# Liquid-cooled battery module

Can a battery module be liquid cooled?
The present work was compared with recently published work on liquid cooling in Table 3 [32,33,34,35,36]. The 18650 cylindrical battery modules are mostly liquid-cooled for side cooling,and configured with parallel or series flow channels. Lv et al. applied the composite cooling structure of liquid cooling and PCM to a battery module.

What is a modular liquid cooling system for cylindrical lithium-ion battery module?
In this paper,a novel modular liquid cooling system ( Fig. 1) was designed to provide an efficient and feasible thermal management solutionsfor cylindrical lithium-ion battery module. The cooling system is composed of inlets/outlets,cooling modules,connecting splices,connecting bolts,etc.

What is a battery module liquid cooling experimental system?
A battery module liquid cooling experimental system was built, including a circulating thermostatic water tank, a flow meter, a charge/discharge tester, a differential pressure meter, and a temperature data acquisition system.

Can a liquid cooled battery module handle thermal propagation?
Conclusions In this paper,the thermal management and suppression of thermal propagation in a lithium-ion battery module with a liquid-cooled shell were investigated through experiments. It has been demonstrated that the presented liquid-cooled shell can meet the demands of battery module thermal management at high charging and discharging rates.

Does a liquid cooled battery module have collaborative heat dissipation?
In this paper,numerical investigation and multi-objective optimization of a liquid cooled battery module with collaborative heat dissipationin both axial and radial directions are presented. In the battery module,11×10 cylindrical batteries are arranged in square array on the cold plate,allowing axially downward heat dissipation.

Is liquid cooled shell suitable for battery module thermal management?
It has been demonstrated that the present liquid-cooled shell is capable of meeting the demands of battery module thermal managementand maintaining battery module charging and discharging within acceptable temperatures.

The battery thermal management system (BTMS) are categorized into active and passive methods based on the requirement for external energy input [12, 13].Researchers have explored various active cooling technologies, including air cooling, liquid plate cooling, and thermoelectric cooling [[14], [15], [16]], alongside passive methods such as phase change material (PCM) ...

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An illustration of the new liquid-cooled shell battery module: (a) overall structure of battery module system with both positive and negative connections (yellow color); (b) top view of the ...

This study presents a bionic structure-based liquid cooling plate designed to address the heat generation characteristics of prismatic lithium-ion batteries. The size of ...

In order to verify its potential application in battery thermal management, the HCSG was assembled on the surface of the liquid-cooling plate in the 18 650-battery module, and it was ...

An ideal functioning thermal management system of liquid-cooled battery module with lithium-ion prismatic metal can battery cells should maintain the battery temperature within optimal operating temperature range using most efficient cooling strategy to maximize functionality and durability of the battery pack. Under US06 driving cycles that ...

Optimization design of liquid-cooled battery thermal management system based on wavy tube Chenyu Wang1 · Fei Liu1,2 · Jiale Guo1 Received: 13 May 2024 / Revised: 12 July 2024 / Accepted: 16 July 2024 / Published online: 6 August 2024 ... Al-Zareer et al. (2020) immersed the battery module into the cooling pool lled with coolant by simula ...

Fig. 3 (a) Battery pack render for liquid cooling solution (on the right) and the cross-section view of the cooling channels, 109 (b) temperature evolution during a ...

In this study, a honeycomb liquid-cooled lithium battery module is proposed. Select 18650-type lithium battery as the research object because 18650-type lithium batteries are the

In this study, thermal cooling analysis of a liquid-cooled battery module was conducted by considering changes in the thermal conductivity of the TIM depending on its ...

A three-dimensional battery module thermal model and an analytical optimization approach are developed for selected design concept of the liquid cooled battery ...

18.2.1 New Battery Module Liquid-Cooled Shell Model. In this paper, a new type of liquid-cooled shell structure is proposed, as shown in Fig. 18.1. The liquid-cooled shell is equipped with 4 × 5 through-holes to accommodate 18,650 Li-ion batteries, with multiple horizontal and vertical flow channels built in between the batteries. ...

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