

# Feasibility study report on compressed air energy storage power generation

Is compressed air energy storage economically feasible?

Compressed air energy storage (CAES) is a large-scale energy storage system with long-term capacity for utility applications. This study evaluates the economic feasibility of CAES pre-selected reservoirs case studies for the Portuguese electricity system.

What is the exergy efficiency of a compressed air energy storage system?

In the exergy analysis, the results indicate that the exergy efficiency of the compressed air energy storage subsystem is 80.46 %, which is 16.70 % greater than the 63.76 % of the reference compressed air energy storage system, showing that the system integration can decline the exergy loss.

What is the value of compressed air energy storage technology?

The dynamic payback period is 4.20 years and the net present value is 340.48 k\$. Compressed air energy storage technology is recognized as a promising method to consume renewable energy on a large scale and establish the safe and stable operation of the power grid.

How safe is a modular compressed air energy storage system?

The modular compressed air energy storage system proved to be stable and bounded with a safety factor of two for foundation, which is the predominant factor that holds the entire system.

Can compressed air energy storage improve the profitability of existing power plants?

Linden Svd, Patel M. New compressed air energy storage concept improves the profitability of existing simple cycle, combined cycle, wind energy, and landfill gas power plants. In: Proceedings of ASME Turbo Expo 2004: Power for Land, Sea, and Air; 2004 Jun 14-17; Vienna, Austria. ASME; 2004. p. 103-10. F. He, Y. Xu, X. Zhang, C. Liu, H. Chen

What is compressed air energy storage (CAES)?

Compressed air energy storage (CAES) is an effective solution for balancing this mismatch and therefore is suitable for use in future electrical systems to achieve a high penetration of renewable energy generation.

Compressed air energy storage technology is recognized as a promising method to consume renewable energy on a large scale and establish the safe and stable operation of the power grid. To improve the energy efficiency and economic performance of the compressed air energy storage system, this study proposes a design for integrating a compressed air energy ...

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This paper primarily focuses on a systematic top-down approach in the structural and feasibility analysis of the novel modular system which integrates a 5 kW wind turbine with compressed air storage built within the tower structure, thus replacing the underground cavern storing process.

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This work provides a feasibility study of small compressed air energy storage (CAES) system for portable electrical and electronic devices. The applications and the small scale CAES ...

Among many energy storage technologies, compressed gas energy storage (CGES) has become a promising energy storage technology by virtue of its high power generation, wide range of capacity, and low investment cost [4] pressed air energy storage (CAES) is the earliest developed and the most mature technology among CGES.

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