steps
- Drawing ratio: Up to 1:10, in either direction
- Hot shoe & hot pin: Ambient–300°C, in 1 °C steps; hot-shoe length 300 mm
- Traverse pitch: 0.1–4.0 mm, in 0.1 mm steps
- Winding width: 10–150 mm, in 1 mm steps
- Winding torque: Electronically adjustable in 250 steps
- Power supply: 208-240 Vac / 50-60 Hz, 1 phase, 16 A
- Dimensions (L × W × H): 172 cm × 50 cm × 35 cm
- Weight: Approximately 75 kg

Platform Options

Multifilament Spinning

- Qualitative melt-strength measurement: 0–1 N
- Pressure transducer
- Mounting table for the micro-compounder and quench box

Winding Unit

- Diameter measurement: 0–25 mm · 1-axis or 2-axis laser

Conditioning Unit

- Thermoregulated hot pin
- Nitrogen purge for the hot shoe
- Air cooling for the godet rolls
- Fibre tension measurement: 0–2 N
- Single-fibre slip measurement



Multifilament die



Quench box

Contact us at
xplore-together.com