New Energy Battery Convex Plate

Why is convex cooling plate better than other cooling plates?
It indicates that the cooling plate with convex structure has a better cooling performancethan the other three,and the heat transfer performance of various cooling plates changes a lot with the increasing of mass flow rate. The convex structured cooling plate could be applied for optimizing the performance for electric vehicles.

How to choose a cooling plate for a rectangular battery?
In order to find a more efficient type of cooling plate for the rectangular batteries, the three-dimensional models of four common cooling plates with different internal structures are established. After a series of computational fluid dynamic simulations and comparisons, the most optimum structure of the cooling plate is obtained.

What does a convex structured cooling plate mean?
It indicates cooling plates changes a lot with the increasing of mass flow rate. The convex structured cooling plate could be applied for optimizing the performance for electric vehicles. DOI: 10.1061/(ASCE)EY.1943-7897.0000648.This work is made available under the terms of

What is a liquid cooling plate?
Liquid cooling plate is an important direction in the research of indirect contact BTMS. The design dimensions of the liquid cooling plates are often related to the structure material and layout of the battery,while the internal flow channel of the liquid-cooled plate has a variety of forms.

What is the structure of a liquid cooling plate?
The structure of the liquid cooling plate is mainly designed according to the size of the battery pack of an EV. The size of the cooling plate is designed to be 6 2 0 × 3 4 0 × 4. 5 m m (excluding the height of the pipe at the inlet and outlet).

Why is the cooling plate a dangerous part of a battery?
This is because as the fluid flows inside the channel,it absorbs the heat from outside constantly,so the temperature will increase along with the flow direction. Additionally,the edge of the cooling plate has the no fluid through it. The area,as a result,would be the most dangerous part of the battery. Fig. 9.

Semantic Scholar extracted view of "Thermal management of lithium-ion battery modules optimized based on the design of cold plate with convex pack structure" by Yang Li et al.

In this paper, four multichannel cooling plates with honeycomb structure, U-shaped structure, airfoil structure, and convex structure are designed according to the certain heating condition of a rectangular battery pack. After a ...

DOI: 10.1016/j.est.2024.113061 Corpus ID: 271476147; Performance analysis of a novel concave-convex surface liquid cooling plate for a prismatic Li-ion battery pack under high discharge rate

The innovation lies in the novel concave-convex surface liquid cooling plate, which minimizes pressure drop increase while enhancing heat transfer, significantly improving overall performance, offering a new direction and optimization approach for liquid heat transfer enhancement using splitters.

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A kind of new-energy automobile power battery coldplate provided by the invention, including lower sheet space;Upper sheet space, upper sheet space are covered on lower sheet space, ...

Thermal performance analysis of battery thermal management system utilizing bionic liquid cooling plates with differentiated velocity distribution strategy. Jiekai Xie Guoqing ...

The 3D finite element model (3D-FEM) of the composite conical convex-concave plate (CCCP) (a) is divided into a (b) 3D unit cell and (c) 2D equivalent plate model (2D-EPM).

To address the issue of temperature increase in battery modules using liquid cooling plates, a convex pack structure within the flow channel is proposed to enhance flow efficiency. High temperatures can lead to battery performance deterioration, increased safety risks, and reduced service life.

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In this context, new energy vehicles, with electric vehicles (EVs) at the forefront, have emerged as a significant research focus. ... This paper presents a new design of a prismatic battery cooling plate with variable heat transfer path, called VHTP cooling plate. The grooves on the VHTP layer are utilized to change the heat transfer path between the coolant and the local ...

To address the issue of temperature increase in battery modules using liquid cooling plates, a convex pack structure within the flow channel is proposed to enhance flow efficiency. High temperatures can lead to battery performance deterioration, increased safety risks, and reduced service life. The optimal parameters for the convex structure (radius, transverse spacing, and ...

Although the convex plate heat exchanger has potential advantages, such as superior heat transfer performance, low flow, and high-pressure resistance, it has received relatively less attention [97].

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The utility model discloses a combined new energy battery cooling plate structure, which comprises a bottom plate and a top plate; the top plate is made of heat conducting metal, the...

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In this paper, four multichannel cooling plates with honeycomb structure, U-shaped structure, airfoil structure, and convex structure are designed according to the certain heating condition of a rectangular battery pack. After a series of computational fluid dynamics (CFD) simulations, the optimal cooling plate structure is selected to meet the ...

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