Economics of air energy storage

Compressed air energy storage (CAES) and Pumped hydro storage (PHS) are two major large-scale energy storage technologies that can provide bulk energy services to a power system [2]. ... Economics of compressed air energy storage to integrate wind power: a case study in ERCOT. Energy Policy (2011) Yun Liu et al. Wind generation"s effect on ...

Energy storage is a practical approach to overcoming peak power demand [3].Energy storage methods can also be applied for peak-shaving, peak-shifting, load-balancing, energy managing, and standby power purposes [4].Energy storage systems cover renewable power plants in real-time demand and are an alternative to fossil fuel-based auxiliary systems ...

Downloadable (with restrictions)! Compressed air energy storage (CAES) could be paired with a wind farm to provide firm, dispatchable baseload power, or serve as a peaking plant and capture upswings in electricity prices. We present a firm-level engineering-economic analysis of a wind/CAES system with a wind farm in central Texas, load in either Dallas or Houston, and a ...

In order to assess the electrical energy storage technologies, the thermo-economy for both capacity-type and power-type energy storage are comprehensively investigated with consideration of political, environmental and social influence. And for the first time, the Exergy Economy Benefit Ratio (EEBR) is proposed with thermo-economic model and applied ...

Compared to electrochemical storage (e.g. lithium-ion batteries), CAES has a lower energy density (3-6 kWh/m 3) [20], and thus often uses geological resources for large-scale air storage.Aghahosseini et al. assessed the global favourable geological resources for CAES and revealed that resources for large-scale CAES are promising in most of the regions across the ...

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In this work, we focus on long-term storage technologies--pumped hydro storage, compressed air energy storage (CAES), as well as PtG hydrogen and methane as chemical storage--and batteries. We analyze the systemic, energetic, and economic perspectives and compare the costs of different storage types depending on the expected full-load hours ...

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