

Automatic Z-Fold Stacking Machine For Prismatic Lithium Ion Battery Cells

Item Number: DP05



Introduction

Discover our high precision automatic Z fold stacking machine for prismatic lithium ion battery cells featuring active tension unwinding multi sheet detection and automated taping to optimize cell assembly consistency throughput and manufacturing yield across pilot and production lines.

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Application	Description	Key Benefit
Prismatic EV Battery Manufacturing	Automated high-speed Z-folding of high-capacity cathode and anode sheets for automotive-grade prismatic lithium-ion power cells.	Maximizes volumetric energy density and ensures strict geometric alignment tolerances across high-volume production.
Energy Storage System (ESS) Cell Assembly	Continuous stacking of large-format prismatic battery cells designed for grid-scale, commercial, and industrial energy storage modules.	Delivers layer-to-layer repeatability and consistent interface contact to extend cell life and improve thermal stability.
High-Rate Industrial Cell Fabrication	Production of specialty prismatic cells for heavy industrial machinery, marine propulsion, and aerospace backup power systems.	Protects heavy-gauge current collector tabs from bending while maintaining uniform interfacial pressure throughout the stack.
Battery R&D and Pilot Line Prototyping	Fast-turnaround cell prototyping for new cathode/anode formulations, solid-state separators, and advanced electrolyte configurations.	Offers fully programmable layer counts and flexible parameter tuning without requiring mechanical tooling changeovers.
Consumer Electronics Cell Production	Precision Z-fold fabrication of medium-capacity prismatic cells for high-end power tools, robotics, and commercial electronics.	Prevents active material contamination and corner chipping, maximizing first-pass production yields to 99%.

Parameter Category	Specification Details (Item Number: DP05)
Stacking Speed	Single station: 1.0 - 1.2 s/pcs
Auxiliary Handling Time	10 - 15 s per finished cell core
Electrode-to-Separator Alignment	Center deviation: ± 0.3 mm
Separator End Face Alignment	± 0.3 mm
Adjacent Electrode Alignment	± 0.2 mm
Overall Electrode Alignment	± 0.3 mm
Stacking Layer Configuration	Fully programmable within allowable thickness envelope
Outer Separator Wrapping	Single-layer outer wrap, no tail roll
First-Pass Product Yield	$\geq 99\%$ (equipment-induced defects only)
Equipment Operating Rate (Uptime)	$\geq 98\%$ (equipment-induced downtime only)
Supply Power Requirements	Single-Phase AC 220V $\pm 10\%$, 50 Hz, 4 kW (UK standard plug configuration)
Compressed Air Supply	0.5 - 0.7 MPa (5 - 7 kgf/cm ²), Flow Rate: 200 L/min
Operating Environment Temperature	5 - 35 °C
Operating Relative Humidity	5 - 55% RH

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Ambient Air Quality Standards	Free of conductive dust, corrosive chemicals, toxic vapors, and salt-laden air
Vibration & Magnetic Interference	Free of external magnetic fields, mechanical impacts, or perceptible floor vibration
Floor Loading Capacity	> 650 kg/m²
Machine Physical Dimensions	Approx. W 2350 mm × L 1800 mm × H 2200 mm (subject to final engineering drawing)
Total Equipment Weight	Approx. 2500 kg
Chassis Finish and Exterior	Industrial Computer Gray