



Electron beam welding machine for EV components, including batteries, inverters, and motors



Extremely consistent process



Strong, high quality welds



Significantly faster than laser welding



Equipment, Features and Options

Standard Equipment

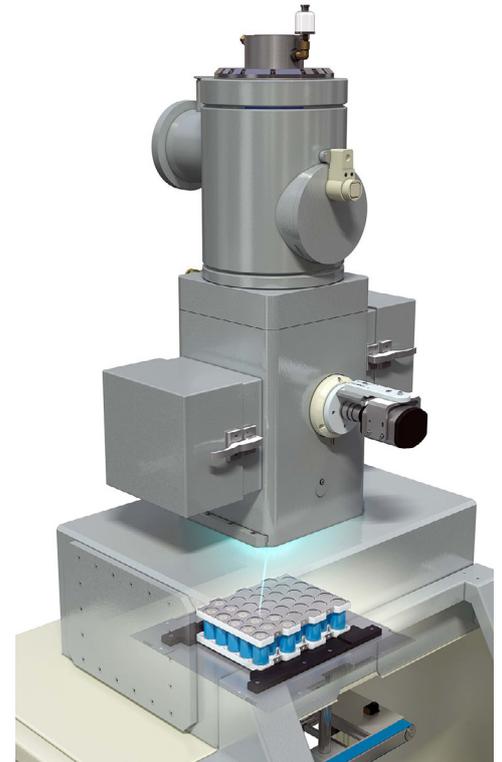
- > Air-conditioned electrical cabinet
- > Function generator for application of welding patterns
- > Directly heated cathode
- > Separately pumped gun column (turbo-molecular)
- > Filament alignment jig
- > High-quality HDMI camera, with adjustable cross hairs and video capability
- > Industrial PLC
- > Fully automated vacuum system
- > PC-based HMI, with recipe storage and data logging
- > eWon ethernet hub for remote diagnostics

Advanced Features

- > Automatic focus and alignment
- > Automatic joint finder and imaging using back scattered electrons
- > CNC control
- > Dry vacuum pumps
- > Mylar film protector
- > Recirculating water chiller
- > Special beam functions, including beam splitting
- > High speed beam focus
- > Dynamic gun column stigmator system
- > Rapid wide range deflection
- > Reduced power input

Tooling Options

- > Custom tooling
- > Indexing carousel
- > Motorised gun-slide
- > XY table



As the vacuum chamber contains the welding process, there is less spatter, so the welds are much more consistent than laser welding.

There is also potential to implement vacuum load-lock systems, allowing for very fast cycle times.

Typical Battery Weld Times

	Time to weld one cell (4 welds)	Time to manufacture one battery pack
Typical for resistance welding	4 seconds	12,000 seconds
Typical for laser welding	0.42 seconds	1,260 seconds
Demonstrated speed for electron beam	0.063 seconds	189 seconds
Anticipated development for electron beam	0.025 seconds	75 seconds



Battery packs



Production Evflow machine



Motor stators



Hairpins

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