

Can 3D printing be used to design a battery bracket?

As a consequence, it is particularly imperative to undertake lightweight design optimization for the battery bracket of new energy vehicles by applying 3D printing technology. To actualize this goal, Rhino software was initially employed for 3D modeling to design the battery bracket system for a pure electric vehicle in China.

What is a battery bracket for EVs?

Finite element analysis (FEA) of a battery bracket tailored for EVs. This bracket plays a pivotal role in securing the battery pack, ensuring structural integrity, and dampening vibrations and impacts during vehicle operation. The design process incorporates meticulous material selection, weight optimization, and manufacturability.

What is a battery bracket?

It stands as the most significant large component of new energy vehicles, occupying a pivotal position within the battery pack system¹. Currently, enterprises utilize aluminum alloy battery brackets, which are severely limited by their heavy weight and high cost. Furthermore, these battery brackets endure heavy loads.

What are light-weighting strategies for battery pack brackets?

For the time being, light-weighting strategies for battery pack brackets predominantly involve the application of lightweight materials and the implementation of lightweight structural designs. Lightweight material applications for battery pack brackets include the utilization of aluminum alloy, high-strength steel, and composite materials.

How RHINO software is used to design a battery bracket system?

To actualize this goal, Rhino software was initially employed for 3D modeling to design the battery bracket system for a pure electric vehicle in China. Subsequently, topology optimization design of the battery bracket was carried out by adopting Altair Inspire software.

How are 3D printed battery brackets treated?

The 3D printed brackets, housings, and lightweight battery brackets underwent surface treatment consisting of several steps. First and foremost, support removal was carried out, followed by rough polishing using sandpaper. Finally, the components were polished with a polishing cloth.

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... but also has small welding deformation and a ...

Battery trays, also known as battery boxes or PACK boxes, are increasingly valued as a very important component in the development of new energy vehicles. The design of Battery trays ...

battery enclosure after MIG (melt inert-gas) welding, a welding clamping scheme with hook-pull devices was designed. By adjusting the clamping force of the hook-pull device, the MIG welding

The fabrication of welded joints is a complicated and coupled process [15, 16], and it is important to consider the influence caused by the processing in order to accurately ...

?: The welding process of aluminum(Al)alloy car body has problems such as poor weld quality,low welding co-efficient,and large welding deformation.This paper mainly focuses on ...

The utility model discloses a deformation-preventing new energy automobile battery bracket, which comprises a left battery box frame and a right battery box frame, wherein a bracket ...

Taking the structural performance for the battery bracket of new energy commercial vehicles as an example, this paper builds a unit-level digital twin model--DTMAR. ...

Aiming at the inward shrinkage between the frame and the bottom plate of the power battery enclosure after MIG (melt inert-gas) welding, a welding clamping scheme with ...

The battery is integrated into the chassis of the new energy-pure electric car, which has a higher percentage of unsprung mass, a lower center of gravity, and improved stability. For vehicle ...

The development of new energy vehicles, particularly electric vehicles, is robust, with the power battery pack being a core component of the battery system, playing a vital role ...

2.4 Sealing design of the mounting surface between the air pressure balancing component and the battery box. During the long-term use of the electric vehicle battery pack, ...

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