

# **Coal mine energy storage power generation**





## Overview

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Can underground space energy storage technology be used in abandoned coal mines?

The underground space resources of abandoned coal mines in China are quite abundant, and the research and development of underground space energy storage technology in coal mines have many benefits.

What is coal underground thermal energy storage?

Coal underground thermal energy storage (CUTES) is a form of energy storage that makes extensive use of the underground highways in closed mines as a place to store energy and to offer heating and cooling in the winter and summer months, respectively.

Can compressed air energy storage be used in coal mines?

However, the key issues, such as the uneven heat transfer of the system and the corrosion and scaling of the heat transfer medium, need to continue to be addressed. (3) The potential for compressed air energy storage in coal mines' underground spaces is enormous, and it can be used with less costly excavation.

How to promote coal mine energy storage?

(3) Provide financial incentives, such as subsidies, tax breaks and investment incentives, to attract investors to participate in coal mine energy storage projects. (4) Support technological innovation and R & D to promote the application and commercialization of new technologies in the field of coal mine energy storage.



## Coal mine energy storage power generation

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Do coal mines need energy storage technologies? Various energy storage technologies and risks in coal mine are analyzed. A significant percentage of renewable energy is connected to the ...

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### Challenges and opportunities of energy storage technology ...

Apr 1, 2024 · Therefore, this paper mainly discusses the research status of using coal mine underground space for energy storage, focusing on the analysis and discussion of different ...

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### Underground Hydro-Pumped Energy Storage Using Coal Mine ...

Nov 12, 2021 · This paper proposes to use abandoned coal mine goafs serving as large-scale pumped hydro storage (PHS) reservoir. In this paper, suitability of coal mine goafs as PHS ...

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### Conversion of Coal-Fired Power Plants Using Energy Storage ...

Nov 30, 2025 · Key discussions at the seminar focused on four main areas: (1) Lessons learned from retrofitting coal-fired power plants with energy storage systems; (2) policy and regulatory ...

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### Frontiers , Pumped storage power station ...

Sep 23, 2022 · As an energy basin, the Yellow River basin is a key demonstration area to promote energy system reform in China. There are ...

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### How to turn coal mines into giant, green ...

May 12, 2023 · Old coal mines can be converted into "gravity batteries" by retrofitting them with equipment that raises and lowers giant piles of sand.

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### Mine energy storage power generation

Various energy storage technologies and risks in coal mine are analyzed. A significant percentage of renewable energy is connected to the grid but of the time-space imbalance of renewable ...

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### Underground Hydro-Pumped Energy Storage ...

Nov 12, 2021 · This paper proposes to use abandoned coal mine goafs serving as large-scale pumped hydro storage (PHS) reservoir. In this ...

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### Coal making way for renewables as China ...

Apr 23, 2025 · In China, since energy storage capacity has not yet kept pace with the increase in solar and wind power, the grid still relies on thermal ...

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### Optimal dispatching of wind-PV-mine pumped storage power ...

Mar 15, 2022 · Considering the gradual maturity of storage and energy storage technology of



abandoned mine reservoirs, the combination of storage and energy storage technology of ...

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Can pumped-storage power in underground coal mine reduce carbon

May 10, 2020 · The energy storage and generation from abandoned coal mines and mine reservoirs is about 1.5 times of China's total annual power generation in 2014 (Ge et al., 2020).

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Research on development demand and potential of pumped storage power

Jul 1, 2023 · These abandoned mines still contain approximately 42 billion tons of coal resources, nearly 500 billion m<sup>3</sup> of unconventional natural gas,  $1.38 \times 10^{10}$  m<sup>3</sup> underground space, and ...

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How abandoned mines can become clean ...

Jan 17, 2023 · A novel technique called Underground Gravity Energy Storage turns decommissioned mines into long-term energy storage solutions.

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How to use compressed air storage in flooded coal mines

Dec 3, 2025 · Researchers in China developed a new compressed air energy storage system that uses flooded roadways in abandoned coal mines to store compressed air and heat for ...

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Using abandoned coal mines for underground pumped storage

Aug 13, 2025 · Repurposing abandoned coal mines for underground pumped storage development Pumped storage continues to ramp up the role it will play in global energy ...

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New Uses for Coal Mines as Potential Power Generators ...

May 17, 2024 · Abstract: In the context of sustainable development, revitalising the coal sector is a key challenge. This article examines how five innovative technologies can transform ...

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Towards a digitally enabled intelligent coal mine integrated energy

Jan 1, 2025 · The consensus on energy-saving and low-carbon goals led to greater requirements for the sustainable development of coal mines (CMs) worldwide. Against...

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New Uses for Coal Mines as Potential Power Generators ...

May 3, 2024 · Coal mines, whether operating or abandoned, represent a legacy of the Industrial Revolution but also hold transformative potential. With awareness of the need to reduce ...

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A method for optimizing the capacity allocation of a ...

Oct 15, 2024 · In addition, it is possible to store an average of 2.32 % of the PV power generated and to extend the power generation time by approximately 2.5 h per day. This research is ...

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Pumped Storage Hydropower Using Coal Mines , ORNL

Apr 22, 2025 · They also plan to conduct system efficiency analyses to determine best practices in coal mine PSH facility construction. Impact Repurposing abandoned coal mines for PSH will ...

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Energy-carbon efficiency improving strategy for coal mine ...

Dec 3, 2025 · As an energy-intensive heavy industry, the coal mining industry plays a key role in achieving energy conservation and emission reduction. This study presents an energy-carbon ...

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New Uses for Coal Mines as Potential Power Generators and Storage ...

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