

Which welding techniques can be used for connecting battery cells?

Brass (CuZn37) test samples are used for the quantitative comparison of the welding techniques, as this metal can be processed by all three welding techniques. At the end of the presented work, the suitability of resistance spot, ultrasonic and laser beam welding for connecting battery cells is evaluated.

Can a battery cell casing be welded?

The findings are applicable to all kinds of battery cell casings. Additionally, the three welding techniques are compared quantitatively in terms of ultimate tensile strength, heat input into a battery cell caused by the welding process, and electrical contact resistance.

Why do battery cells need to be welded?

Battery cells are most often put into modules or packs when produced for electrically driven vehicles. The variable of greatest influence when welding battery packs is the contact resistance between the cell and the connection tab. It is crucial to minimize this variable as much as possible to prevent energy loss in the form of heat generation.

Is UWB suitable for welding a cylindrical battery cell?

UWB is also suitable for creating electrical connections between cylindrical battery cells. Although proper fixation of the cell is paramount for the welding, as any significant lateral movement will reduce the vibration amplitude and consequently diminish the power of the welding process.

How does resistance welding affect a battery cell?

4.1.2 Effect on the battery cell Small-scale resistance welding is often the preferred method for joining Li-ion batteries into battery packs. This process ensures strong joints with an almost complete elimination of the heat impact on the joined workpieces during a short time.

Can a battery pack be welded?

In summary, welding the thicker, more conductive tabs used in today's more efficient, higher capacity battery packs can be challenging, but welding success can be achieved by designing the parts correctly and selecting equipment that is best suited to the application.

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Laser welding is an essential technology in the mass production of prismatic Li-ion batteries, known for its precision and efficiency in various critical applications. This technique is used extensively for hermetic sealing of battery housings, welding anode and cathode terminals to the cell housing, connecting terminals with bus bars, and securing safety vent caps. In...

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Laser joining offers quality and cost advantages over other methods and can be applied at every stage of battery production - from component and cell fabrication, through module and ...

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The specific features, advantages and dependencies of each welding technique for connecting cells are discussed. In addition, a quantitative analysis on welded test samples reveals the ultimate tensile strength and heat input into a battery cell.

CTT have undertaken such projects. A typical automatic industrial cell assembly line layout is shown on CTT drawing TYP ASSY which is available as a download on this page. The automatic assembly line uses Cast on Strap (COS) ...

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