

Technical regulations for cold plate welding of battery cabinet

What are cold plates for electronic cooling?

Cold plates for electronic cooling feature a casing with a cooling liquid channel and a cover. Ensuring watertightness, thermal efficiency and durability at a cost-effective price is vital. FSW welding addresses these requirements. Solid-state FSW process eradicates porosity, ensuring a leak-proof seal in both aluminum and copper.

How to ensure optimal fsw welding results for your cold plate?

To guarantee optimal FSW welding results for your cold plate, several critical factors must be evaluated. Each of these contributes to the overall quality, durability and performance of the assembled product: Dimensions of the cover: The thickness of the cover is a pivotal aspect, with a range from a minimum of 1 mm up to a maximum of 12 mm.

How to choose a cold plate?

Minimizing pressure loss is another key consideration. Achieving top-notch quality is also vital, especially when dealing with thermomechanical stress factors. Specifically, the surface flatness of a cold plate must be impeccable to ensure ideal thermal contact with electronic components.

What is a fsw-welded cold plate?

Enables use of high-conductivity materials like AA1050 and copper doubling thermal efficiency. Up to 10x less costly than traditional methods like copper tubing, brazing or conventional welding. Achieves mechanical strengths of up to 4300 psi (300 Bar) without the need for post-heat treatment. Technical Specifications of FSW-Welded Cold Plates

What is a cold plate sealing test?

A successful sealing test ensures that there are no leaks and that the welded joint has a strong, hermetic seal. Experimental characterization of the thermal resistance and pressure drop in the cold plate is undertaken. This process evaluates the cold plate efficiency in dissipating heat, which is crucial for applications in demanding environments.

How does a cold plate work?

the contact surface of the fluid with the solid. Heat transfer from the heat generating source to the cold plate and then to the liquid medium flowing in the cold plate and carried out of the system. The factors of the heat generating source have a major role in determining the cost and complexity of the cold plate design.

Battery thermal management systems are key technologies to address issues related to battery heat generation, ensuring the performance, safety, and lifespan of power batteries. The main functions ...

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Trumonytechs is an excellent partner from design to production. Our thermal management experts provide cold plate design. They also offer complete thermal management solutions. ...

Flat liquid cold plates are commonly used in electronics cooling, automotive battery cooling, and industrial equipment cooling applications, among others. 2. Contoured Liquid Cold Plates. Contoured liquid cold plates are designed with ...

The results indicated that hybrid channeling not only enhanced the interfacial strength of Cu-Al cold plates but also significantly improved the heat dissipation capacity, offering a new ...

Example of steel cold plate application on co-engineering project with Forsee Power - 0.7mm thin cold plate - Laser welded Welding: Alusi® (AS) coating for cold-stamping and bare steel via ...

REQUIREMENTSOur customer required aluminum components to be welded together with precision tolerances to assemble battery cold plates for an OEM manufacturer...

Battery Contact Considerations o Dimensional: ANSI and IEC industry standard dimensions should be used when designing a battery compartment to avoid battery fit problems. o ...

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Industrial machinery and power electronics often incorporate liquid cold plates to cool high-power semiconductors such as insulated gate bipolar transistors (IGBTs) and thyristors when ...

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