



BUHLE POWER

Vanadium battery solar container energy storage system cost





Overview

What is the difference between a lithium ion battery and a vanadium electrolyte?

The vanadium electrolyte retains a positive end of life value which can be used to offset any recycling costs. In contrast, the lithium ion battery, assumed to be LFP which accounts for most sales today, has end-of-life costs which push LCOS up by \$6/MWh. Finally, there is some difference in efficiency costs as well.

Which energy storage technologies are included in the 2020 cost and performance assessment?

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.

Do batteries have residual value?

Some batteries have residual value when they reach the end of their useful life: vanadium electrolyte can be reused in a new battery, and NMC lithium ion batteries contain valuable metals that can be recovered and sold. Other chemistries like LFP have little residual value to offset EOL costs.

Will additional storage technologies be added?

Additional storage technologies will be added as representative cost and performance metrics are verified. The interactive figure below presents results on the total installed ESS cost ranges by technology, year, power capacity (MW), and duration (hr).



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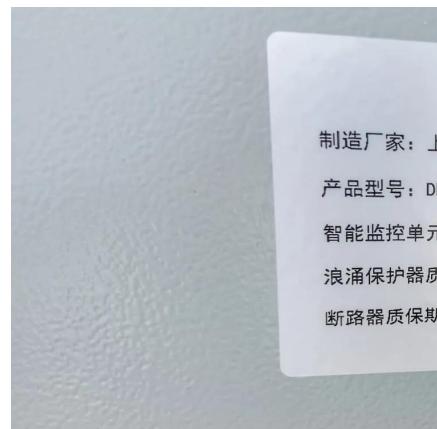
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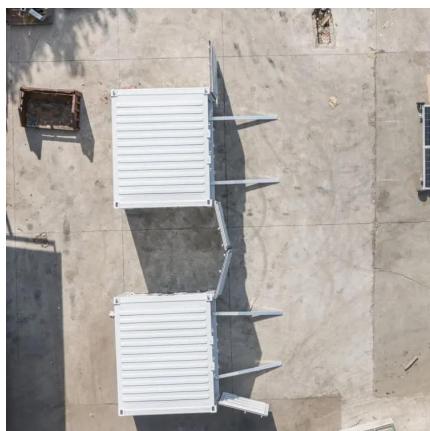
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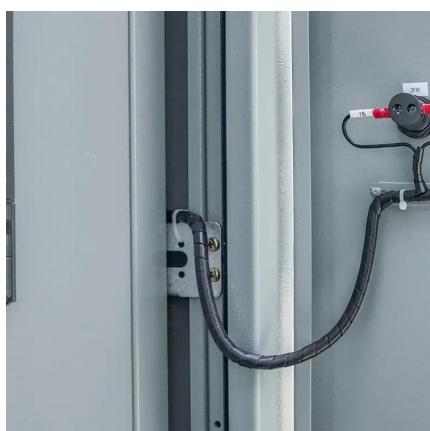
Container energy storage price structure

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