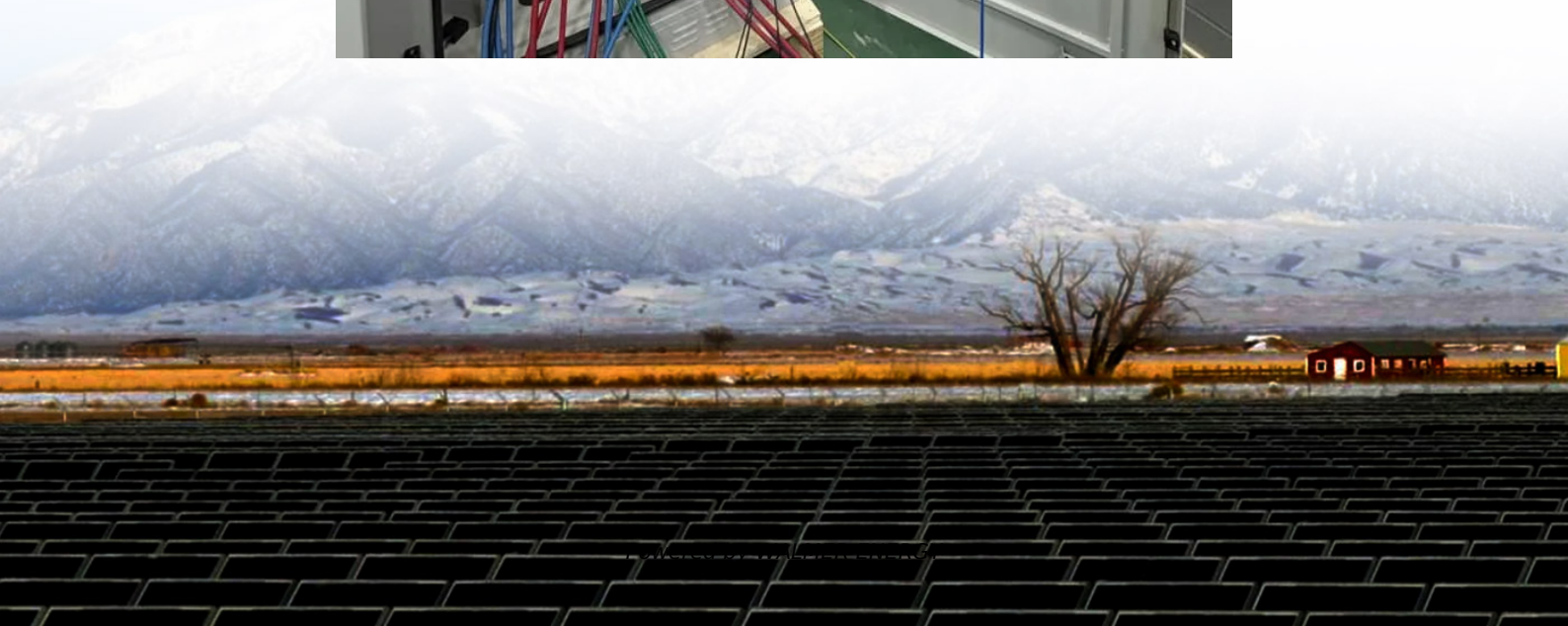


Batteries that store energy like coal





Overview

Can old coal mines be converted into gravity batteries?

Old coal mines can be converted into "gravity batteries" by retrofitting them with equipment that raises and lowers giant piles of sand. Underground Gravity Energy Storage system: A schematic of different system sections. (Credit: JD Hunt et al., *Energies*, 2023).

How much would a deeper mine cost compared to a lithium-ion battery?

A deeper mine would not only produce and store more energy, but would also be more cost effective. Energy storage costs vary from \$1 to \$10 per kilowatt-hour for UGES, the authors calculate, downright cheap compared to lithium-ion batteries, which currently cost about \$150/kWh. Battery prices continue to fall as chemistries improve, however.

Are gravity batteries a viable alternative to a mined lithium ion?

Their costs fluctuate with geopolitics and supply chain dependencies—China currently controls an estimated 72% of the lithium-ion market. These factors push many governments and companies to explore alternatives that can operate without relying heavily on mined materials. A gravity battery, at its core, leverages potential energy.

Can gravity batteries save electricity?

Power production often plunges when the sun sets or the wind dies down. At the same time, demand can surge unexpectedly, placing strain on electric grids that are already juggling the stresses of an electrified future. Enter gravity batteries, a technology that uses one of the simplest forces in nature—gravity—to store large amounts of energy.



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