

PDEOZE PowerContainer

Lightweight design of new energy battery cabinet



Overview

What is improved battery pack for electric vehicles?

Lightweight design of battery box cover for new energy electric vehicles based on Optistruct topology optimization. This design aims to reduce weight and increase stiffness, as presented in the paper by Fengwu Shan, Dunhou Tan, and Jing Lin (2008) published in Times automotive.

Can composite materials be used in electric vehicle battery box design?

This paper focuses on the use of composite materials instead of traditional metal materials in the lightweight design and static strength analysis of an electric vehicle battery box. The finite element model of the battery box was established using ABAQUS.

How to design a battery enclosure?

The design of battery enclosures should be based on the overall spatial structure and layout of the energy storage system. For instance, whether it is necessary to integrate the water-cooling plate with the bottom protective plate to reduce costs. What position and dimensions should be chosen for the beams to enhance heat transfer efficiency?

Why is design upgrade and structure optimization of battery case important?

Cost control is a non-avoidable topic presented in front of ESS business participants. That's why design upgrade and structure optimization of battery case is necessary in very high level of priority. Cooling plates + assembly frame + PCM.

How to design ESS battery enclosure?

Normally, one ESS Battery case consists of top cover, lower case, cooling plate, frame panel, beams and bottom plate. The design of battery enclosures

should be based on the overall spatial structure and layout of the energy storage system.

Does a composite battery box meet the strength requirements?

The results show that under the two combined conditions, the maximum stress of the battery box is less than the specified stress of the composite material, and the failure factor is much less than 1, meeting the strength requirements of the battery box. M. Hartmann (2013).

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Finite Element Model Analysis
Finite Element Model Analysis of Battery Pack Box Optimum Design of Battery Pack Box Filled with Foam Aluminum Material
The foamed aluminum material with high porosity shows a good low-stress value level and a long platform period when it is impacted by an external force. It can effectively absorb more collision energy when used in automobile structures. In the event of a collision and external impact on the vehicle, it can achieve the purpose of reducing the collision. See more on link.springer
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This study conducts research on the lightweight design of new energy vehicle power battery packs based on the finite element analysis method. Firstly, a numerical model of the battery ...

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