

# Hot metal energy storage

What is high-temperature thermal storage (HTTs)?

High-temperature thermal storage (HTTS), particularly when integrated with steam-driven power plants, offers a solution to balance temporal mismatches between the energy supply and demand. However,...

Are metal hydrides suitable for heat storage?

Most important of all, the price of the complete system remains the deciding factor over the potential feasibility of heat storage systems based on metal hydrides. Metal hydrides are potential candidates for the storage of heat at low, medium and high temperatures for solar and other heat generating applications.

What is thermochemical energy storage?

Thermochemical energy storage uses reactive materials that use the heat of reaction to store energy in chemical bonds. The benefit of thermochemical storage is that the reactants can be stored for very long periods with minimal energy loss. When needed, the reaction can be reversed, releasing the heat of reaction.

Is magnesium hydride a thermal energy storage material?

Magnesium hydride has been identified as a thermal energy storage material since the 1960's due to its high thermal energy density of  $2800 \text{ kJ kg}^{-1}$ , the natural abundance of magnesium metal and ease of production which leads to a relatively cheap Thermal Energy Storage (TES) material.

What is energy storage & how does it work?

Sensible energy storage technologies include the use of liquid molten salt stored at nearly  $600^\circ\text{C}$  in large insulated tanks, which can be dispatched when needed to heat a working fluid in a heat engine (steam Rankine cycle or Brayton cycle) to generate electricity.

Can metal hydrides be corroded in a heat storage system?

The worst case scenario is a rupturing of the heat storage system, therefore corrosion tests of metal hydrides with materials for the construction of the heat storage vessels must be performed under variable operating temperature and hydrogen pressure to prevent this potentially dangerous situation.

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