

Lithium Ion Battery Z Fold Semi Automatic Stacking Machine

For Pouch Cell Fabrication And Battery Research

Item Number: DP02



Introduction

Streamline lithium ion battery cell assembly with this precision semi automatic Z fold stacking machine. Engineered with active constant tension control, foot switch pneumatic actuation, and tight alignment accuracy, it delivers dependable, repeatable pouch cell fabrication for laboratory research and pilot production.

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Application	Description	Key Benefit
Lithium-Ion Pouch Cell Prototyping	Precision layer-by-layer stacking of cathode, anode, and continuous separator rolls for standard lithium-ion chemistries (NMC, LFP, LCO).	Achieves stacking alignment accuracy within ± 0.5 mm, preventing edge short circuits and inconsistent capacity distribution.
Solid-State Battery R&D	Stacking novel composite cathode sheets, solid electrolyte membranes, and metallic lithium foils in research environments.	Gentle pneumatic clamping and precise tensioning prevent micro-cracks or mechanical fracture on brittle solid electrolyte layers.
Sodium-Ion Battery Development	Assembly of emerging sodium-ion pouch cells using thick electrode coatings and specialized porous separator substrates.	Flexible thickness tolerance up to 12 mm accommodates high-mass-loading electrode formulations without tooling distortion.
Academic & Industrial Battery Labs	Rapid fabrication of customized multi-layer pouch cells for material validation, electrochemical impedance spectroscopy, and cycle-life testing.	Fast changeover between varying cell dimensions reduces prototyping downtime across multi-user research facilities.
Pilot-Line Pre-Production Screening	Small-batch assembly of commercial-grade pouch cell designs prior to large-scale roll-to-roll automated stacking investment.	Delivers production-level stacking neatness and repeatable interfacial compression at a fraction of full-scale capital equipment cost.
Advanced Capacitor & Supercapacitor Fabrication	Z-folding non-woven or polymeric separators between high-surface-area activated carbon electrode sheets.	Constant web tension prevents separator stretching, preserving low equivalent series resistance (ESR) across the stack.

Parameter	Value / Specification
Item Number	DP02
Stacking Accuracy (Alignment Neatness)	Better than ± 0.5 mm
Minimum Stacking Dimension (L x W)	44 mm x 44 mm (including tab length; smaller sizes require custom pressing plate)
Maximum Stacking Dimension (L x W)	200 mm x 150 mm (including tab length; tabs oriented on long side)
Maximum Stacking Thickness	Up to 12 mm (thicker cell stacks require modified adjustment plates)
Separator Roll Outer Diameter	Maximum 220 mm
Stacking Mode	Semi-automatic Z-fold (pneumatic drive with manual electrode sheet placement)
Tension Management	Continuous mechanical constant-tension regulation system
Operation Control	Ergonomic foot-pedal switch with auxiliary panel push-buttons
Display & Timer	Digital counter with cycle timer and one-touch zero-reset

Parameter	Value / Specification
Memory Function	Automatic state and parameter retention after power-off / idle
Required Compressed Air Supply	0.4 MPa to 0.6 MPa (clean, dry compressed air)
Electrical Power Supply	Single-Phase 220 VAC $\pm 10\%$, 50 Hz / 60 Hz (110 VAC single-phase customizable)
Rated Power Consumption	200 W
Equipment Dimensions (L $\times$ W $\times$ H)	512 mm $\times$ 820 mm $\times$ 580 mm
Equipment Net Weight	Approximately 50 kg