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Battery pack electrical and structural design



Overview

Nowadays, battery design must be considered a multi-disciplinary activity focused on product sustainability in terms of environmental impacts and cost. The paper reviews the design tools and method.

What is a power battery pack design scheme?

Through weight reduction and structural optimization, an innovative power battery pack design scheme is proposed, aiming to achieve a more efficient and lighter electric vehicle power system.

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.

What are the components of an electric vehicle power pack?

The main components of an electric vehicle power pack referenced in this paper include the battery cell, battery module, battery management system (BMS), cooling equipment, electrical system, and various structural components: the upper cover, lower box, bracket, etc. [10, 11, 12].

How can battery packaging design improve battery safety?

A robust and strategic battery packaging design should also address these issues, including thermal runaway, vibration isolation, and crash safety at the cell and pack level. Therefore, battery safety needs to be evaluated using a multi-disciplinary approach.

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The target concerns electric and hybrid vehicles and energy storage systems in general. The paper makes an original classification of past works defining seven levels of ...

Abstract This project offers a detailed overview of the process involved in designing a mechanical structure for an electric vehicle's 18 kWh battery pack.

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Firstly, structural improvement design and light alloy material replacement for high-strength steel battery pack of a pure electric vehicle were carried out, which improved the safety ...

Discover how EV battery pack design shapes electric vehicle performance with a focus on structure, safety, thermal management, and ...

The structural design of the battery pack ? integrates mechanical, thermal, and electrical considerations to create a complete system that is safe, durable, and high-performing.

What are the key components needed to build a lithium-ion battery pack? The key components include lithium-ion cells (cylindrical, ...

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Discover how EV battery pack design shapes electric vehicle performance with a focus on structure, safety, thermal management, and cutting-edge integration methods.

What are the key components needed to build a lithium-ion battery pack? The key components include lithium-ion cells (cylindrical, prismatic, or pouch), a battery management ...

This suggests that the battery pack may experience resonance during actual operation. Based on the static and modal analysis results, we proposed a structural ...

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