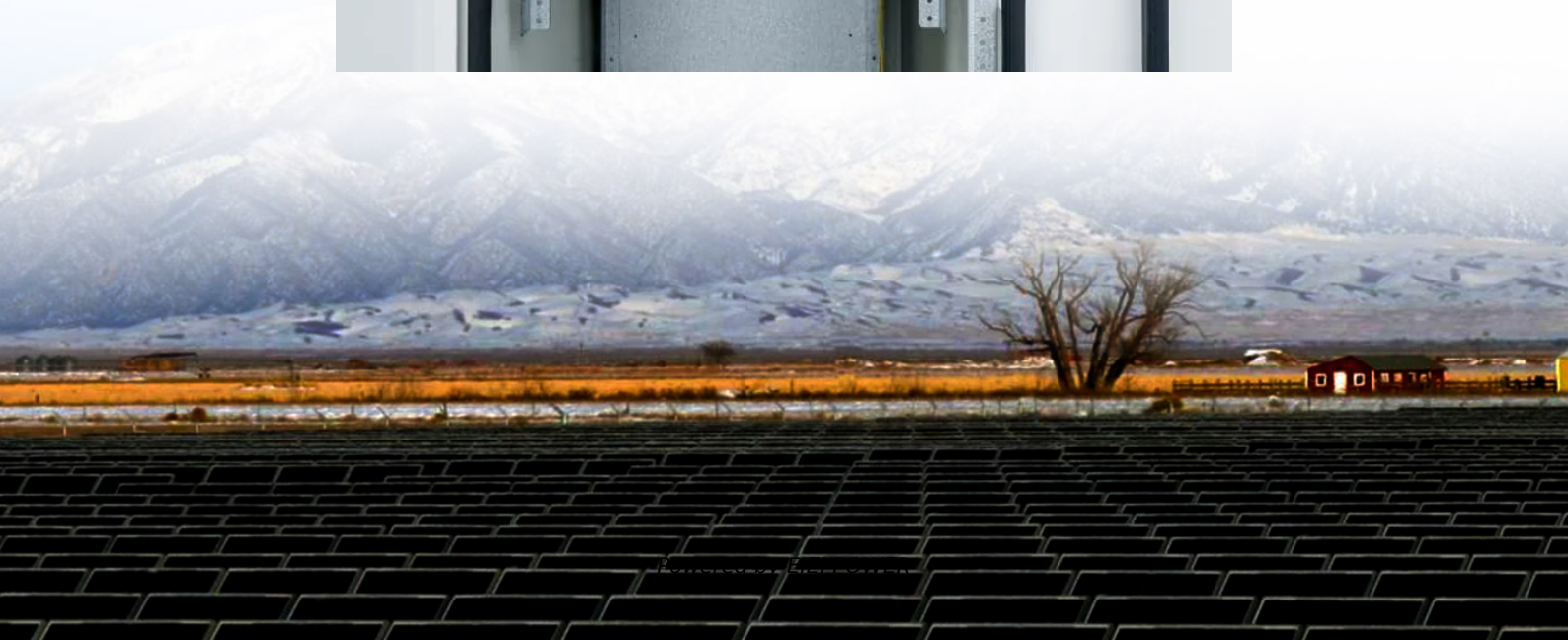


# Energy storage field and power battery field





## Overview

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Why are battery energy storage systems important?

Battery energy storage systems (BESSs) have become increasingly crucial in the modern power system due to temporal imbalances between electricity supply and demand.

What are battery energy storage systems?

Battery energy-storage systems typically include batteries, battery-management systems, power-conversion systems and energy-management systems 21 (Fig. 2b).

How are batteries used for grid energy storage?

Batteries are increasingly being used for grid energy storage to balance supply and demand, integrate renewable energy sources, and enhance grid stability. Large-scale battery storage systems, such as Tesla's Powerpack and Powerwall, are being deployed in various regions to support grid operations and provide backup power during outages.

How does a battery energy storage system work?

The direct current generated by the batteries is processed in a power-conversion system or bidirectional inverter to output alternating current and deliver to the grid. At the same time, the battery energy storage systems can store power from the grid when necessary 24, 25.



## Energy storage field and power battery field

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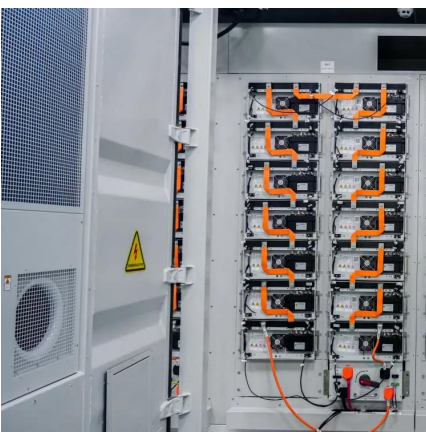


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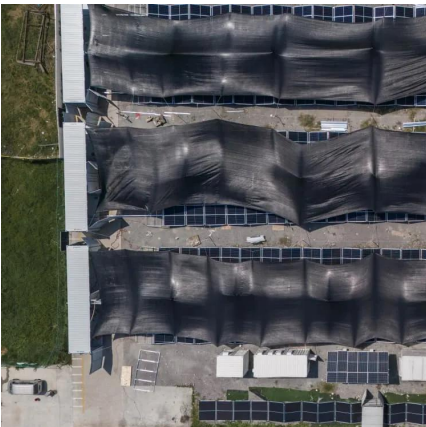
### **Utility-Scale Battery Storage , Electricity , 2024b , ATB , NLR**

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