

Semi Automatic Electrode Laser Cutting Machine

Item Number: MQ11



Introduction

Semi automatic electrode laser cutting machine for lithium ion battery pilot lines delivers fast precision cutting clean dust control reliable handling and consistent production performance with simple software rapid changeover stable fiber laser and high yield results for advanced research

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Application	Description	Key Benefit
Lithium Ion Battery Pilot Lines	Cuts positive and negative electrode sheets into specified outer profiles for small-batch cell production and process verification.	Supports repeatable electrode preparation with a qualification rate of $\geq 99.5\%$.
Battery R&D Laboratories	Enables researchers to evaluate electrode geometries, tab configurations, and cutting parameters during experimental development.	Simple parameter changes and graphical operation accelerate iteration and rapid changeover.
Power Battery Electrode Prototyping	Processes electrode materials sized from 50 mm to 300 mm, including tabs, for prototype power-cell programs.	High-speed laser movement and accurate positioning shorten preparation time.
Positive Electrode Processing	Handles incoming positive electrode material with thicknesses from 60-250um, including applications requiring ceramic layer cutting.	Controlled cutting conditions support profile formation while limiting heat affected area.
Negative Electrode Processing	Cuts negative electrode sheets for laboratory cells, trial batches, and pilot manufacturing workflows.	Vacuum adsorption stabilizes the sheet during cutting and transfer.
Small Batch Cell Fabrication	Provides an automated cutting step between electrode preparation and cell assembly in compact experimental lines.	Compact installation and lower equipment cost suit development-scale production.
Electrode Process Validation	Allows engineering teams to verify cutting speed, dimensional accuracy, dust control, and material response before scale-up.	Measurable performance limits provide a practical basis for process qualification.

Specification Category	Parameter	Value	Notes
Product Identification	Site-facing identifier	MQ11	Semi automatic electrode laser cutting machine
Functional Capability	Primary function	Cutting the outer profile of power lithium ion battery electrodes	Operator loads the electrode, and the system completes positioning, laser cutting, and return transfer
Incoming Material	Maximum incoming material size	300mm*300mm	Includes tabs
Incoming Material	Minimum incoming material size	50mm*50mm	Includes tabs
Incoming Material	Incoming material thickness	60-250um	Positive electrode requires ceramic layer cutting
Incoming Material	Incoming material dimensional accuracy	$\pm 1\text{mm}$	
Laser Processing	Laser cutting method	Laser cutting path	
Electrode Output	Electrode length	50-300mm	Includes tabs
Electrode Output	Electrode width	50-300mm	Includes tabs
Cutting Performance	Laser cutting speed	$\geq 200\text{mm/s}$	

Specification Category	Parameter	Value	Notes
Cutting Performance	Electrode dimensional accuracy	±0.2mm	
Cutting Performance	Dissolved bead size	≤10um	
Cutting Performance	Heat affected zone	≤120um	
Cutting Performance	Metal leakage	≤50um	
Environmental Performance	Equipment noise	≤75 db	Measured at a distance of 1M from the machine
Utilities	Equipment power supply	AC380V±5%,□□ 50Hz	
Utilities	Equipment air supply	Compressed air 0.5-0.6Mpa	
Physical Configuration	Equipment dimensions	□ 1200×1200×1700□□)	Main body
Physical Configuration	Appearance color	Standard warm gray 1C	If required by the customer, a color card must be provided
Physical Configuration	Equipment weight	□ 500Kg	
Production Performance	Product qualification rate	≥99.5 %	
Production Performance	Equipment operating rate	≥95%	
Operating Environment	Adaptable ambient temperature	0-50 C°	