FET-100 SERIES:

Multi-functional laboratory & pilot melt spinning systems

FET

FIBRE EXTRUSION TECHNOLOGY

"Innovative Fibre Solutions"

FET-100 SERIES:

Multi-functional laboratory & pilot melt spinning systems

1. INTRODUCTION

FET supplies state of the art laboratory and pilot melt spinning systems for processing multifilament, nonwoven and monofilament formats. These flexible, bespoke systems are capable of delivering high specification technical filaments for functional textile materials, high performance composites and medical devices.

"High Capability, Multifunctional, Cost-Effective and Flexible"

THE FET-100 PILOT SERIES

FET-100 Extrusion

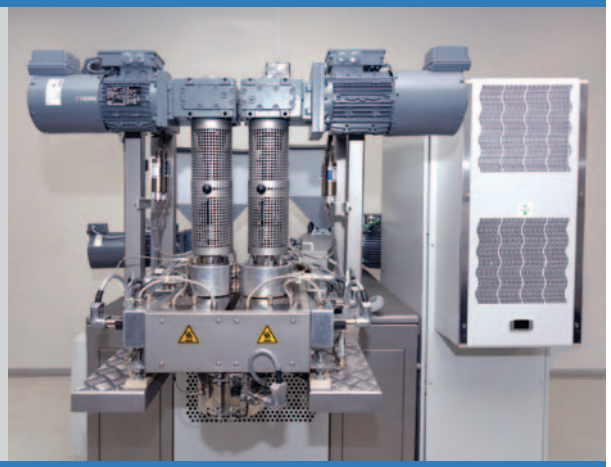
FET-101 Multifilament

FET-102 Nonwoven

FET-103 Monofilament

A significant development is that FET-100 systems can be specified to be multi-functional. This allows for easy and fast conversion between material formats. It configures to all combinations of multifilament, monofilament and melt spinning of nonwoven structures as required.

This highly versatile and flexible system is ideal for research and development, designed specifically for detailed investigation into extruded textile materials. Benefits include substantial savings on cost, floor space and also the ability to add optional equipment in the future.



FET
FIBRE EXTRUSION TECHNOLOGY

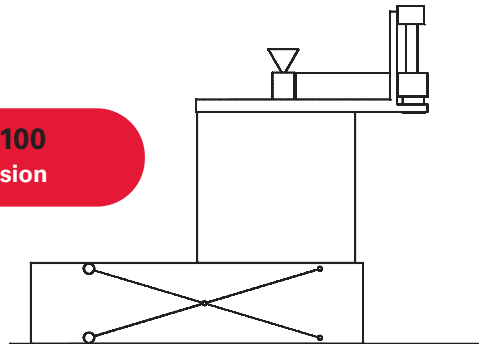
"Innovative Fibre Solutions"

FET-100 SERIES:

Multi-functional laboratory & pilot melt spinning systems

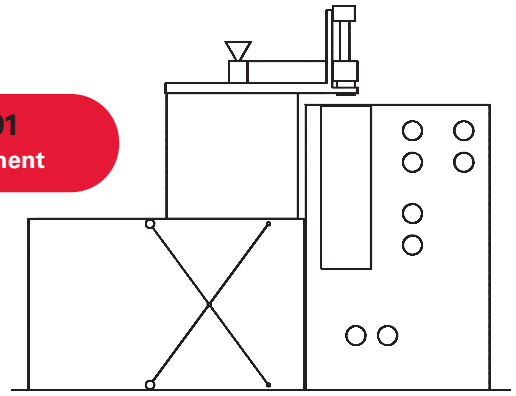
THE FET EXTRUSION MODULE...

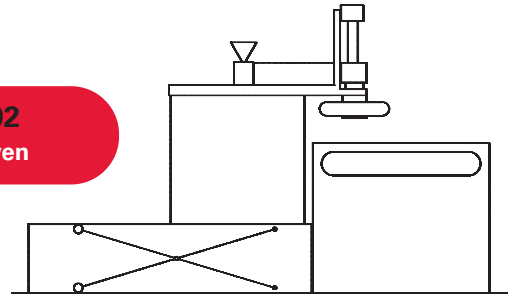
Multiple Process Options From One Extruder...

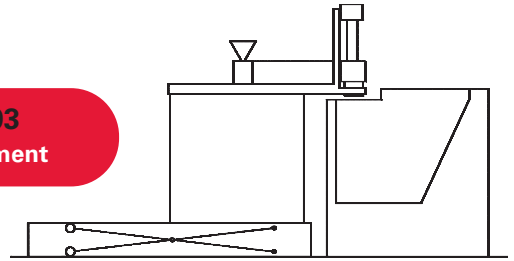


Extrusion Module Options:

- Multi-polymer capability
- Bi-component
- Tri-component
- Corrosion resistant
- High temperatures







FET-100 SERIES:
Multi-functional laboratory & pilot melt spinning systems

2. MULTI-POLYMER AND FORMAT CAPABILITY

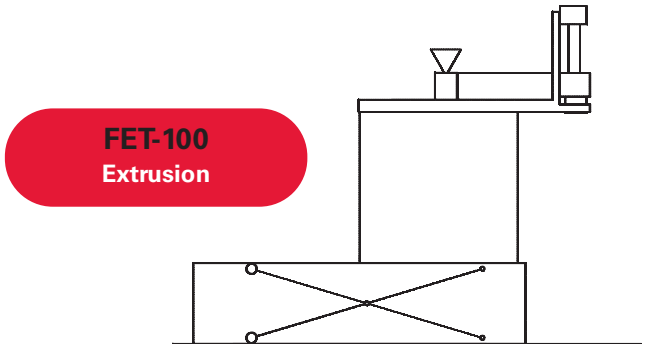
FET-100 Extrusion

Central to all FET laboratory and pilot melt spinning systems is the specially developed extrusion module the FET-100 Extrusion which allows multiple process options.

This extrusion module is designed to provide melt spinning capacity to any one of the three downstream process options. The module is mounted on a hydraulic lifting table which permits automated adjustment of the working height.

The FET-100 extrusion module can be specified as a mono-component, bi-component or tri-component system. For example supplied systems are producing on core and sheath, side by side, islands in the sea and segmented pie.

As a further example of the versatility of the FET-100 Extrusion, twin screw extruder options are available and it can be specified for high temperature capability and corrosion resistant construction. The extrusion module can be equipped with polymer drying and additive dosing systems.



This means that FET laboratory and pilot systems are capable of processing a wide range of polymer types often involving difficult-to-process materials:

- Standard polymers
- Engineering polymers
- High temperature polymers
- Corrosive and aggressive polymers
- Bio sustainable and biomedical polymers

See Appendix for polymer types already processed.

FET
FIBRE EXTRUSION TECHNOLOGY

"Innovative Fibre Solutions"

FET-100 SERIES:

Multi-functional laboratory & pilot melt spinning systems

3. MULTIFILAMENT FORMAT

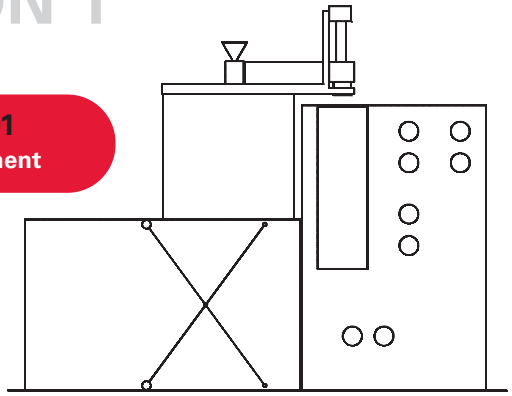
FET-101 Multifilament

FET offers a wide range of bespoke pilot and laboratory melt spinning systems for continuous multifilament applications capable of matching the demands of all users. Our systems are being used by world leading companies and research institutes for a wide variety of applications. Each variation of the FET-101 Multifilament option is uniquely specified and designed, for example:

- Spin packs are designed to match the polymers to be processed
- Uniform air quench systems are offered, cross blown and inside out types
- A variety of draw roll types and roll configurations are available
- These include FDY to POY systems, high tenacity configurations, low, medium and high speed systems to 7,000m/m, high temperature godets to 300°C

OPTION 1

FET-101
Multifilament



FET
FIBRE EXTRUSION TECHNOLOGY

"Innovative Fibre Solutions"

FET-100 SERIES:
Multi-functional laboratory & pilot melt spinning systems

4. NONWOVEN FORMAT

FET-102 Nonwoven

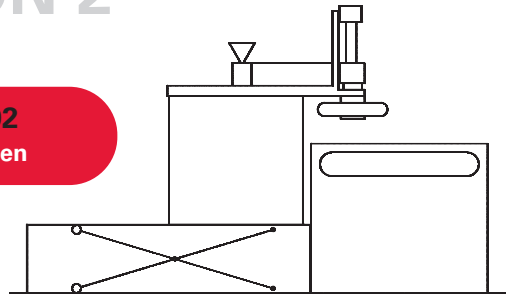
The extrusion module readily converts to nonwoven processing capability. Simple integration of the FET-102 Nonwoven option gives the possibility of melt spinning nonwoven materials.

Melt blown and spun bond types can both be achieved on the same base system. Additional options include tertiary air blades, in line suction and conveying, heated calendering systems, edge trimming and web take-up units.

A wide range of nonwoven structures can be produced and there is considerable potential for developing unique filament and mechanical properties.

OPTION 2

FET-102
Nonwoven



- Applicable to a broad range of polymers, including viscous materials normally not appropriate for the melt blowing or spun bond process
- Applications include resorbable biomedical polymers and numerous engineering grade materials
- A wide range of structural and mechanical properties are obtainable from the process
- There are numerous options for post-processing of the web, such as by calendering, point bonding or lamination

FET
FIBRE EXTRUSION TECHNOLOGY

"Innovative Fibre Solutions"

FET-100 SERIES:

Multi-functional laboratory & pilot melt spinning systems

5. MONOFILAMENT FORMAT

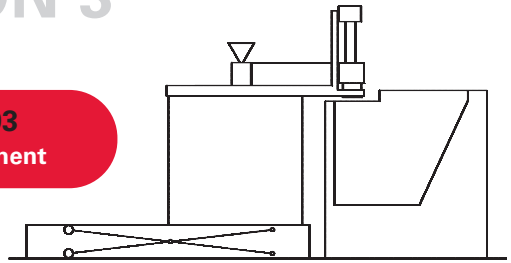
FET-103 Monofilament

Utilising the same extrusion module, FET can also provide specialist laboratory and pilot melt spinning systems for monofilament applications.

As with multifilament equipment, our flexible monofilament systems are being used by high tech organisations and research institutes on a variety of technical and R&D projects.

OPTION 3

FET-103
Monofilament



FET-103 Monofilament option may typically comprise the following:

- Water quench and filament drying units, versatile draw stands with infinite number of draw zones, draw speeds and draw ratios, can be supplied with heated rolls in various diameters
- Various types of stretching devices, hot air, hot water, draw plates and infra-red systems with high temperature capability
- In-line diameter monitoring
- Take-up systems on flanged spools or precision cross wound

FET
FIBRE EXTRUSION TECHNOLOGY

"Innovative Fibre Solutions"

FET-100 SERIES:

Multi-functional laboratory & pilot melt spinning systems

6. TYPICAL APPLICATIONS OF FET LAB AND PILOT MULTIFUNCTIONAL MELT SPINNING SYSTEMS

- Biomedical materials, such as resorbable polymers for use in medical devices
- Specialised novel fibres from exotic and difficult to process polymers
- Sustainable polymers, biodegradable and composting materials
- Textiles for a wide range of composites
- Functional textile materials, provided by polymer formulation or additives
- Nonwoven materials from viscous polymers

There remains enormous potential for a wide range of other multifilament, nonwoven and monofilament applications of this process.

Please note that this technology is available for demonstration in our Fibre Development Centre.

7. TECHNICAL BACK-UP

Just as important as the quality of equipment is a world leading support service to ensure customer satisfaction from initial enquiry to installation and throughout the process.

- All FET customers are provided with a comprehensive back-up service and equipment is supplied as a turn-key installation, complete with commissioning and training
- Ongoing support is maintained via on-line modem connection providing remote diagnostics and technical support
- Ancillary equipment can be supplied including polymer drying systems, additive dosing units, calibration equipment, spin pack cleaning and preparation
- For processing issues the systems are backed by FET's in-house Fibre Development Centre where help and advice are available

FET
FIBRE EXTRUSION TECHNOLOGY

"Innovative Fibre Solutions"

APPENDIX

Grid showing types of polymer used in processing trials at FET

	Multifilament	Melt Spun Nonwoven	Monofilament
Polyolefins Polypropylene Polyethylene PO co-polymers	✓	✓	✓
Resorbable Polymers (Biomedical) PGA Polyglycolic acid PLLA Polylactic acid PHB Polyhydroxy butyrate PTMC Poly trimethylene carbonate PCL Polycaprolactone PDO Polydioxanone	✓	✓	✓
Performance Polymers PET Polyethylene terephthalate PBT Polybutylene terephthalate PA Polyamide TPU Polyurethanes TPE Thermoplastic elastomers	✓	✓	✓
Sustainable resins S-Polyamides PLA, PDLA PHA Polyhydroxy alkanoate S-PET	✓	✓	✓
Engineering Polymers PPS Polyphenylene sulphide PPSU Polyphenylsulphone PEI Polyetherimide PEEK Polyetherether ketone ABS Acrylonitrile butadiene styrene PC Polycarbonate	✓	✓	✓
Halogenated Polymers PVdC Polyvinyledene chloride CTFE Chlorotetraflouroethylene	✓	✓	✓

FET
FIBRE EXTRUSION TECHNOLOGY

"Innovative Fibre Solutions"

FET-100 SERIES:

Multi-functional laboratory & pilot melt spinning systems

FET

FIBRE EXTRUSION TECHNOLOGY

"Innovative Fibre Solutions"