

What is a battery casing?

Battery casings are essential components in all types of lithium and lithium-ion batteries (LIBs) and typically consist of nickel-coated steel hard casings for 18650 and 21700 cell formats. These steel casings comprise over one quarter of total battery cell mass and do not actively contribute to battery capacity.

Can lightweight Al hard casings improve lithium-ion battery performance?

Lightweight Al hard casings have presented a possible solution to help address weight sensitive applications of lithium-ion batteries that require high power (or high energy). The approaches herein are battery materials agnostic and can be applied to different cell geometries to help fast-track battery performance improvements.

1. Introduction

Can steel casings improve battery performance?

These steel casings comprise over one quarter of total battery cell mass and do not actively contribute to battery capacity. It is therefore possible to achieve considerable battery performance improvements, in terms of device energy density, by reducing the mass of the battery casing.

What material is used for a battery enclosure?

The majority of long-range BEVs in production use aluminum as the main material for the battery enclosure. (Constellium) Mass reduction is the main driver behind aluminum battery enclosures, but thermal requirements prove challenging for the lightweight material.

Are aluminum battery enclosures a good choice?

Aluminum battery enclosures typically deliver a weight savings of 40% compared to an equivalent steel design. According to Asfeth, the alloys best suited for battery enclosures are the 6000-series Al-Si-Mg-Cu family -- alloys that are also highly compatible with end-of-life recycling, he said.

Are battery casings safe?

Stress & abuse testing of the cells revealed no compromise of cell safety. Battery casings are essential components in all types of lithium and lithium-ion batteries (LIBs) and typically consist of nickel-coated steel hard casings for 18650 and 21700 cell formats.

Global Technical Regulation No. 20 on EV safety (GTR 20), which aims to protect occupants during thermal runaway for at least five minutes, has been adopted in China ...

Material Selection: Choose high-quality aluminum alloy materials such as 3003 or 5052, which have good formability, corrosion resistance, and mechanical properties.. **Material Preparation:** Cut the aluminum alloy material into plate ...

Aluminum Battery Enclosure Design. Agenda 2. Aluminum usage in Battery Electric Vehicles and Battery Enclosures ... which case is normally aluminum casting o Electrical units such as inverter/converter/BMS are also ... Standard High Strength Ultra High Strength YS [MPa] 3003-O 0 200 400 600 800 1000 1200 1400 1600 1800 2000 Steel equivalent

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For the fuse standard system, it is mainly divided into IEC standard, UL standard and ISO standard. Among them, Chinese GB, German DIN and British BS basically adopt IEC standard. IEC standards mainly include IEC 60127, IEC 60269, etc. UL mainly includes UL248, etc. ISO mainly includes ISO 8820 series.

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