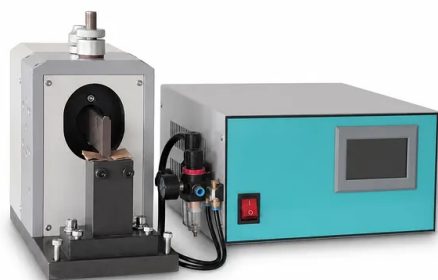


Smart 4500W Ultrasonic Battery Tab Welding Machine For 70 Layer Electrode Stacks

Item Number: DH05



Introduction

Smart 4500W ultrasonic welding machine delivers stable low resistance battery tab joints for aluminum and copper foil stacks up to 70 layers with automatic frequency tracking quality monitoring and bilingual touchscreen control.

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Application	Description	Key Benefit
Lithium-ion cell tab welding	Joins 0.2 mm aluminum strip to aluminum-foil electrode stacks of up to 70 layers for battery cell fabrication.	Produces firm, low-resistance aluminum-to-aluminum joints with controlled ultrasonic output.
Copper-foil negative-electrode assembly	Joins 0.2 mm nickel strip to copper-foil stacks of up to 70 layers.	Supports the nickel-to-copper tab connection required for controlled negative-electrode processing.
Battery R&D sample preparation	Establishes welding conditions using adjustable time, energy, power, and depth modes during development of electrode-stack configurations.	Gives researchers parameter flexibility while retaining real-time process visibility.
Pilot-line cell fabrication	Repeats defined tab-welding settings for early-stage battery manufacturing and process validation.	Parameter limits and out-of-range alarms help monitor weld-to-weld consistency.
Multilayer electrode-stack joining	Creates weld points sized 3 x 8 mm, 3 x 10 mm, or 3 x 12 mm on supported aluminum-foil and copper-foil stack assemblies.	Provides specified weld-point options for matching the joint area to the stack design.
Battery quality-process monitoring	Uses real-time welding data, real-time frequency, real-time welding power, and configurable upper and lower limits during production checks.	Helps identify parameter deviations before affected assemblies proceed further.
Tab-joint strength evaluation	Produces joints whose destructive pull force can be evaluated according to layer count, material selection, and material thickness.	Supports process teams in relating joint strength checks to the actual stack construction.

Parameter	Specification
Site-facing identifier	DH05
Rated power	4500W
Frequency	24KHZ
Power supply	220V/ 50Hz
Compressed-air supply	≥0.5MPa
Control method	CPU control
Controller circuit	Optimized internationally advanced full-bridge regulated circuit; constant-amplitude output; automatic frequency tracking; no manual adjustment required
Intelligent control modes	Time, energy, power, energy, depth modes
Maximum upper ultrasonic electrode stroke	20mm
Welding time	0.05~ 9S

Parameter	Specification
Display	7-inch interference-resistant touch display
Display languages	Chinese and English
Settable display parameters	Trigger time; welding time; power; secondary-wave delay time
Real-time displayed parameters	Frequency and welding power
Fault indication	Fault-type alarm
Start-up inspection	Automatic self-test; scans welding-system parameters and displays them in real time; alarms when a fault is present
Welding-quality data assistance	Upper and lower parameter limits can be set from real-time welding-data parameters; alarm is issued when values exceed the limits
Amplitude compensation	Automatic amplitude adjustment for more stable amplitude output, welding stability, and welding-quality consistency
Welding horn material	Imported powder-alloy steel
Welding horn characteristics	High hardness; high-precision ground pattern; service life greater than 150,000 operations per side
Lower ultrasonic electrode material	Selected imported special mold steel
Lower ultrasonic electrode characteristics	Wear-resistant; high-temperature resistant; good toughness; high mechanical rigidity; small deformation after heat treatment; consistent ultrasonic output frequency; large, strong, stable mechanical high-frequency displacement amplitude
Ceramic plate	Imported German black ceramic plate
Aluminum rod	Aluminum rod from an American aluminum company
Welding horn component	Powder alloy
Aluminum welding capability	0.2mm aluminum strip + up to 70 layers of aluminum foil
Aluminum weld-point sizes	38mm; 310mm; 3*12mm
Copper welding capability	0.2mm nickel strip + up to 70 layers of copper foil
Copper weld-point sizes	38mm; 310mm; 3*12mm
Joint quality characteristics	Firm welding; low internal resistance; no false welding; no powder vibration; no separator burning; no insulation-tape heating; no tab or electrode-sheet cracking
Residual welded interface between metals	Greater than 80%
Weld appearance	Flat surface; no wrinkles; no raised burr on the reverse side; full and clear weld point; firm and reliable weld; weld-point location does not crack
Strength verification	Destructive pull force can be tested according to layer count and material thickness