

Which energy storage technologies are suitable for China's energy structure development?

Pumped hydro storage and compressed-air energy storage emerges as the superior options for durations exceeding 8 h. This article provides insights into suitable energy storage technologies for China's energy structure development in the present and near future. 1. Introduction

Which energy storage option is most cost-effective?

The application analysis reveals that battery energy storage is the most cost-effective choice for durations of 2 h, while thermal energy storage is competitive for durations of 2.3-8 h. Pumped hydro storage and compressed-air energy storage emerges as the superior options for durations exceeding 8 h.

Which energy storage technology has the best economic performance?

When the storage duration is 1 day, thermal energy storage exhibits the best economic performance among all energy storage technologies, with a cost of 0.4 CNY/kWh. Even with increased storage durations, the economic performance of TES and CAES remains considerable. Fig. 8. Economic performance under the day-level energy storage scenario.

Is battery energy storage better than other energy storage technologies?

Multiple analysis for the hour-level scenario In the hourly scenario, as illustrated in Fig. 6, battery energy storage exhibits a substantial advantage. Fig. 5 plainly illustrates the superiority of battery storage over other energy storage technologies, particularly for storage durations of 1 h.

What are the different types of energy storage systems?

The main research objects chosen for this article include battery energy storage (BES), thermal energy storage (TES), hydrogen energy storage (HES), pumped hydro storage (PHS) and compressed-air energy storage (CAES) (as shown in Fig. 1) to reflect their differences. Fig. 1. Schematic diagram of energy storage system in this study.

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