



BUHLE POWER

# Single flow battery for scalable energy storage





## Overview

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A promising technology for performing that task is the flow battery, an electrochemical device that can store hundreds of megawatt-hours of energy—enough to keep thousands of homes running.

Are flow batteries a good option for large-scale energy storage?

Flow batteries have numerous benefits that have made them a potential option for large-scale energy storage. They are well-suited for applications requiring long-duration storage due to their scalability, high energy density and long cycle life.

Can hybrid flow batteries be used for energy storage?

This strategy can be readily applied to existing hybrid flow batteries (e.g., Zn-I<sub>2</sub>, Zn-Br<sub>2</sub>). Flow batteries allow independent scaling of power and energy and permit low-cost materials for large-scale energy storage.

Are flow batteries a game-changer for large-scale energy storage?

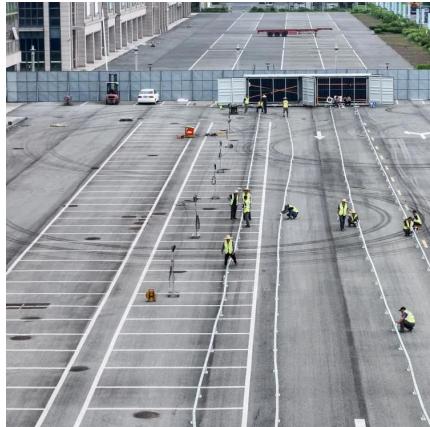
Among these innovations, flow batteries have emerged as a potential game-changer for large-scale energy storage. Recent advancements in membrane technology, particularly the development of sulfonated poly(ether ether ketone) (sPEEK) membranes, have brought flow batteries closer to widespread adoption.

Are all-vanadium flow batteries scalable?

The scalability of all-vanadium flow batteries is limited by the liquid electrolytes. Emerging solid-liquid hybrid flow batteries (e.g., Zn metal flow battery) use solid active material with improved energy density; however, the hybrid configuration sacrifices scalability.



## Single flow battery for scalable energy storage



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