



Nanospider™ Production Line

INFINITY

INFINITY line's free-surface technology utilizes a spinning solution delivery method that produces continuous jets, effectively eliminating critical membrane defects. The configuration is a continuous moving of spinning electrode (SE) in loop wire shape onto which a spinning solution is continuously deposited by a special static coating box. This enables production of high-performance nanofiber membranes for use in HEPA and liquid filtration.



RECOMMENDED USES

- **Full scale manufacturing**
 - Optimized for mass production
 - Designed for 24 hours / 7 days operation
 - Automated production control system

FEATURES

- **Defect-free technology**
 - Suitable for HEPA and liquid filtration which require low to no defects
 - HEPA & ULPA filtration: high levels of filtration performance 99-99.99999% E10-U16
 - Liquid filtration: Nanofibers can be applied to a composite as part of nano - and ultra- filtration
- **Scalable production volume**
 - Scalable concept to increase production volume by addition of spinning units
 - Combine 1, 2, 3 or 4 spinning units in line
- **Cost effective production**
 - Process optimization for particular polymer, substrate material and parameters of the product
 - Low volume polymer system
 - Low solvent evaporation
- **Ready for plant integration**
 - Configure for in-line processing
 - Easy to fit into your facility
 - Standard connections for easier plant integration



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TECHNICAL DATA

EQUIPMENT

Production line

Number of spinning units: 1
Number of spinning modules: 2
Modules can be operated independently, also with different polymers
Total number of spinning electrodes: 8 (4 per module)
Spinning electrode width: 1,6 m

Equipment variables

Spinning voltage: 0 - 140 kV
Substrate speed: 0,01 - 5,0 m/min (depends on requested nanofiber's coating)
Spinning distance: 150 - 250 mm

Peripherals

Unwind / rewind with safety fencing	Polymer mix station
Tent / Supporting roller	Precise air-conditioning
Data storage and remote access	Waste air treatment

Consumption

Power: approx. 5-10 kW

Safety/regulation

Meets all CE requirements

Dimensions

Length: 13800 mm	Width: 9600 mm
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Note: One unit configuration

Scalability

1 spinning units	8 spinning electrodes
2 spinning units	16 spinning electrodes
3 spinning units	24 spinning electrodes
4 spinning units	32 spinning electrodes

PROCESS

Process

Throughput: depends on polymer, substrate, process and fiber diameter
Effective width of nanofiber layer: 1,6 m
Working temperature: 20 - 30 °C
Working humidity: 20 - 40% RH (influence on throughput)

Cycle times

Operational: 24 hours / 7 days	Operating mode: batch
Start-up time: up to 20 min	Volume of solution per batch:
Polymer refilling: 20 min	60 l (2x 30 litre)

Polymer filling

Maintenance

Regular maintenance time: 85-89% uptime
Cleaning of spinning components: inside or outside of the unit

SITE

Site

Operating staff required: 1 person/shift
Production premises: 10 m x 20 m space required, ceiling height above 4 m
Low dust environment required

Connections

Internet connection – service remote access
Compressed dry air: 6 - 8 bar, might vary in range 200NI/min to 2000 NI/min according to the setup and operation regime
Inert gas: 0.5 bar, might vary in range 2NI/min to 200 NI/min for various periods in operation regime
Ventilation requirements: Usually 2000 m³/h - for production line + peripherals (one unit line)

INFINITY line layout

