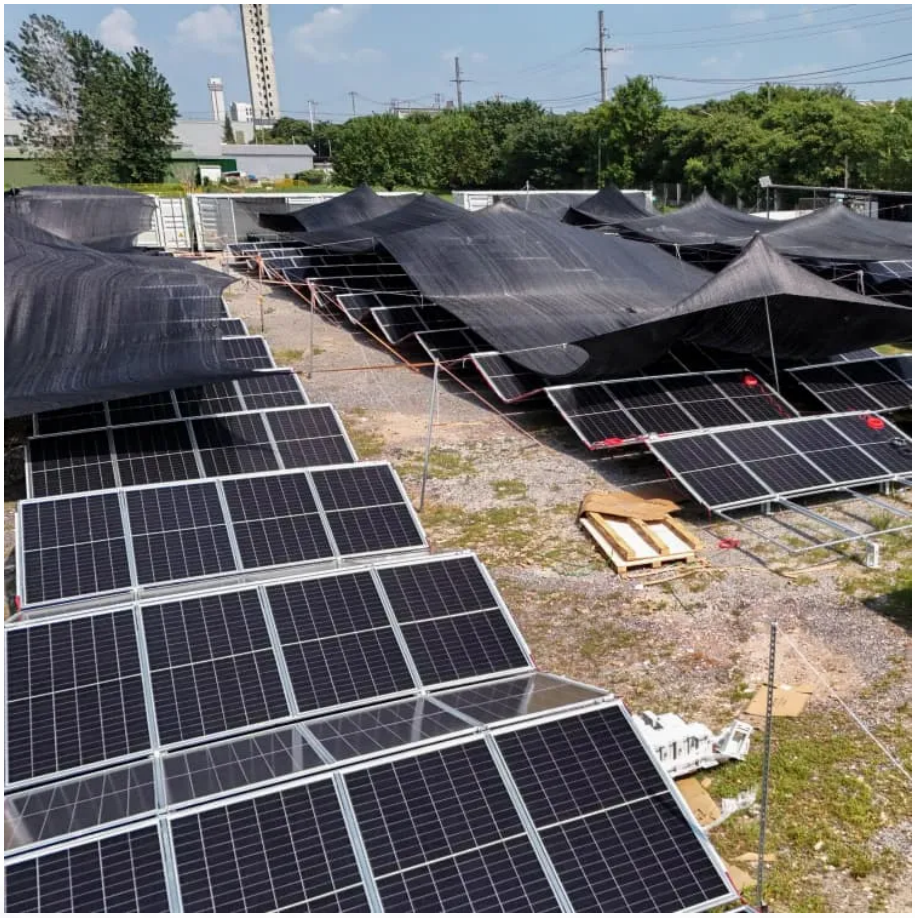
LLSE CONTAINERS

# 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.

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).

How is a battery box based on a finite element model?

To analyze a battery box using finite elements, first establish its finite element model using ABAQUS. This involves geometric cleaning, defining the composite material of the box structure and the foam material of the battery module, and dividing the grid according to the finite element analysis process.

# Lightweight design of new energy battery cabinet

[Optimization Analysis of Power Battery Pack Box Structure for New ](#)

Finite Element Model AnalysisFinite Element Model Analysis of Battery Pack BoxOptimum Design of Battery Pack Box Filled with Foam Aluminum MaterialThe 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 collis See more on link.springer E3S Web of Conferences[PDF]

## Strength analysis of the lightweight-designed power ...

This study enriches the current theoretical research of the power battery box, and offers more opportunities and effective ways to guide the further lightweight design of the new energy ...

[Research on Electric Vehicle Battery Box Lightweight ...](#)

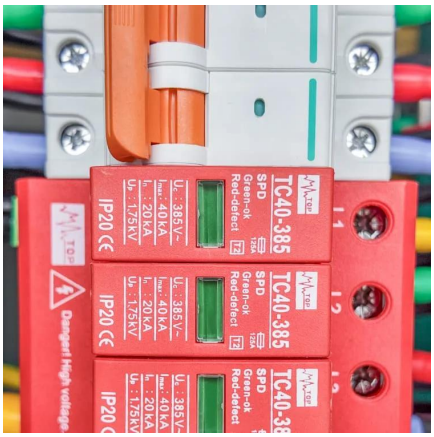
May 25, 2017 · At present, the single battery energy density is relatively small, in order to achieve sufficient mileage and power performance, the quantities of battery are large, cause the ...

[Optimization Analysis of Power Battery Pack Box Structure for New ](#)

Mar 10, 2023 · This paper takes a BEV as the target model and optimizes the lightweight design of the battery pack box and surrounding structural parts to achieve the goal of improving ...

## Research on Lightweight Structure of New Energy Vehicle

Sep 7, 2023 · In the past few decades, research on battery pack boxes has mainly focused on functionality, and now there has been research on other aspects of performance, such as ...




## EV Battery Pack Design: Structure, Safety & Optimization

Oct 4, 2024 · The integrated structure design and battery pack power, from the monomer to the system, are the main influencing factors. Therefore, by choosing suitable high-energy ratio ...

## Detailed Explanation of New Lithium Battery Energy Storage Cabinet

Jan 16, 2024 · The structural design of the new lithium battery energy storage cabinet involves many aspects such as Shell, battery module, BMS, thermal management system, safety ...

## Lightweight design and static strength analysis of battery ...

Sep 20, 2019 · Fengwu Shan, Dunhou Tan, Jing Lin (2008). Lightweight design of battery box cover for new energy electric vehicles based on Optistruct topology optimization. Times ...

## Research on lightweight design of power battery cabin in ...

Dec 1, 2020 · The static analysis and constrained modal analysis are carried out for the battery cabin under two extreme conditions of bumpy sharp turn and bumpy emergency braking, and ...



## Lightweight design of new energy vehicle power battery ...

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 ...

## Strength analysis of the lightweight-designed power ...

This study enriches the current theoretical research of the power battery box, and offers more opportunities and effective ways to guide the further lightweight design of the new energy ...

[Research on Lightweight Structure of New Energy Vehicle Power Battery ]

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