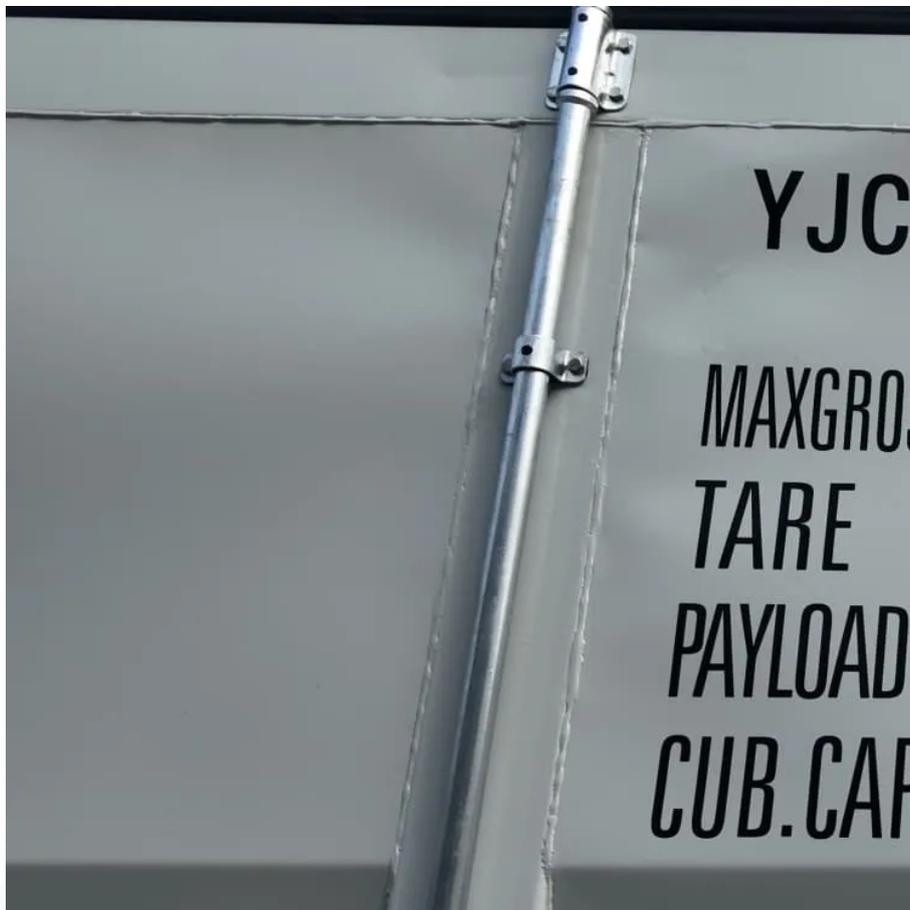


Embedded BMS battery management system





Overview

What is a battery management system (BMS)?

Received 5th September 2024 , Accepted 8th January 2025 The widespread adoption of electric vehicles (EVs) and large-scale energy storage has necessitated advancements in battery management systems (BMSs) so that the complex dynamics of batteries under various operational conditions are optimised for their efficiency, safety, and reliability.

What is a BMS used for?

BMSs are used in various applications, including Electric Vehicles (EVs), smartphones, renewable energy storage systems, and other devices powered by rechargeable batteries. The building unit of the battery system is called the battery cell. The battery cells are connected in series and in parallel to compose the battery module.

What is a cloud-based battery management system (BMS)?

As summarised in Table 1, a cloud-based BMS offers several improvements and advantages and opens multiple new horizons to monitor and control battery packs compared to a conventional BMS in different dimensions. Based on the discussions presented in the sections so far, the next section will introduce the perspective IBMS.

What is a BMS master controller?

Data is sent to a BMS Master Controller, which aggregates and analyzes the information. Battery Management Unit (BMU): The Battery Management Unit (BMU) is a key component in a Battery Management System (BMS) responsible for monitoring and measuring critical parameters of the entire battery pack or its individual cells.



Embedded BMS battery management system



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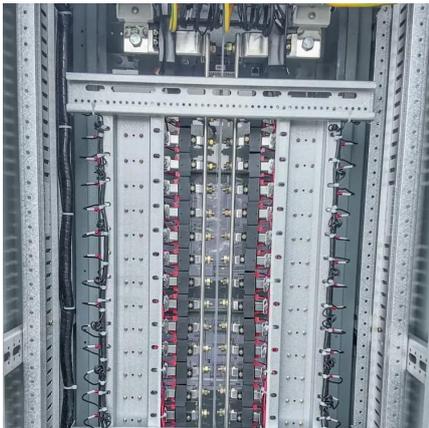
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This paper addresses the challenges and drawbacks of conventional BMS architectures and proposes an intelligent battery management system (IBMS).

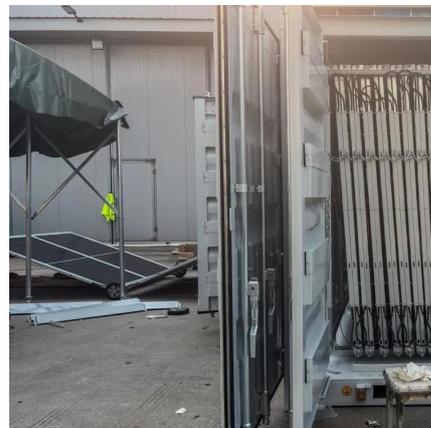


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