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Title: Liquid flow battery module design

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This report investigates the thermal performance of three liquid cooling designs for a six-cell battery pack using computational fluid dynamics (CFD). The first two designs, vertical ...

With simple modifications to the existing design, the improved design offers better heat augmentation capability along with reduced pressure drop. The initial analysis focused on ...

Abstract The liquid-cooled component is a key part of liquid-cooled thermal management system, which controls the temperature of batteries to ensure safety and high ...

Utilizing numerical simulation and thermodynamic principles, we analyzed the heat transfer efficacy of the bionic liquid cooling module for power batteries. Specifically, we ...

In view of this, the present article conducts a comparative assessment of the numerical simulation methodologies adopted for the analysis of LC-BTMS and systematically ...

Focusing on the challenge of achieving multi-objective equilibrium in cold plate design, as discussed in the previous literature, this paper aims to balance T_{max} , ΔT , m , and ...

Thus, in this study, we will apply the established integrated model to investigate the thermal behavior of a large battery module that employs a direct liquid cooling strategy, ...

In liquid-based BTMS, the controllable factors are flow rate and inlet temperature of working fluid. The primary goal of BTMS is to remain the suitable temperature range and ...

Addressing a key research gap in the lack of unified AI-based approaches that ensure both high predictive accuracy and informed design trade-offs, this study presents a ...

Battery thermal management systems are critical for high performance electric vehicles, where the ability to remove heat and homogenise temperature distributions in single ...

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