Kongres Container

Operational price of flow batteries

Overview

Recent projects show flow battery prices dancing between $300-$600/kWh installed. Compare that to lithium-ion's $150-$200/kWh sticker price, but wait—there's a plot twist.How do you calculate a flow battery cost per kWh?

It’s integral to understanding the long-term value of a solution, including flow batteries. Diving into the specifics, the cost per kWh is calculated by taking the total costs of the battery system (equipment, installation, operation, and maintenance) and dividing it by the total amount of electrical energy it can deliver over its lifetime.

What is the capital cost of flow battery?

The capital cost of flow battery includes the cost components of cell stacks (electrodes, membranes, gaskets and bolts), electrolytes (active materials, salts, solvents, bromine sequestration agents), balance of plant (BOP) (tanks, pumps, heat exchangers, condensers and rebalance cells) and power conversion system (PCS).

Are flow batteries worth the cost per kWh?

Naturally, the financial aspect will always be a compelling factor. However, the key to unlocking the potential of flow batteries lies in understanding their unique cost structure and capitalizing on their distinctive strengths. It’s clear that the cost per kWh of flow batteries may seem high at first glance.

What is a flow battery?

At their heart, flow batteries are electrochemical systems that store power in liquid solutions contained within external tanks. This design differs significantly from solid-state batteries, such as lithium-ion variants, where energy is enclosed within the battery unit itself.

How can flow battery research reduce costs?

Standardization of flow battery components and the development of high-

voltage chemistries are highlighted as paths towards decreasing costs and achieving greater market penetration. Electrolyte tank costs are often assumed insignificant in flow battery research.

Are industrial flow batteries competitive?

Their model considers the present and future competitivity of industrial flow batteries in operating specific services, which have not yet been developed to an accurate grade, and yields economic performance indicators such as capital costs, operative costs, levelized cost of storage (LCOS), and net present value.

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