

Lithium-ion batteries have become far more affordable and are now an increasingly viable method of providing hourly and daily load balancing in heavily decarbonized electricity markets. But they won't come close to meeting the ...

Energy storage at all timescales, including the seasonal scale, plays a pivotal role in enabling increased penetration levels of wind and solar photovoltaic energy sources in power systems. Grid-integrated seasonal energy storage can ...

The time-range of applicability of various energy-storage technologies are limited by self-discharge and other inevitable losses. While batteries and hydrogen are useful for storage in a time-span ranging from ...

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The combination of Al production via inert-anode smelting (power to metal) and Al conversion to electricity via Al-air batteries (metal to power) is a promising approach for seasonal/annual energy storage systems.

Grid-level storage of seasonal excess can be an important asset to renewable electricity. By applying the freeze-thaw thermal cycling strategy, here, we report Al-Ni molten salt batteries with effective capacity recovery ...

The creation of the "freeze-thaw battery," which freezes its energy for later use, is a step toward batteries that may be used for seasonal storage: saving energy in one season, such as spring, and using it in another, ...

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