Semi Automatic Z Fold Stacking Machine For Prismatic Power Lithium Ion Battery Cells

Item Number: DP04

Introduction

Engineered for prismatic power lithium battery manufacturing, this high-precision semi-automatic Z-fold stacking machine delivers 1.3 to 1.6 second cycle speeds, active tension web guiding, and ±0.2 mm electrode alignment accuracy for demanding pilot production and battery research workflows.

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Application	Description	Key Benefit
Prismatic EV Power Cell Pilot Lines	Assembling multi-layer prismatic lithium-ion pouch and can cores for automotive powertrain prototyping and validation.	Delivers production-grade stacking alignment of ±0.2 mm to maximize energy density and prevent edge short-circuits.
Commercial Energy Storage Systems (ESS)	Fabricating high-capacity prismatic cell stacks requiring uniform separator tension and thick electrode pairings.	High stacking throughput of 1.3–1.6 s/sheet accelerates assembly while maintaining a 99% machine-level qualification yield.
Solid-State & Advanced Battery R&D	Stacking novel solid electrolyte separators with brittle or customized composite cathode/anode sheets.	Gentle vacuum suction and secondary mechanical positioning minimize mechanical stress on experimental electrode coatings.
Defense & High-Reliability Battery Packs	Small-batch manufacturing of specialized high-drain power cells requiring stringent zero-defect quality control.	Rigorous quad-knife clamping ensures exact internal registration and eliminate micro-shorts from separator displacement.
University & Materials Science Research	Prototyping varied cell chemistries, alternative binders, and ultra-thin separators across diverse research grants.	Highly configurable layer counts and parameter sets allow rapid switching between experimental chemistries.
Contract Battery Manufacturing & QC	Validating pre-production battery batches and verifying electrode die-cutting accuracy prior to multi-million-dollar line investments.	High operational uptime of 98% ensures continuous shift testing with highly dependable and repeatable core metrics.

Specification Parameter	Technical Value / Standard (DP04)
Stacking Method	Semi-Automatic Continuous Z-Fold (Zigzag) Stacking
Stacking Speed	1.3 □ 1.6 s/pcs (per electrode sheet)
Auxiliary Cycle Time	15 □ 20 s (cell transfer, reload preparation)
Adjacent Electrode Alignment Accuracy	±0.2 mm
Overall Electrode Stack Alignment Accuracy	±0.3 mm
Separator End-Face Alignment Accuracy	±0.3 mm
Electrode-to-Separator Center Deviation	±0.4 mm
Stacking Layer Capacity	Fully programmable / configurable within machine thickness limits
Outer Separator Finishing	Automated reserve blank stacking, manual tail winding, manual tape sealing
Equipment Yield Rate	≥ 99% (qualified rate for defects caused solely by the machine)
Operational Availability (Uptime)	≥ 98% (uptime rate for faults caused solely by the machine)
Rated Power Consumption	2.0 kW
Electrical Power Supply	208V AC, 60Hz (Live + Neutral); Voltage Fluctuation Tolerance ±10%

Specification Parameter	Technical Value / Standard (DP04)
Compressed Air Requirement	0.5 – 0.7 MPa (5 – 7 kgf/cm²); Consumption: 100 L/min
Equipment Dimensions	W1550 mm x L1250 mm x H1850 mm
Equipment Mass & Floor Load	Approx. 1000 kg; Floor Bearing Capacity requirement > 450 kg/m²
Structural Machine Color	Industrial Computer Grey (Custom color standards available upon request)
Operating Ambient Temperature	5 – 35 °C
Operating Relative Humidity	5 – 55% RH (Non-condensing)
Air Quality Requirements	Free of salt spray, toxic gases, corrosive agents, and conductive dust
Environmental Dynamics	Free of external electromagnetic interference; isolated from mechanical impact and vibration