

Precision Laboratory Transfer Coating Machine For Lithium Ion Battery Electrodes

Item Number: TB25



Introduction

Precision laboratory transfer coating machine for lithium ion battery electrodes delivers controlled continuous and intermittent coating, uniform film application, integrated drying, and reliable winding for demanding cathode and anode pilot production with compatibility for aluminum and copper foil substrates.

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Application	Description	Key Benefit
Lithium iron phosphate cathode development	Applies NMP-based slurry containing lithium iron phosphate to aluminum foil for electrode formulation and process trials.	Supports cathode coating within the specified 40 to 85 wt% solids and 100 to 250 g/m ² dry-coating-weight range.
Ternary cathode process research	Produces aluminum-foil electrodes from ternary-material slurry for coating-window evaluation and subsequent cell testing.	Enables continuous or intermittent coating up to 300 mm wide.
Graphite anode electrode preparation	Coats DI-water-based graphite slurry onto copper foil for anode development and pilot electrode production.	Supports the specified 35 to 65 wt% solids, 80 to 200 g/m ² dry-coating-weight, and up to 3 m/min coating-speed range.
Battery pilot-line electrode manufacturing	Creates dried, rewind cathode and anode rolls as input for downstream pressing, slitting, assembly, and evaluation operations.	Integrates coating and drying before roll collection in one defined material-handling sequence.
Coating parameter optimization	Evaluates the interaction of material system, coating thickness, solid content, temperature, and web speed during electrode-process development.	Provides stated processing ranges to establish controlled trial conditions.
Intermittent electrode-pattern production	Produces coated sections where an intermittent pattern is required by the electrode and cell-design process.	Offers intermittent coating for both cathode and anode workflows.
Materials laboratory substrate trials	Tests compatible aluminum and copper foil substrates before transfer to later-stage electrode production.	Accommodates foil widths from 100 to 330 mm and specified foil thickness ranges.

Item	TB25 Specification
Equipment function	Precision coating of lithium-ion battery cathode and anode electrode sheets; includes unwinding, coating-head, oven, traction, rewinding, and electrical-control sections; applies mixed slurry uniformly on the substrate, dries it, and rewinds it for subsequent processing.
Roller face width	400 mm
Mechanical speed, no load	Max: 3 m/min
Coating mode, cathode	Continuous, intermittent coating
Coating mode, anode	Continuous, intermittent coating
Maximum coating width, cathode	Max: 300 mm
Maximum coating width, anode	Max: 300 mm
Single-side dry coating thickness, cathode	80 to 250 μ m
Single-side dry coating thickness, anode	80 to 250 μ m

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Single-side coating weight, cathode	100 to 250 g/m ²
Single-side coating weight, anode	80 to 200 g/m ²
Coating speed, cathode	0.5 to 2 m/min
Coating speed, anode	0.5 to 3 m/min
Coating-speed note	Coating speed is related to product characteristics including material system, coating thickness, solid content, and temperature. The listed maximum coating speed may not meet special coating-process requirements.
Cathode substrate	Aluminum foil
Anode substrate	Copper foil
Substrate width, cathode	100 to 330 mm
Substrate width, anode	100 to 330 mm
Substrate thickness, cathode	9 to 15 μ m
Substrate thickness, anode	6 to 15 μ m
Substrate acceptance condition	Aluminum foil or copper foil used for acceptance must not have looseness, uneven thickness or weight, surface oil contamination, or other conditions affecting web transport and coating performance.
Cathode slurry material	Lithium iron phosphate, ternary materials, etc.
Anode slurry material	Graphite
Cathode solvent	NMP
Anode solvent	DI-Water
Cathode slurry solid content	40 to 85 wt%
Anode slurry solid content	35 to 65 wt%
Cathode slurry specific gravity	1.5 to 3.0 g/cm ³
Anode slurry specific gravity	1.0 to 2.0 g/cm ³
Cathode slurry viscosity	5000-15000 mPa.s
Anode slurry viscosity	3000-8000 mPa.s
Same-batch slurry solid-content fluctuation	$\leq \pm 0.5\%$
Same-batch slurry viscosity fluctuation	$\leq \pm 500$ mPa.s, 25 ± 2 degrees C
Unwinding roll diameter	Max. ϕ 200 mm
Unwinding load capacity	Max. 100 kg
Unwinding core specification	Internal diameter 3 inches, approximately 76.2 mm; length $\leq$ 450 mm
Unwinding core material	Metal, ABS plastic, paper core
Rewinding roll diameter	Max. ϕ 200 mm
Rewinding load capacity	Max. 100 kg
Rewinding core specification	Internal diameter 3 inches, approximately 76.2 mm; length $\leq$ 450 mm
Rewinding core material	Metal, ABS plastic, paper core
Oven heating method	Electric heating
Oven structure	3 sections x 2 m/section = 6 m, single layer
Maximum oven temperature	Max: 140 degrees C
Approximate equipment dimensions	L (8 m) x W (2 m) x H (2.1 m); width includes electrical cabinet and excludes operating space
Power supply	Three-phase AC380V $\pm 10\%$, 50Hz; protective grounding

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Installed power	55KW
Main power supply quantity	1
Compressed-air pressure	$\geq 0.6\text{MPa}$; pressure fluctuation $\pm 1\%$; clean air after water removal, oil-free treatment, filtration, and pressure stabilization
Compressed-air consumption	10m ³ /h
Compressed-air connection quantity	1 per unit
Compressed-air pipe connection	Phi 12 mm
Coating-area ambient temperature	25 $\pm$ 5 degrees C, determined according to buyer process requirements
Relative humidity	10% to 30%RCH, determined according to buyer process requirements
Cleanliness	Class 100,000, determined according to buyer process requirements
Total equipment weight	Approximately 3 tons
Floor type and flatness	Cement or terrazzo floor; flatness $\pm 5\text{ mm/m}^2$
Floor load capacity	$\geq 500\text{ kg/m}^2$
Maximum exhaust airflow at 140 degrees C	Cathode 2000 m ³ /h; anode 2000 m ³ /h
Maximum fresh-air intake at 60 degrees C	Cathode 1500 m ³ /h; anode 1500 m ³ /h