

400Mm Precision Separator Micro Gravure Coating Machine

Item Number: TB21



Introduction

400mm precision separator micro gravure coating machine delivers controlled ceramic slurry application drying and rewinding for PE and PP lithium ion battery separator production with coating widths up to 300 mm and speeds to 3 m per minute.

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Application	Description	Key Benefit
Lithium-Ion Battery Separator Coating	Applies alumina ceramic slurry to PE or PP separator films before downstream cell assembly.	Supports controlled dry thickness and coating weight for separator process development.
Battery R&D Line Development	Enables evaluation of coating width, slurry solids content, viscosity, speed, and drying conditions during laboratory and pilot work.	Provides a defined roll-to-roll platform for establishing process windows.
Ceramic Separator Surface Treatment	Produces continuous single-side ceramic-coated separator material using an alumina and deionized-water slurry system.	Integrates coating and electrically heated drying in one material path.
Separator Material Qualification	Processes separator substrates from 8 to 30 μ m thick and 100 to 320 mm wide for comparative material studies.	Accommodates common thin-film separator dimensions within a specified web range.
Coating Parameter Optimization	Supports structured trials across 0.5-3 m/min coating speed, 1-10 μ m dry thickness, and 10-25 g/m ² coating weight.	Helps technical teams compare coating conditions against measurable process targets.
Pilot Roll Preparation	Unwinds, coats, dries, corrects, and rewinds rolls for further inspection or downstream battery-manufacturing preparation.	Maintains a continuous workflow from incoming substrate roll to coated output roll.
Controlled Dry-Room Processing	Can be installed in coating environments specified at 25 $\pm$ 5°C, 10%-30%RCH, and Class 100,000 cleanliness.	Aligns equipment planning with defined temperature, humidity, and cleanliness conditions.

Parameter	Specification
Site-facing identifier	TB21
Equipment function	Precision coating of lithium-ion battery separators; uniformly coats mixed slurry onto the substrate, maintains dimensions and weight within the process range, dries the coating, and rewinds the material for subsequent processing
Process flow	Substrate unwinding → tension stabilization → micro-gravure coating → drying and baking → tension stabilization → web guiding → traction rewinding
Substrate type	PE, PP separator
Substrate width	100□ 320 mm
Substrate thickness	8□ 30 μ m
Slurry type	Ceramic slurry
Slurry material	Aluminum oxide
Slurry solvent	Deionized water
Slurry solids content	3□ 15 wt%
Slurry density	0.6□ 2.0 g/cm ³
Slurry viscosity	500-2000 mPa.s

Parameter	Specification
Coating method	Continuous coating
Maximum coating width	300 mm
Single-side dry coating thickness	1□ 10 μm
Single-side coating weight	10□ 25 g/□
Coating speed	0.5□ 3 m/min
Roll face width	400 mm
Maximum no-load mechanical speed	5 m/min
Unwinding roll diameter	Max. φ200 mm
Unwinding load capacity	Max. 100 kg
Unwinding core specification	Internal diameter 3 inches, approximately 76.2 mm; length ≤450 mm
Unwinding compatible core materials	Metal, ABS plastic, paper core
Rewinding roll diameter	Max. φ200 mm
Rewinding load capacity	Max. 100 kg
Rewinding core specification	Internal diameter 3 inches, approximately 76.2 mm; length ≤450 mm
Rewinding compatible core materials	Metal, ABS plastic, paper core
Oven heating method	Electric heating
Oven structure	2 sections × 1.2 m/section = 2.4 m; single layer
Maximum oven temperature	140°C
Overall equipment dimensions	Approximately L(4.0 m) × W(2.1 m) × H(1.9 m); width includes electrical cabinet and length excludes operating space
Power supply requirement	Three-phase AC380V±10%, 50Hz; protective grounding required
Installed power	35KW
Main power supply quantity	1
Compressed-air pressure	≥0.6MPa
Compressed-air pressure fluctuation	±1%
Compressed-air quality	Clean air after water removal, oil-free treatment, filtration, and pressure regulation
Compressed-air consumption	10m³/h
Compressed-air connection quantity	1 per unit
Compressed-air pipe interface	Φ12 mm
Coating-area ambient temperature	25±5°C, determined according to buyer process requirements
Relative humidity	10%□ 30%RCH, determined according to buyer process requirements
Cleanliness requirement	Class 100,000, determined according to buyer process requirements
Total equipment weight	Approximately 1.3 tons
Floor type	Cement floor or terrazzo floor
Floor flatness	±5 mm/□
Floor load-bearing capacity	≥500 □ /□
Maximum exhaust air volume at 140°C	Positive electrode: 1800□ /h; negative electrode: 1800□ /h

Parameter	Specification
Maximum fresh-air intake at 60°C	Positive electrode: 1500□ /h; negative electrode: 1500□ /h