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Battery pack mechanical structure thermal design

Overview

What is battery pack design?

Battery pack design involves considering electrical, mechanical, thermal aspects and the Battery Management System (BMS). - Mechanical design considerations include the weight of the battery, the forces acting on it, and the material selection for the base plate.

Can simple mechanical features be integrated into battery packaging design?

More than 75 sources including scientific and technical literature and particularly 43 US Patents are studied. The study illustrates through examples that simple mechanical features can be integrated into battery packaging design to minimise the probability of failure and mitigate the aforementioned safety risks.

Can a prismatic Lithium-ion battery pack be mechanically designed?

Development of a mechanical design of a prismatic lithium-ion battery pack for an electric vehicle. Journal of Power Sources, 274, 455-461. Zhang, Z., Zhang, F., & Bai, J. (2020). Multi-objective mechanical design optimization for prismatic lithium-ion battery pack structure. Applied Energy, 276, 115416.

Why do HEV batteries need a thermal management system?

Because HEV batteries have high specific power and undergo aggressive HEV charging/discharging profiles, thermal issues in an HEV pack are of more concern than in EV packs. For this reason, HEV battery packs require more effective thermal management systems.

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Battery Pack Thermal Design, NREL (National Renewable ...
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Fundamentals of Battery Pack Design , Ansys Innovation ...
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Mechanical Design of Battery Packs Mastery , Ansys Courses
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