EV-CUBE

Automated Battery Module Welding System

FEATURES

- Sized for cylindrical cell modules up to 1000 x 1000 x 600 mm and 450 kg
- IPG laser and beam delivery optimized for the application
- Standard weld station with proven weld process developed by IPG
- Real-time Weld Measurement option

BENEFITS

- Typically 3X faster than alternative technologies - lowers production costs
- IPG process knowledge accelerates implementation and reduces schedule risk
- Optional Real-time Weld Measurement prevents catastrophic part failures and recalls
- Optional tooling development services from IPG increase part yield and accelerate time to first part
- Single-vendor solution from experts in both laser process and tooling simplifies communications

EV-Cube Battery Module Welding Systems are full-automated workstations for welding busbars in cylindrical cell modules. Configurable for either manual or conveyor-fed part loading, systems are suitable for process development, prototype and low-volume production welding.

EV-Cube is configurable with virtually all IPG lasers and scanning heads. IPG will provide guidance on the best equipment selection for specific applications (material/thickness combinations) based on proven battery welding implementations.

System options include part loading, IPG battery module tooling services and Real-Time Weld Measurement for 100% qualification of weld profiles.

EV-Cube is a standard battery welding system that together with IPG laser processing and tooling design services greatly accelerates implementation compared to custom-designed alternatives.

Available to both end users and line integrators, IPG will work under multilateral NDAs to ensure meeting current and evolving welding needs.

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System Specifications	
Laser Source	IPG industrial fiber lasers from 1000 to 6000 W. Single and Multi-mode (See options)
Beam Delivery	IPG High Power Scanner
Maximum Part Size/Weight, mm/kg	1000 x 1000 x 600 / 450
Part Loading	Manual load or Conveyor pass-through (See options)
Typical Applications	Busbar welding of cylindrical, pouch and prismatic cells (Single sided)
Typical Materials	Copper, Aluminum (1050,1100, 3003) Nickel, Stainless Steel, Ni-plated Steel and NI-plated copper
Weld Positioning (XY), mm, µm Range X-Y /Repeatability Weld to Cell Accuracy, µm	1000 x 1000 ± 10 x 10 50
Part Tooling	IPG Custom-designed part tooling (including busbar clamping) included in system price
System Control	Industrial PLC controller with front swing-arm mounted HMI and keyboard. Pendant control of motion system (3 axes) and system doors
Machine Enclosure	CDRH Class 1 workcell (External Laser size dependent on laser type)
Dimensions (L x W x H), mm	2600 x 2200 x 1800
Weight, kg	4,500
Software	Single operator HMI and process control software with embedded IPGScan deflection controller. External commands through Ethernet IP
Operating Environment, °C (°F)	Temperature: 20 - 35 (68 - 95) Relative Humidity < 50 - 65%, No dew or frost

System Options			
Laser Source (Options)	Adjustable Mode Beam 2/4 kW Single & Multi-mode with independent core & ring power control	Rack Mounted Lasers 1 - 2 kW Single-mode 4 - 6 kW Multi-mode	Laser Cabinets 1 - 2 kW Single-mode 4 - 6 kW Multi-mode
Real-Time Weld Measurement	Integrated real-time inline coherent imaging (ICI) weld monitoring system measuring weld penetration depth, transverse profile		
Part Loading	Manual part loading via system front doors or conveyor pass-through with automated entry and exit doors. All doors interlocked for laser Class 1 operation		
Vision	Integrated vision imaging and correction system providing typical weld-to-part accuracy of ± 50 µm		
Height Sensor	Integrated height sensing and correction system providing typical height setting accuracy of ± 50 µm		
Power Meter	Integrated power meter for automatic, programmable measurement of laser power		

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