

Pilot Electrospinning Machine



The NanoSpin Pilot Electrospinning Machine (NSP) is a semi-industrial system for fabricating high-quality polymeric and ceramic nanofibers. It features a powerful electrospinning unit with full control over parameters such as voltage, working distance, temperature, and operation time. An intuitive touchscreen interface allows precise adjustment of spinneret and collector settings. Multiple polymer jets enable uniform nanofiber deposition across a wide range of substrates. With a coating rate of 2 to 200 meters per hour, the NSP delivers both speed and scalability. It is ideal for pilot-scale research, product development, and semi-industrial production. Robust safety features ensure secure operation when handling high-voltage components and chemical solutions. Engineered for performance, the NSP offers reliable, high-throughput nanofiber production for demanding applications.

NanoSpin NSP nomenclature

NSPXY

X: Number of electrospinning units (1 or 2)

YY: Maximum electrospinning width (30 cm or 60cm)

Example:

NSP130: NanoSpin Pilot, 1 units, width: 30 cm

NSP260: NanoSpin Pilot, 2 units, width: 60 cm



Main Features

User-Friendly Operation & Maintenance

10" Touchscreen HMI Panel for process control

PLC System for precise operation

Advanced Safety Features

Higher production speed than conventional systems

One Electrospinning Unit (Second unit optional)

Blown system (Air-assisted nanofiber electrospinning process)

Adjustable air pressure control

Five blown nozzles (individually controlled)

Precise solution injection into nozzles

Two Emergency Stop Buttons

Advanced high voltage control systems

18-Month Warranty



Flexibility & Material Compatibility

Various **polymers and composites** can be electrospun

Ability to achieve different **product specifications**, including **porosity, morphology, diameter, and bead loading**

Economical and easy-to-use process

Supports **synthetic, biodegradable, and natural polymers**, as well as **polymer/composite materials**



Main control

HMI Panel	▪ 10" Touchscreen
Type	▪ Programmable Logic Controller (PLC)
Control Features	▪ Start and end position of the nozzle(s) ▪ Injection rate of pump(s) ▪ Control the air pressure ▪ Electrospinning distance(s) ▪ Electrospinning time ▪ ON/OFF timer for exhaust fan ▪ Rotational speed control of collector from HMI ▪ Temperature control ▪ Humidity control ▪ Advanced high voltage control systems ▪ Alarm for desirable volume of injection and for finishing solution in Pumps



Electrospinning System

Blown system (Air-assisted nanofiber electrospinning process)

Adjustable air pressure control

Five blown nozzles (individually controlled)

Precise solution injection into nozzles

Higher production speed than conventional systems



Collector & Substrate Winder

Working Distance	▪ 15-25 cm
Rotating Speed	▪ 0-50 RPM (synchronized with substrate speed)
Drum Collector Size	▪ Ø17×65cm
Plate Collector Size	▪ 20×70cm
Substrate Speed	▪ 2to200m/h
Substrate Width	▪ 60cm
Edge Control System	for precise alignment
Tension Control System	for consistent operation



High Voltage Power Supply

Model	▪ HV35 Positive ▪ HV35 Negative
Max. Output Voltage	▪ 35 kV
Power	▪ 30 Watt
Voltage Monitoring	▪ Digital, Accuracy: 0.1 kV
One positive high voltage power supplies connected to Nozzles	
One negative high voltage power supply connected to collector	



Climate Control system

Ventilation	▪ A programmable fan adjustable by HMI panel
Heating System	▪ Adjustable from room temperature up to 45°C, ± 1°C via HMI panel
Cooling System	▪ Temperature down to 19°C, ± 1°C (Optional)
Humidifier	▪ Up to 80% (Optional)
Dehumidifier	▪ Dehumidifier down to 10% ± 5% (Optional)
Support Condition	▪ Room Temp.: 20-30°C ▪ Room Humidity: 20-70%



General

Cassis	▪ Metal body
Case	▪ 7 doors for easy access to all parts of the system
Dimensions	▪ 376 cm (L) × 239 cm (H) × 193 cm (W)
Weight	▪ Approximately 1000 kg
Input power	▪ 220 volts, single phase, 50-60 Hz

