

## **Compressed Air Energy Storage: a new beginning?**

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### **Abstract**

Ambitious targets for renewable penetration in the electricity production mix go with the emergence of new challenges, such as the integration of intermittent electricity into the transmission and distribution grid and the need for storage or power production backups. Different technologies exist and are both competing and complementary to cover answer needs. Compressed air energy storage (CAES) systems are one of the rare technologies able to store high amounts of energy over long durations. CAES in salt caverns does exist at industrial scale since the Huntorf (Germany) and McIntosh (Alabama, USA) plants came into operation in 1978 and 1991, respectively. To date, no industrial project has emerge for more than 25 years. However, the trends are changing and an increasing number of utilities are now considering CAES to address the power storage market. One of the underlying reasons for this new interest is that isothermal CAES, despite the absence of thermal energy storage which limits its efficiency below 50%, turns out to be well suited to the main revenue mechanism currently targeted by project developers: getting money from grid operators for commitment to provide electricity, without necessarily providing it (capacity markets). The present work will review historical CAES developments, expose recent ones and introduce to some of the reasons under this new beginning.

**Key words:** Compressed Air Energy Storage (CAES), Adiabatic Compressed Air Energy Storage (A-CAES)