

The Prospects of Zinc-Bromo Flow Batteries





Overview

By bridging the gap between laboratory-scale innovations and practical deployment, this review highlights the promise of ZBBs as a high-performance, cost-effective, and sustainable energy storage technology, and outlines key future research directions. Are zinc-bromine flow batteries suitable for large-scale energy storage?

Zinc-bromine flow batteries (ZBFs) offer great potential for large-scale energy storage owing to the inherent high energy density and low cost. However, practical applications of this technology are hindered by low power density and short cycle life, mainly due to large polarization and non-uniform zinc deposition.

What is a zinc-based flow battery?

The history of zinc-based flow batteries is longer than that of the vanadium flow battery but has only a handful of demonstration systems. The currently available demo and application for zinc-based flow batteries are zinc-bromine flow batteries, alkaline zinc-iron flow batteries, and alkaline zinc-nickel flow batteries.

Are aqueous zinc-bromine flow batteries reversible?

Aqueous zinc-bromine flow batteries show promise for grid storage but suffer from zinc dendrite growth and hydrogen evolution reaction. Here, authors develop a reversible carbon felt electrode with Pb nanoparticles to suppress these issues, improving battery performance and cycle stability.

Are aqueous zinc-bromine batteries a viable solution for next-generation energy storage?

Aqueous zinc-bromine batteries (ZBBs) have attracted considerable interest as a viable solution for next-generation energy storage, due to their high theoretical energy density, material abundance, and inherent safety. In contrast to conventional aqueous batteries constrained by sluggish ion diffusion through



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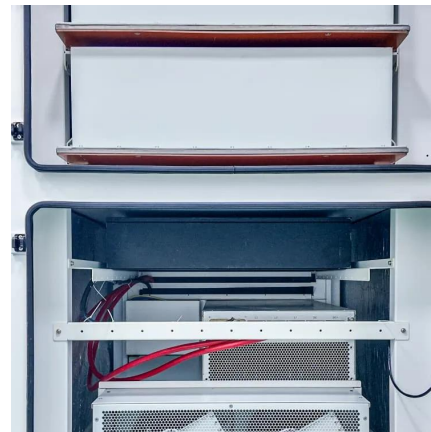


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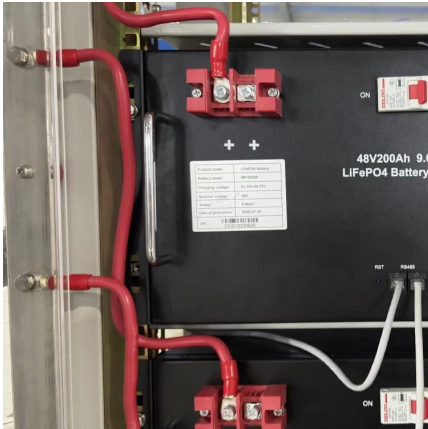
Advancements in electrolyte and membrane technologies for zinc ...

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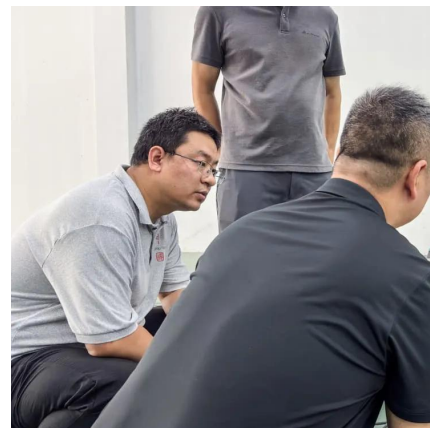


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