

Automatic Battery Electrode Sheet Die Cutting Forming Machine

Item Number: MQ04



Introduction

Automatic battery electrode sheet die cutting forming machine delivers 30-40 cycles per minute, ≤ 0.1 mm cutting accuracy, ≤ 0.015 mm burrs, and $\geq 98\%$ qualified output for reliable lithium battery production with stable web handling and precise closed loop alignment control.

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Application	Description	Key Benefit
Lithium Battery Electrode Production	Automatically die cuts positive or negative electrode roll material into configured sheet formats for downstream cell fabrication.	Improves dimensional consistency and reduces manual cutting labor.
Battery Pilot Lines	Supports repeatable electrode forming during pilot-scale process validation and production transfer.	Provides controlled throughput and programmable batch quantities.
Laboratory Battery R&D	Processes electrode rolls for coin cell, pouch cell, and other research-oriented assembly workflows where repeatable samples are required.	Reduces variation between test samples and improves experimental repeatability.
Electrode Material Development	Handles electrode materials with thicknesses from 20 to 180 μm during formulation and coating studies.	Supports comparison of material batches with controlled cutting conditions.
High-Precision Sheet Preparation	Produces electrode sheets with cutting accuracy of ≤ 0.1 mm and burrs of ≤ 0.015 mm when operated within specified conditions.	Helps maintain clean edges and consistent active-area dimensions.
Advanced Materials Research	Provides automated roll-to-sheet conversion for thin functional materials used in battery and materials research.	Combines alignment, tension control, and automatic collection in one process.
Small-Batch Manufacturing	Produces defined quantities using touchscreen-configured die-cutting counts and step precision.	Makes short runs easier to manage while limiting unnecessary material waste.

Parameter	Specification
Product Identifier	MQ04
Application	Automatic die cutting and forming of lithium battery electrode sheets
Incoming Material Format	Roll stock
Maximum Incoming Material Width	≤ 300 mm
Maximum Incoming Roll Diameter	≤ 400 mm
Incoming Material Thickness	20-180 μm
Product Size Range	350 × 350 mm
Production Speed	30-40 cuts/min
Qualified Product Rate	$\geq 98\%$
Equipment Fault Rate	$\leq 5\%$; faults caused by the equipment only
Cutting Dimension Accuracy	≤ 0.1 mm

Parameter	Specification
Burr Height	≤0.015 mm
Finished Material Collection	Automatic flow into receiving tray
Edge Trim Handling	Automatic edge-trim collection

Parameter	Specification
Electrical Supply	AC220 ±10%
Power Consumption	≤4.5 kW
Compressed Air Requirement	≥0.6 MPa
Weight	2.0 T
Overall Dimensions	3200 × 1250 × 1500 mm, length × width × height

Function or Assembly	Configuration and Performance
Unwinding Control	Variable-frequency motor with position-detection potentiometer for intelligent variable-speed unwinding
Tension Control	Floating roller mechanism maintains suitable electrode tension
Web Alignment	Precision servo correction mechanism with alignment sensor and high-precision closed-loop control
Feeding Drive	Servo motor with precision planetary reducer
Feed Roller Surface	Nitrile rubber roller
Die-Cutting Station	Single high-speed die-cutting station
Main Control System	PLC program control
Operator Interface	Touchscreen for setting step precision and die-cutting quantity
Lower Die Platform Adjustment	Stepper motor controlled vertical movement with touchscreen adjustment for each upward or downward step displacement
Edge-Trim Collection Drive	Speed-adjustable motor
Edge-Trim Conveyor	Pull-belt collection system using a brown-paper conveyor belt

Assembly	Main Components
Unwinding and Alignment Assembly	Painted square-tube main frame, variable-frequency motor, servo push rod, brown surface-hardened aluminum roller, plated metal components, and aluminum alloy components
Front Roller Assembly	Plated metal components and plated metal roller drum
Paired-Roller Feeding Assembly	Plated metal base, servo motor, planetary reducer, nitrile rubber roller, tape-joining pressing cylinder, and tape-joining stainless steel platform
Die-Cutting Assembly	Cast machine base with metal transmission and moving components
Edge-Trim Collection Assembly	Speed-adjustable motor, plated metal roller drum, aluminum alloy side panels, and brown-paper conveyor belt