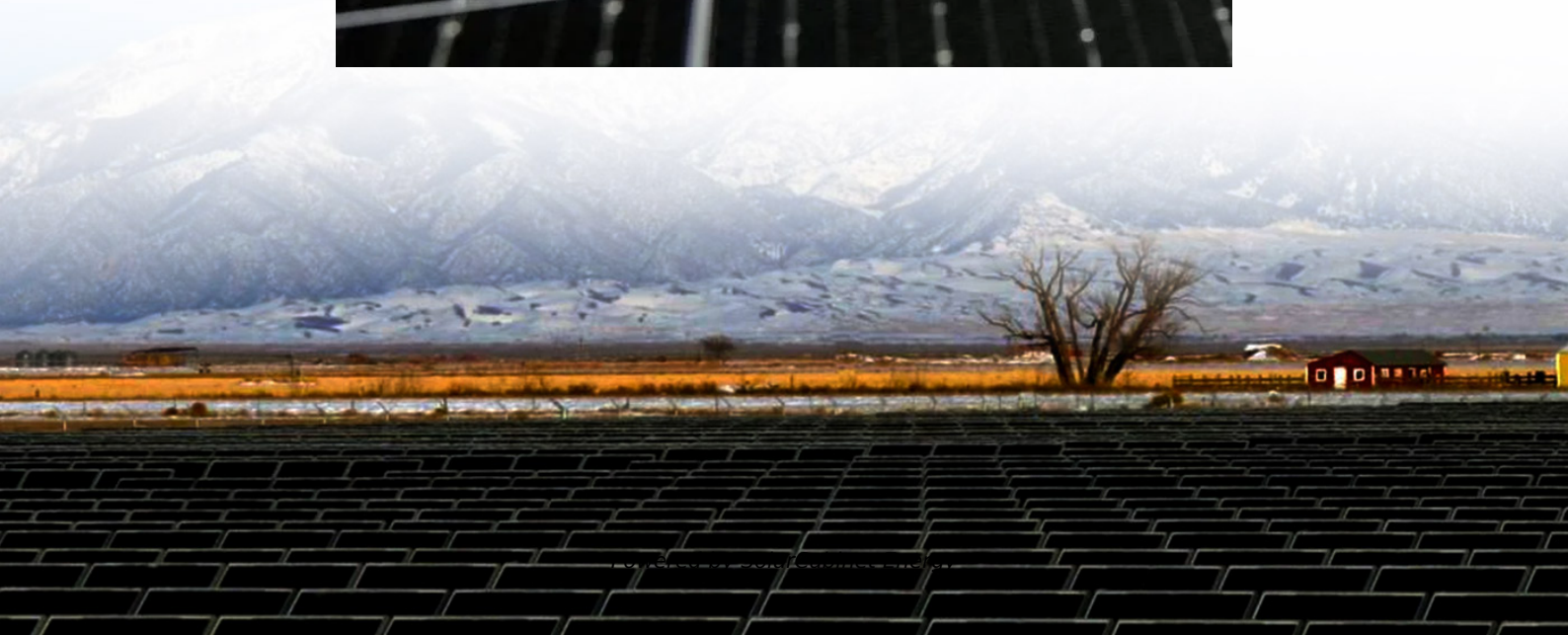
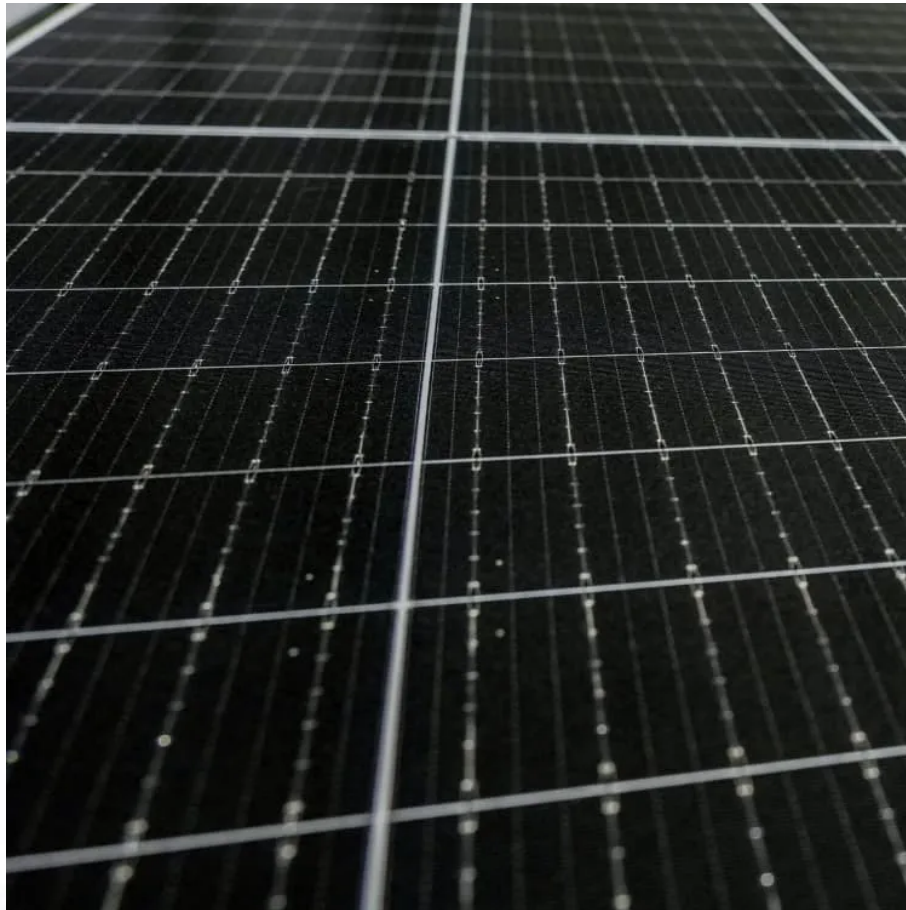


# **BMS can support battery modules**





## Overview

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Battery modules are assembly units made of multiple battery cells arranged for easy service. They connect to a Battery Management System (BMS) using a CAN bus for monitoring. How does BMS technology work with battery management systems?

In this piece, we'll learn about how BMS technology works with vehicle systems like thermal management and charging infrastructure. On top of that, we'll get into how predictive analytics and machine learning reshape the scene of battery management systems. These advances allow more proactive monitoring of battery health and performance.

What are the components of a battery management system (BMS)?

A typical BMS consists of: Battery Management Controller (BMC): The brain of the BMS, processing real-time data. Voltage and Current Sensors: Measures cell voltage and current. Temperature Sensors: Monitor heat variations. Balancing Circuit: Ensures uniform charge distribution. Power Supply Unit: Provides energy to the BMS components.

What are the different BMS architectures for a battery system?

Different battery systems call for different BMS architectures: Centralized: Single controller handles all cell data Distributed: Module-level sensors report to a central unit Modular: Smart modules manage subsets of the battery independently Sensors: Voltage, current, temperature Microcontroller (MCU): BMS "brain" for logic and data processing.

How do modular BMS systems work?

Modular BMS systems divide into several similar modules. Each module watches over its assigned battery cells through dedicated wiring. A main controller often coordinates these modules' activities. The system becomes easier to troubleshoot and maintain. Battery packs can grow larger without much difficulty.



How does a BMS protect a battery pack?

Monitoring battery pack current and cell or module voltages is the road to electrical protection. The electrical SOA of any battery cell is bound by current and voltage. Figure 1 illustrates a typical lithium-ion cell SOA, and a well-designed BMS will protect the pack by preventing operation outside the manufacturer's cell ratings.

What is a modular battery management system?

Modular battery management systems represent a hybrid approach that combines elements of both centralized and distributed architectures. These systems group cells into modules, each with its own local controller, while maintaining a master controller that coordinates overall pack operation.



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### [How a Battery Management System \(BMS\) works and how to ...](#)

In essence, a battery management system monitors, among other things, the state of charge (SoC), meaning how much battery life the cells can still provide before being depleted, and the ...

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