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A new generation of large-scale flow batteries





Overview

Redox flow batteries as the novel and intrinsically safe energy storage technology has the characteristics of long charge and discharge cycle life, recyclable electrolyte, good life cycle economy and environmental friendliness, which has received widespread attention from academia and industry. What is a flow battery?

RFB are an energy storage system that utilizes redox reactions to store and release energy. An energy storage device that follows these types can be considered a flow battery for a general comparison.²⁷ (a) A minimum of one reversible oxidation-reduction reaction must occur.

What are aqueous redox flow batteries?

Aqueous redox flow batteries (ARFBs) have emerged as a promising technology for long-duration, grid-scale energy storage due to their advantages in safety, scalability, and independent tunability of power and energy capacities. Enhancing energy density is crucial for reducing system costs and facilitating large-scale deployment.

Are aqueous iron-based flow batteries suitable for large-scale energy storage applications?

Thus, the cost-effective aqueous iron-based flow batteries hold the greatest potential for large-scale energy storage application.

What types of battery technologies are being developed for grid-scale energy storage?

In this Review, we describe BESTs being developed for grid-scale energy storage, including high-energy, aqueous, redox flow, high-temperature and gas batteries. Battery technologies support various power system services, including providing grid support services and preventing curtailment.



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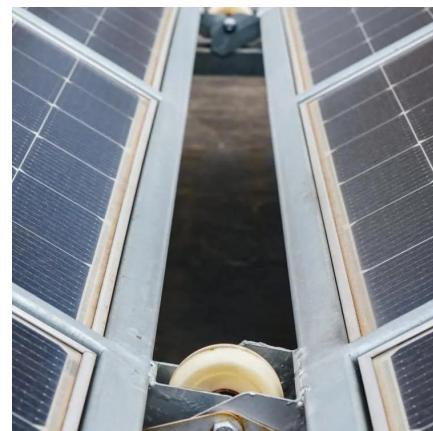
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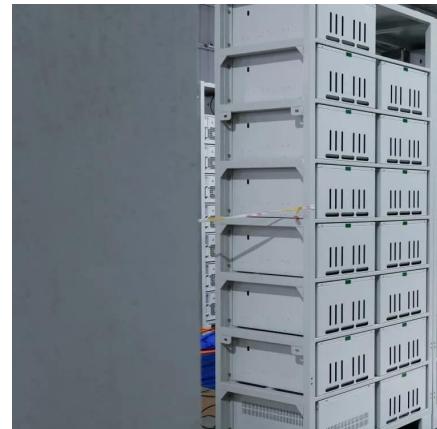
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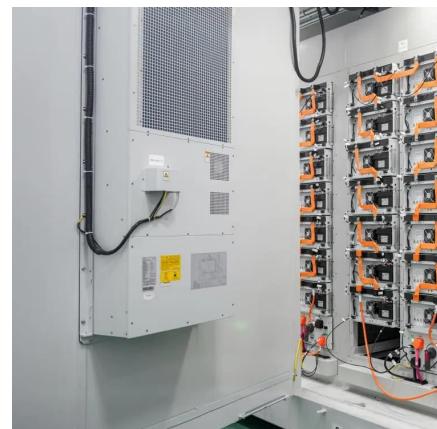


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