

Energy storage plate

Why is battery energy storage system important?

Battery energy storage system (BESSs) is becoming increasingly important to buffer the intermittent energy supply and storage needs, especially in the weather where renewable sources cannot meet these demands .

What are the objectives of a liquid based cold plate?

Objective functions and constraints For a liquid-based cold plate, the primary goal is to maximize the heat transfer rate and minimize the flow resistance through optimizing the channel structure. In addition, thermal uniformity is another key factor, which cannot be neglected for battery thermal management.

Can lithium-ion batteries be used for energy storage?

Developing energy storage system based on lithium-ion batteries has become a promising route to mitigate the intermittency of renewable energies and improve their utilization efficiency. In this context, thermal management is needed to maintain battery temperature and thermal uniformity without consuming significant power.

How does a cold plate work?

Based on prior study , the cold plate is separated into many short flow paths and is positioned on the bottom surface of batteries. During operating process, the coolant flows down through channels and exchanges excess battery heat with the solid walls of cold plate. Fig. 1.

Does battery heat generation affect to design of cold plate?

In 2022, Vichapol et al. considered the effect of battery heat generation on TO design of cold plate. The channels formed at high heat load exhibited complex flow paths, but they had good suitability for low charge/discharge rates.

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