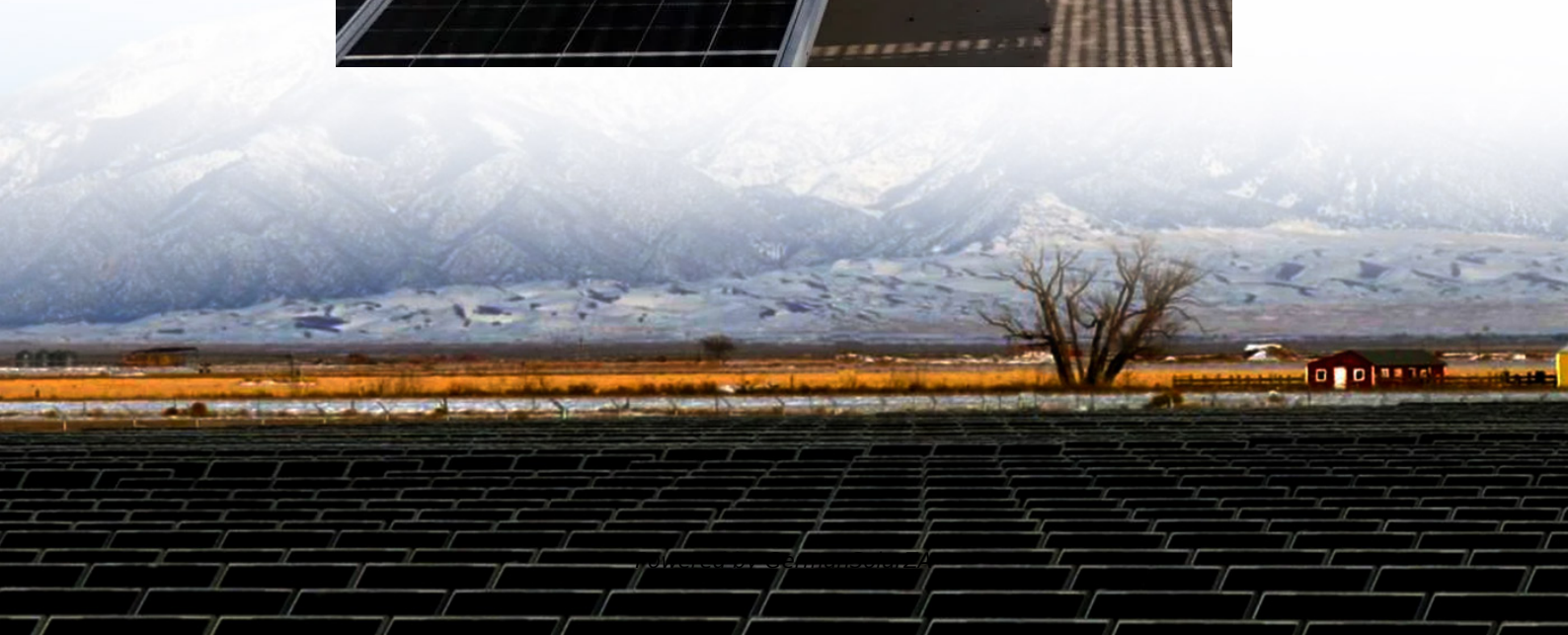


Aluminum foil and energy storage power station





Overview

Can aluminum be used as energy storage and carrier medium?

To this regard, this study focuses on the use of aluminum as energy storage and carrier medium, offering high volumetric energy density (23.5 kWh L⁻¹), ease to transport and stock (e.g., as ingots), and is neither toxic nor dangerous when stored. In addition, mature production and recycling technologies exist for aluminum.

Can molten aluminum be used in stationary power generation?

Both solid (powder) and molten aluminum are examined for applications in the stationary power generation sector, including the integration of aluminum-based energy storage within aluminum refinement plants. Two innovative aspects are proposed in this work.

Can aluminum be used as energy storage?

Extremely important is also the exploitation of aluminum as energy storage and carrier medium directly in primary batteries, which would result in even higher energy efficiencies. In addition, the stored metal could be integrated in district heating and cooling, using, e.g., water-ammonia heat pumps.

Does aluminum outperform power-to-power systems based on hydrogen and liquid fuels?

Along with the additional advantages relating to high volumetric energy density, and safety and management aspects, the aluminum-based technology appears to outperform the power-to-power systems based on hydrogen and liquid fuels.



Aluminum foil and energy storage power station



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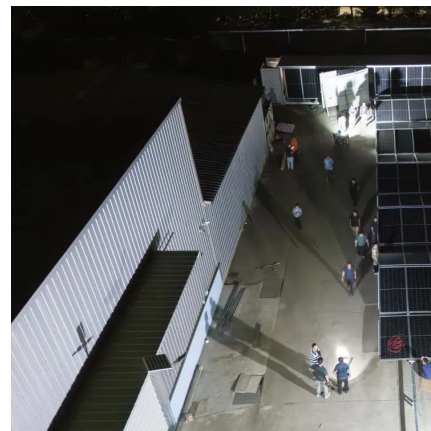
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Reactive Metals as Energy Storage and Carrier Media: Use of Aluminum

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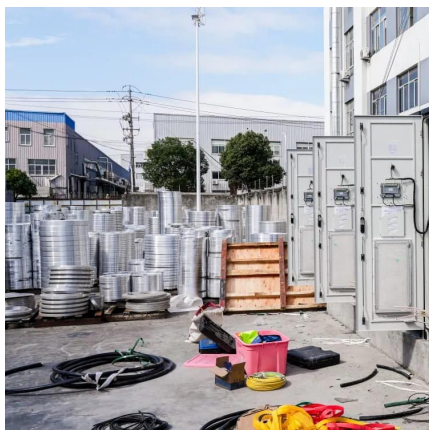
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