

SolarTech Power Solutions

Czech compressed air energy storage project



Overview

Air4NRG is a European project developing innovative isothermal compressed air energy storage (I-CAES) technology to enhance renewable energy storage, reduce reliance on critical raw materials, and promote Europe's energy independence. What is compressed air energy storage (CAES)?

Compressed Air Energy Storage (CAES) offers potential, but faces challenges including poor efficiency and reliance on fossil fuels. In this context, the EU-funded Air4NRG project aims to improve long-term energy storage. Specifically, it targets over 70 % round-trip efficiency, sustainability, and integration with the grid.

Is compressed air energy storage a viable solution?

Compressed Air Energy Storage (CAES) has been a valid possible solution for decades. However, its poor energy efficiency, the need for fossil fuels to regenerate electricity, and the use of underground cavities as storage reservoirs have limited its development and use.

What is isothermal compressed air energy storage (isothermal-CAES)?

Air4NRG will develop an Isothermal Compressed Air Energy Storage (Isothermal-CAES) system relying, among other things, on isothermal compression and expansion of air by liquid piston to solve the problems of the former CAES.

Where is compressed air stored?

Storage: The compressed air is stored, typically in large underground caverns such as salt domes, abandoned mines, or depleted natural gas reservoirs. Above-ground alternatives include high-pressure tanks or specially designed vessels, though these are generally more expensive and limited in capacity.

What is an example of a widespread storage technology deployment?

One example they mention is precisely CAES. The IEA Technology Roadmap

states that the key to achieving widespread storage technology deployment is enabling compensation for multiple services delivered across the energy system.

How many mw can a compressed air system produce?

CAES systems are categorized into large-scale compressed air ES systems and small-scale CAES. Large-scale systems are capable of producing >100 MW, while the small-scale systems only produce 10 MW or less . Moreover, the reservoirs for large-scale CAES are underground geological formations such as salt formations, host rocks and porous media.

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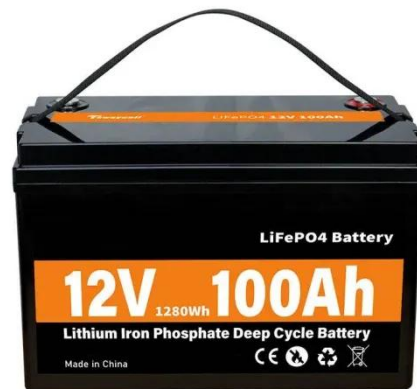
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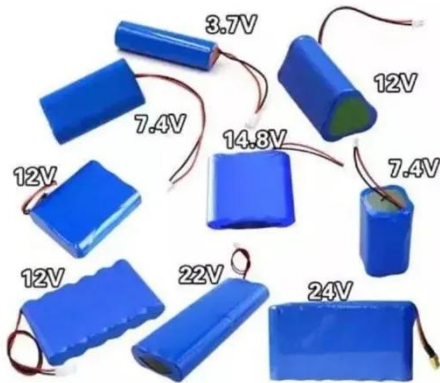


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