Blade battery direct cooling and heating technology

What is a blade battery?

Unlike traditional cylindrical or prismatic batteries,the blade battery features a blade-like form factor,allowing for increased thermal management and reduced risk of thermal runaway . This design improvement significantly enhances the safety of the battery,addressing a crucial concern in EV applications.

How does a blade battery work?

Thermal management: The Blade Battery incorporates an integrated thermal management system to dissipate heat effectively. By placing the battery cells in direct contact with a thermally conductive material,the Blade Battery can maintain a stable operating temperature,preventing overheating and reducing the risk of thermal issues .

Is blade battery technology a game-changer in the EV industry?

In response to these challenges,blade battery technology has emerged as a potential game-changerin the EV industry . The recent expansion of the electric vehicle (EV) industry has prompted research and development into newer methods of improving battery technology. One advancement,the 'blade battery' from BYD,is a promising new solution for

What is a blade battery EV?

Diverse applications of Blade Battery Electric Vehicles (EVs): Blade Battery technology can be employed in electric vehicles, offering enhanced safety, increased energy density, and longer lifespan compared to traditional lithium-ion batteries. It enables the production of safer and more efficient electric cars with longer driving ranges .

What is a blade battery made of?

The casing is typically made of metal or plastic materials,such as steel,aluminum,or various engineering plastics. Thermal management materials: To enhance thermal management and dissipate heat generated during battery operation,the Blade Battery incorporates thermal management materials.

What is a blade battery management system (BMS)?

Battery management system (BMS): The Blade Battery incorporates a battery management system that monitors and controls various aspects of the battery's performance, including temperature, voltage, and state of charge. The BMS helps optimize the battery's operation, enhances safety, and prolongs its lifespan .

The blade battery offers a longer lifespan, enhanced safety, and improved space utilization and battery pack integration. However, its heat generation distribut

Unsatisfied with conventional EV battery technology and design, BYD pushed limits and embraced

innovation to improve space efficiency. With the knowledge that only 40 percent of a typical auto battery pack"s space is dedicated to the energy-storing battery cells themselves (the rest going to structural elements), BYD strived to do something better.

The blade battery offers a longer lifespan, enhanced safety, and improved space utilization and battery pack integration. However, its heat generation distribution differs from cylindrical or square cells. To address this, we designed a shunt-controlled direct cooling plate tailored to the heat generation characteristics of blade batteries. Using numerical simulation, we evaluated the ...

BYD"s blade battery technology represents a systematic approach to these fundamental constraints. The core challenge lies in optimizing particle density, uniformity, and ...

Advances in direct liquid cooling technology and waste heat recovery for data center: A state-of-the-art review. Author links open overlay panel Ningbo Wang ... (Lucchese et al., 2021). Immersion cooling is to submerge the heating element directly in the coolant, relying on the liquid flow to dissipate the heat generated by the server and other ...

Communication self-heating technology can enable batteries to achieve rapid heating with zero capacity loss in an independent environment, and effectively reduce battery ...

BYD blade battery pack has poor cooling, as cooling system is on the top of the cell. It has led to very high temperature and understand it has low life. Is it true? Log in to ...

National New Energy Vehicle Technology Innovation Center, Beijing, China. Search for more papers by this author ... a comprehensive review of direct cooling system is presented, and essential components on the overall ...

This review paper provides a comprehensive overview of blade battery technology, covering its design, structure, working principles, advantages, challenges, and ...

The BYD Blade battery technology was under development for several years, at least since 2017. Bloomberg reported on October 17, 2024, that Apple engineers ...

Liquid cooling TMS is the most common solution used in almost all EVs. Liquid has higher specific heat capacity and thermal conductivity than air, which gives TMS more ...

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