

# Hydrogen energy storage in 2021

Can hydrogen energy storage improve energy sustainability?

Bibliometric analysis was used to identify potential future research directions. Hydrogen energy storage systems (HydESS) and their integration with renewable energy sources into the grid have the greatest potential for energy production and storage while controlling grid demand to enhance energy sustainability.

What are hydrogen storage technologies?

The development of hydrogen storage technologies is, therefore, a fundamental premise for hydrogen powered energy systems. Conventional technologies store the hydrogen as compressed gas and cryogenic liquid, while for large-scale applications, underground storage turns out to be a preferable method.

Can a hydrogen storage system be used for stand-alone electricity production?

Substituting renewable energy, typically WT and solar modules reduces harmful emissions significantly. In this context, linking hydrogen storage systems is researched for stand-alone electricity production, allowing for increased load demand adaptability for long-term ES .

Are hydrogen storage integrated grids sustainable?

Hydrogen storage integrated grids have the potential for energy sustainability. A historical overview of hydrogen storage was analyzed using the Scopus database. This survey has exhibited a developing hydrogen storage and renewable energy fields of research. Bibliometric analysis was used to identify potential future research directions.

Why is hydrogen storage important?

Hydrogen storage, especially in underground storage (because of its high capacity and lower cost) as energy storage and in the way to the success of fossil to the renewable energy revolution, has gained lots of attention worldwide in the last decade.

Can large scale hydrogen be stored safely and cost-efficiently?

The question is how large scales of hydrogen can be stored safely and cost-efficiently. This review introduces for the first time all the large-scale storage options for compressed hydrogen and provides highlights for their strengths and limitations. This will contribute to the dialogue if hydrogen can work as a future energy vector.



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