



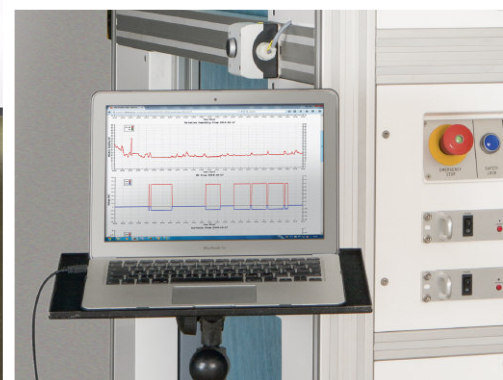
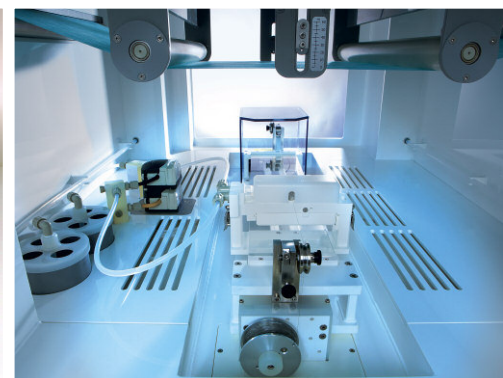
Nanospider™ Production Line

NS 1S500U

Elmarco's Nanospider™ Production Line NS 1S500U is the smallest nanofiber production equipment that delivers sufficient output for small volume manufacturing. Based on Elmarco's proprietary needle-free electrospinning process, the NS 1S500U combines industrial production technology with features of high-end laboratory tool. Capable of running **batch and continuous feed operating modes**, the NS 1S500U is a versatile asset for nanofiber product development and research.



- Continuous / batch operating modes
- Integrated unwind / rewind
- Process data tracking and its additional PC analysis
- 500 mm effective width of nanofiber layer



RECOMMENDED USES

- **Small volume manufacturing**
 - Fastest upscale to Nanospider™ high volume production equipment
 - Full time shift operation capability
 - Delivers high quality materials in a compact and affordable form factor
 - Integrated substrate unwind / rewind
- **Sample production for applied research**
 - Adapted for experimental work
 - Spinning voltage, spinning distance and substrate speed can be controlled
 - Humidity, temperature and air flow sensors for easy process optimization

FEATURES

- **Versatile equipment**
 - Full time shift operation enabled by peristaltic pump for continuous feeding
 - Batch mode operation for initial research
 - Integrated substrate unwind / rewind with low substrate speed capabilities for thick membrane materials preparation
- **Process monitoring**
 - The system tracks process data on the machine which is easily transferred to a PC for additional analysis: e.g. air flow, working humidity and temperature, voltage, current and feeding speed
 - Touch screen user interface
- **Polymer and substrate flexibility**
 - Capable of spinning variety of polymers
 - High viscosity polymer solutions capability
 - Coat numerous substrates, including cellulose, synthetics and fiberglass
 - Nanospider™ needle-free technology allows easy process optimization
- **Simple and safe**
 - Standalone machine
 - Safety shut off switches
 - Extinguishing system
 - Easy to fit into your facility
 - Meets all CE requirements



Nanospider™ Production Line NS 1S500U

TECHNICAL DATA

EQUIPMENT

Spinning unit

Total number of spinning electrodes: 1
 Spinning electrode width: 500 mm (configurable between 300 - 500 mm)
 Stationary wire electrode system
 Integrated unidirectional substrate unwind / rewind

Equipment variables

Spinning voltage: 0 - 100 kV
 Substrate speed: 5 - 5000 mm/min
 Spinning distance: 120 - 240 mm

Accessories

Peristaltic pump incl. storage tanks and carriage for continuous feed mode
 Standard volume spinning carriage for batch operating mode: 40 ml
 Small volume spinning carriage for batch operating mode: 10 ml
 Additional AI frame for easy sample pick up
 Integrated extinguishing system

Optional peripherals

External substrate unwind / rewind
 Humidity and temperature control (AC unit)

Consumption

Power: up to 1,4 kW (without peripherals)

Safety/regulation

Meets all CE requirements

Dimensions

Height: 2250 mm	Length: 1470 mm
Width: 1640 mm	Weight: 510 kg

Note: All dimensions without peripherals, incl. additional AI frame

WEB

Substrate

Max width: 550 mm / Max diameter of substrate roll: 400 mm
 Potential substrates: cellulose, synthetics, fiberglass, foils

Polymers

Versatile equipment for soluble polymers

Fiber metrics

Controlled fiber diameters: approx. 80 - 700 nm
 Fiber diameter deviation: typically +/- 30%
 Cross profile and winding direction homogeneity: typically +/- 5%

Note: All fiber metrics depend on polymer, substrate and process

PROCESS

Process

Throughput: depends on polymer, substrate, process and fiber diameter
 Effective width of nanofiber layer: 300 - 500 mm
 Working temperature: 20 - 30 °C
 Working humidity: 20 - 40% RH
 Process air flow: 30 - 250 m³/hod

Polymer filling

Operating mode	Carriage type	Volume
Continuous feed	Standard	500 ml
Batch mode	Standard	40 ml
Batch mode	Small	10 ml

Cycle times

Continuous feeding: approx 8 hours (depends on polymer / solvent solution)
 Run time per batch: approx 60 min (depends on polymer / solvent solution)
 Start-up time: up to 30 min

Maintenance

Regular maintenance time: total of 2 hours/month (depends on process)
 Cleaning after each batch operation recommended

SITE

Site

Operating staff required: 1 person
 Production premises: 4 m x 4 m space required
 Low dust environment required

Connections

Voltage supply: adapted for grids in all countries
 Exhaust ventilation: 250 m³/hour
 Appropriate treatment of waste air
 Inlet air connection for optional AC unit
 Extinguishing system connection
 External grounding