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Title: New Energy Underground Energy Storage

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What are the five underground large-scale energy storage technologies?

In this work, the characteristics, key scientific problems and engineering challenges of five underground large-scale energy storage technologies are discussed and summarized, including underground oil and gas storage, compressed air storage, hydrogen storage, carbon storage, and pumped storage.

What is large-scale underground energy storage technology?

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Large-scale underground energy storage technology uses underground spaces for renewable energy storage, conversion and usage. It forms the technological basis of achieving carbon peaking and carbon neutrality goals.

What are the different types of underground energy storage technologies?

Viable underground energy storage technologies include compressed air energy storage (CAES), underground pumped hydro storage (UPHS), underground thermal energy storage (UTES), underground gas storage (UGS), and underground hydrogen storage (UHS).

How do I Choose an appropriate underground energy storage technology?

The selection of an appropriate underground energy storage technology depends on the site-specific screening. Technical criteria must be established to evaluate the feasibility, safety, and economic viability for each reservoir type and technology.

The rapid development of intermittent renewable energy (such as wind and solar power) results in a high demand for large-scale energy storage. Undergr...

Underground energy storage technologies utilize deep underground spaces to store energy or strategic resources--such as oil, natural gas, hydrogen, compressed air, and carbon ...

As the world grapples with the need to transition to renewable energy sources, the ability to store energy efficiently and safely becomes paramount. Compressed air and hydrogen storage ...

Abstract As decarbonisation efforts accelerate globally, the role of large-scale underground storage for energy

and climate-related gases - natural gas, hydrogen, and carbon ...

Compared with aboveground energy storage technologies (e.g., batteries, flywheels, supercapacitors, compressed air, and pumped hydropower storage), UES technologies--especially ...

PDF | On Jun 29, 2024, Wendong Ji and others published Integration of large-scale underground energy storage technologies and renewable energy sources | Find, read and cite all the research you ...

In this paper, on the base of the future development of clean and low-carbon energy, the concept and connotation of underground energy storage engineering (UESE) was proposed and ...

This review article examines the latest development of underground energy storage (UES) policies and technologies in China since the enforcement of China's Energy Law in 2025.

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A review article entitled "Critical technologies in the construction of underground artificial chamber for compressed air energy storage systems" (DOI: 10.1002/dug2.70064) provides examples ...

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