

Common Problems and Solutions in Liquid Cooling Plate Production



01. Leakage

Performance:

The air tightness test failed, and leakage occurred during operation.

Core etiology:

Welding/brazing defects, assembly interface issues, and structural design risks.

Solution:

Optimize welding processes, strictly control seal component selection, and refine structural design.



02. Deformation tolerance

Performance:

Post-welding warping of the product leads to poor fit during assembly, impairing heat dissipation.

Core etiology:

Heat stress generated during welding, improper clamping methods, and uneven cooling processes.

Solution :

FSW was employed to minimize deformation, optimize the brazing curve, and utilize rigid fixtures.



03. Flow channel abnormalities

Performance:

Flow channel blockage, surge in operating pressure drop, and rough inner wall surface.

Core etiology:

Processing accuracy defects, process residual impurities, and improper flow channel design.

Solution :

Optimize processing parameters, enhance pre/post-weld cleaning, and refine flow channel design.



04. Welding Defects

Performance:

The welds exhibited visual defects such as porosity, incomplete fusion, cracks, and spatter flow.

Core etiology:

The mismatch between filler material and base material, deviation of process parameters, and inadequate pretreatment were identified as contributing factors.

Solution :

Accurately match the filler material base, strictly control process parameters, and enhance pre-weld cleaning.



05. Performance does not meet the standards

Performance:

High thermal resistance, excessive voltage drop, and short product service life.

Core etiology:

Poor thermal interface contact, unreasonable flow channel layout, and material process effects.

Rx :

Ensure fitting accuracy, optimize thermal conductive materials, and improve the overall layout of flow channels.