

E-Fiber EF500

Needleless electrospinning - Desktop Version



E-FIBER EF500 NEEDLELESS - Desktop Version

E-Fiber electrospinning system with needleless technology is our innovative and high-throughput product for pilot scale and industrial scale production. It is a needleless, free liquid surface electrospinning technology, which assures high productivity and high fiber uniformity. Despite its outstanding performances the system still remains user-friendly with a plug & play installation.

E-Fiber EF500 is a fully-customisable electrospinning platform consisting of a rotating cylindrical spinneret and application-specific rotating collectors, for the pilot and industrial scale manufacturing of polymeric-nanofibrous matrices. This device creates a powerful and highly versatile technique for the fabrication of various fibrous architectures with controlled fibre diameter and orientation. Its technology minimises influence on the electrospinning process.

E-Fiber offers various technological solutions to accurately control each process guaranteeing batch-to-batch reproducibility and precise control of fiber parameters such as diameter, orientation and texture. The equipment is user-friendly and safe thanks to the automatic safety devices that protect the operator.



E-Fiber EF500 Desktop version is a scale-up of the traditional electrospinning technique, capable of manufacturing batches of large format nanomatrix (up to 60 x 30 cm) or roll-to-roll reels, including dual high voltage power supply, touch screen console for the control of all the parameters (spinneret and collector rotating speed, spinneret-collector distance, applied voltage), and insulated enclosure.

The EF500 Desktop version includes all the necessary instrumentation for a complete and ready to use setup, to rapidly begin your electrospinning sessions.

E-Fiber EF500 can be equipped with an infusion system for the polymeric solution to ensure the continuous production of electrospun matrices.

The system is installed in an Aluminum/Plastic cabinet equipped with an extraction fan and includes a LED lighting system.

EF500 - Accessories

Climate control unit - Humidity reduction

E-Fiber EF500 system can be equipped with an external humidity reduction module, in order to control environmental parameters on your working area, with a real time monitoring. This module dehumidifies the air of the working area, and keeps it constant during your electrospinning session. Humidity is directly visualized on the control user interface.

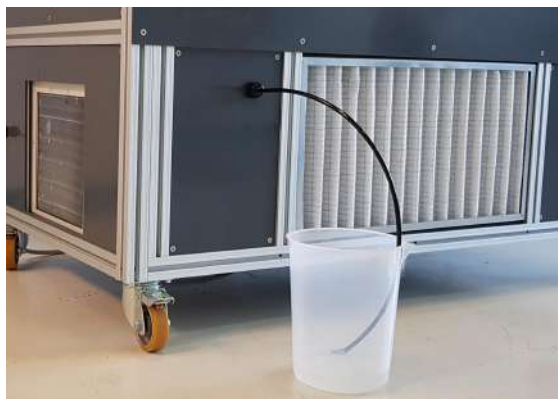
Parameters : humidity reduction up to 20% RH, working range: 0 – 100% RH, Dehumidification performance 1.6 kg/h @ 60% RH.



Climate control unit - Full environmental control

E-Fiber EF500 system can be equipped with an external full control module, in order to control environmental parameters on your working area, with a real time monitoring. This module controls temperature and humidity of the air of the working area, and keeps it constant during your electrospinning session. You can directly manage your setpoint of °C and RH% on the control user interface.

Parameters : working Range: +20/+40°C – 20/60 % RH, Environmental working range: +18/+25°C – 40/80% RH / [+15/+45°C with reduced performance], Heating power: 2,8 kW, Cooling power: 2,0 kW.



Roll-to-roll collector

A motor-driven roll-to-roll collector, used for continuous electrospinning on a reel fabric or substrate. Suitable for medium scale of manufacturing: nanofiber coating and membranes for high performances filtering applications, medical devices, technical textiles etc.

Entirely made with insulating materials, in order to avoid interferences with the electrical field and electrospinning process. Electronic feedback for a precise control over speed rotation, in order to grant highly reproducible batch-to-batch conditions.

Standard Parameters : reel width 300mm or 500mm, adjustable speed up to 10 cm/min (144m/day).



Continuous feeding system

Replaces or adds the standard integrated syringe pumps equipment with continuous solution feeding system, driven by a peristaltic pump, with a bottle reservoir up to 5 Litres. Suitable for long time running session or roll-to-roll collector.

Standard Parameters : solution volume 1 Litre, flow rate 0,1/10 ml/min

STANDARD TECHNICAL DATA

High-voltage power supply (CE and UL mark)

| | |
|----------------------------------|------------------|
| Voltage * | ±60 kV |
| Power * | 120 W (60 W x 2) |
| Arc and Short-circuit protection | Yes |
| Safety Interlock | Yes |
| Voltage Stability | 0,02% per 8 h |

* Fully customizable features

Collector

| | |
|------------------------------------|--------------|
| Rotating collector speed* | 50÷600 rpm |
| Standard collector diameter range* | 100÷200 mm |
| Customized collector diameter* | up to 250 mm |
| Collectors maximum length* | up to 300 mm |
| Material | aluminum |

* Customizable features

Spinneret

| | |
|---------------------------|------------------|
| Rotating spinneret speed* | 0÷6 rpm |
| Spinneret type* | cylindrical drum |
| Spinneret range diameter* | 50÷70 mm |
| Material | Stainless Steel |

* Customizable features

Safety

| | |
|-------------------------------------|-----------------------------------------------------------------------------------------------------|
| Power button | Button with status light |
| Interlock system | On door opening |
| Emergency button switch | Mushroom push button |
| Fume extraction | Enclosure with extraction fan extracted volume > 200 m ³ /h (customization available) |
| External fume extraction connection | 150 mm (customization available) |
| Short circuit and arc protection | On board |
| In Force legislations | LVD 2014/35/UE 2006/42/CE |

General data

| | |
|-------------------------------|-------------------------------------------------------|
| Control Panel | Touch Panel Interface |
| Temperature & Humidity Sensor | -40 to 80°C ±0.5°C accuracy & 0-100% RH 2-5% accuracy |
| Power supply | 220V-110V AC 50-60 Hz (customization available) |
| Dimensions | 800 mm x 800 mm x 1200 mm |
| Weight | 90 Kg |

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