



## A-Core Container

# New long-lasting flow battery



## Overview

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Scientists from the Department of Energy's Pacific Northwest National Laboratory have successfully enhanced the capacity and longevity of a flow battery by 60% using a starch-derived additive,  $\beta$ -cyclodextrin, in a groundbreaking experiment that might reshape the future of large-scale energy storage. Are flow batteries the future of energy storage?

The basic technology behind flow batteries was first patented back in the 1870s. Leveling them up for 21st century applications has been a challenge. Nevertheless, in recent years flow batteries have begun seeping into the stationary energy storage marketplace.

Are flow batteries sustainable?

Conferences > 2024 AEIT International Annual. Flow batteries, with their low environmental impact, inherent scalability and extended cycle life, are a key technology toward long duration energy storage, but their success hinges on new sustainable chemistries.

How long does a flow battery last?

The study, published in the journal Joule, reveals that the flow battery maintained its capacity for energy storage and release for over a year of constant cycling. A common food and medicine additive has shown it can boost the capacity and longevity of a next-generation flow battery design in a record-setting experiment.

Are flow batteries better than traditional lithium-ion batteries?

Flow batteries, which store energy in liquid electrolytes housed in separate tanks, offer several advantages over traditional lithium-ion batteries.

What is a flow battery?

Flow batteries are one of the key pillars of a decarbonization strategy to store energy from renewable energy resources. Their advantage is that they can be

built at any scale, from the lab-bench scale, as in the PNNL study, to the size of a city block.

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.

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