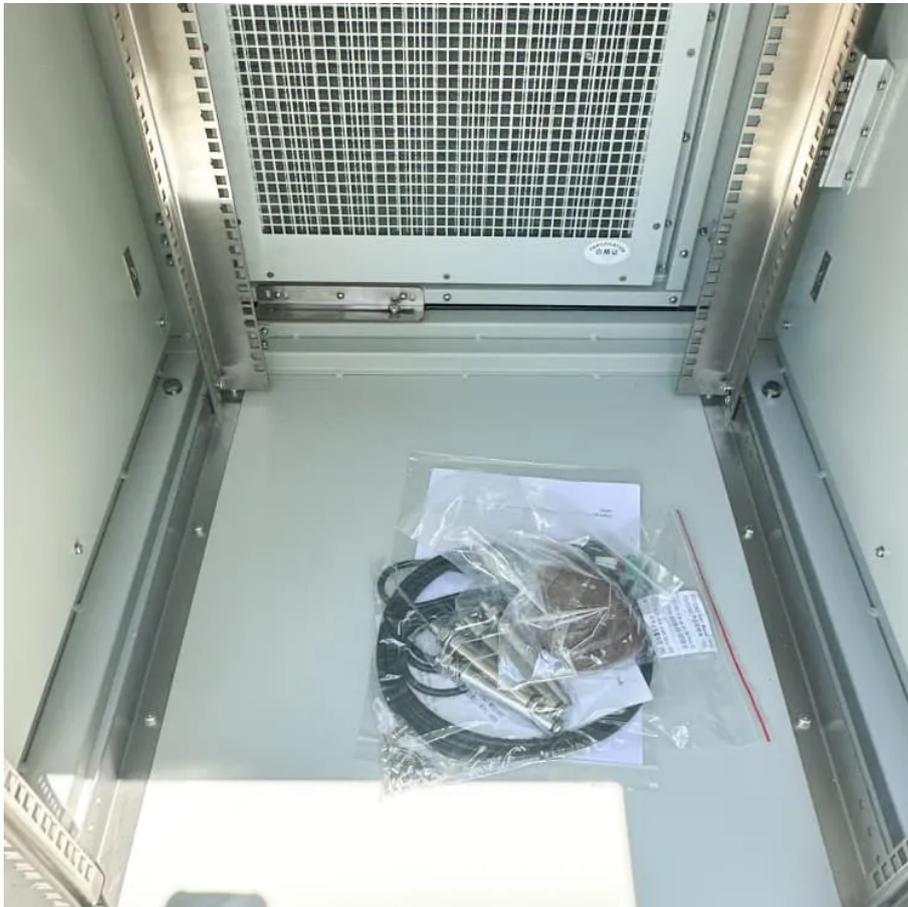


New flow battery charging





Overview

How long does a self-charging flow battery take to charge?

Self-charging batteries integrate energy conversion and storage but are limited by solid-state electrodes. Here, the authors report an organic self-charging flow battery that charges within 8 minutes to 94% capacity, matches various multivalent metal negative electrodes, and demonstrates high stability.

What is a flow battery?

The development of this new flow battery marks a significant milestone in energy storage technology. Unlike conventional batteries, this high-current density, water-based battery is designed for residential use, allowing households to store solar energy more effectively.

How long does a flow battery take to charge?

A high charging rate is achieved, with 94% of the total capacity reached within 8 minutes, owing to the rapid kinetics of liquid-phase redox reactions. Using manganese oxide-based catalysts to reduce side reactions, the flow battery exhibits nearly 99.98% capacity retention over 1,600 cycles.

What makes a Nafion battery better than a flow battery?

The battery outperforms the industry-standard Nafion membrane in both speed and stability, completing 600 high-current cycles with virtually no capacity loss. This advancement represents a major leap forward for flow batteries, which have historically been limited to large-scale applications due to their size and slow charging capabilities.



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