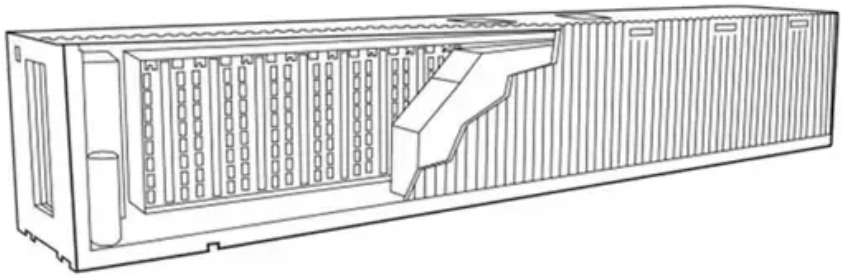
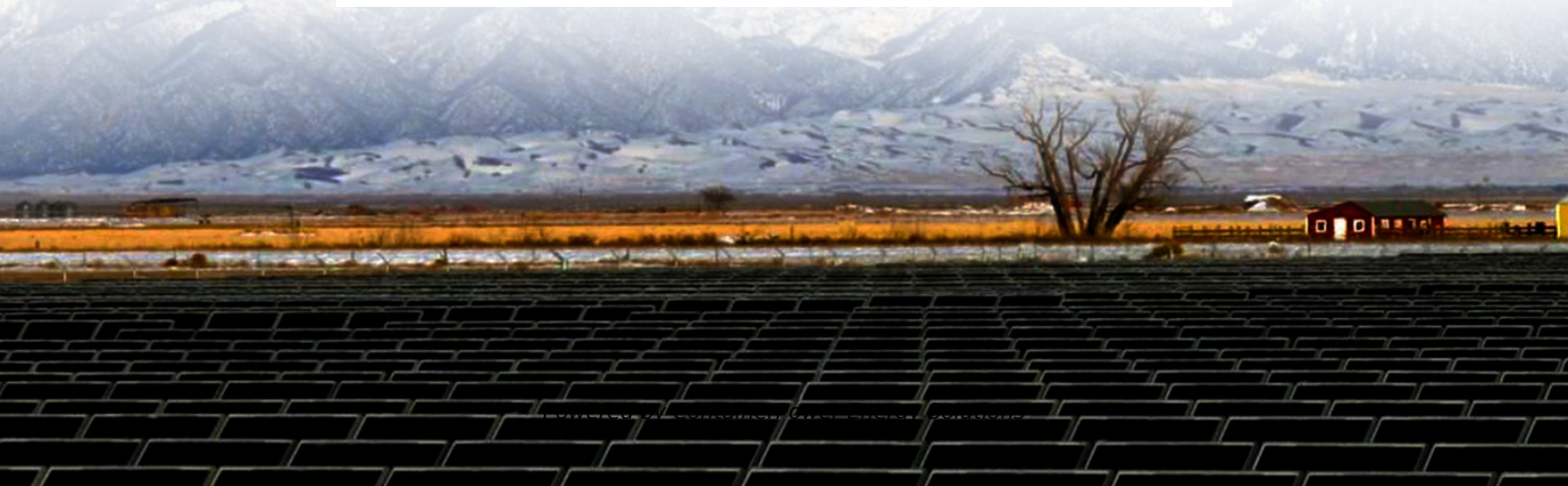
ContainerPower Energy Solutions

Comparison of performance of lithium-ion batteries for energy storage





Overview

The 2020 Cost and Performance Assessment provided installed costs for six energy storage technologies: lithium-ion (Li-ion) batteries, lead-acid batteries, vanadium redox flow batteries, pumped storage hydro, compressed-air energy storage, and hydrogen energy storage.

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This paper provides a comprehensive review of lithium-ion batteries for grid-scale energy storage, exploring their capabilities and attributes.

The findings of this study highlight the subtle advantages and compromises of Lithium-ion and Flow batteries in terms of different performance parameters.

The National Renewable Energy Laboratory's (NREL's) Storage Futures Study examined energy storage costs broadly and the cost and performance of LIBs specifically (Augustine and Blair, 2021).

The findings highlight the suitability of LAES over LiBES for long-term grid-scale applications. As a general trend, LAES offers a lower levelised cost of storage (LCOS) than LiBES demonstrating improved economic performance in scenarios with lower cycling frequencies and higher discount rates.

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