

Lightweight mobile power box modification





Overview

Can a hybrid method be used to improve electric vehicle power packs?

To study an efficient lightweight method of electric vehicle power packs, the paper proposes that a hybrid method is combined with the modified Genetic Algorithm (NSGA-II), the contribution analysis method and the TOPSIS method for improving the battery pack enclosure (BPE) crashworthiness and reducing the structural mass.

What is a battery pack box structure?

The power battery is the only source of power for battery electric vehicles, and the safety of the battery pack box structure provides an important guarantee for the safe driving of battery electric vehicles. The battery pack box structure shall be of good shock resistance, impact resistance, and durability.

How a battery box structure can reduce the weight of a car?

After the optimization design of the battery box structure, the weight of the box is reduced by 0.62kg, and the maximum deformation of the whole vehicle in the collision is reduced from 239.1mm to 235.3mm, which means that structural design can realize the goal of weight reduction and safety improvement. 4. CONCLUSIONS.

How can a battery pack box reduce the displacement?

Jia Feng et al. optimized components such as the carrying beam of the battery pack and box cover, which reduced the battery pack box mass by 41.7 kg, solved the problem of stress concentration on the bearing beam, and resulted in a maximum displacement reduction of 3.6 mm under quasi-static operating conditions .



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The pursuit of lightweight power battery box is urgently needed before the substantial scientific advances in batteries, motors, electronic controls, etc.[2] According to previous studies, it is ...

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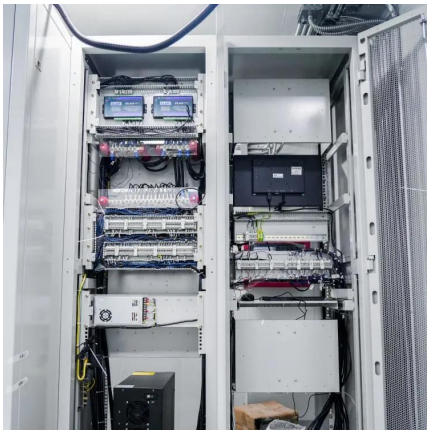
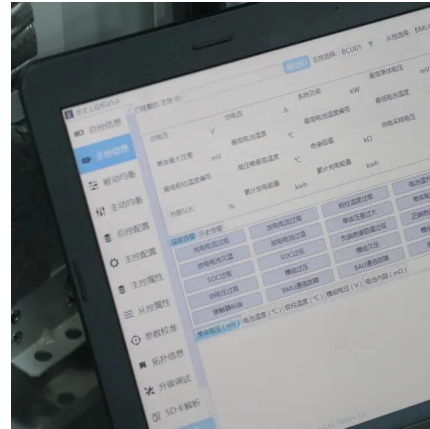
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Finite Element Model Analysis
Finite Element Model Analysis of Battery Pack Box
Optimum Design of Battery Pack Box Filled with Foam Aluminum Material
The foamed aluminum material with high porosity shows a good low-stress value level and a long platform 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 IOPscience\[PDF\]](#)

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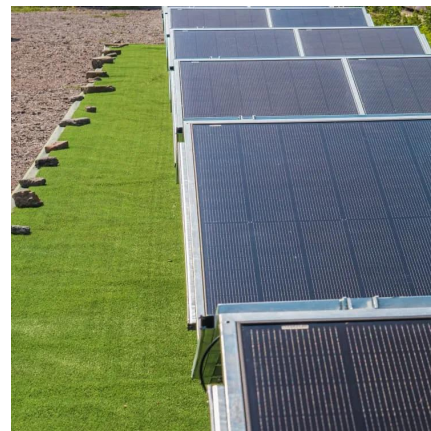
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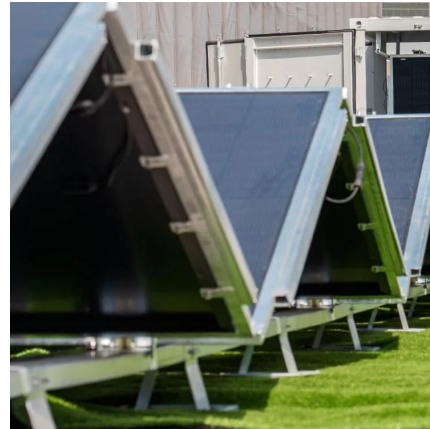
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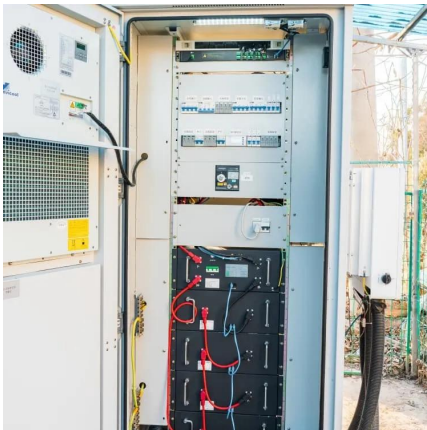
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