

SolarTech Power Solutions

Side energy storage and distributed trading



Overview

Do distributed energy storage systems play a dual role of generation and consumption?

As an emerging flexible resource in the power market, distributed energy storage systems (DESSs) play the dual roles of generation and consumption (Kalantar-Neyestanaki and Cherkaoui, 2021; Li et al., 2021), thereby complicating the market dynamics for energy storage users.

Are shared energy storage mechanisms a viable solution?

However, individual producers and prosumers are small in scale and often exist in a distributed form, making it difficult to effectively integrate resources . In recent years, shared energy storage mechanisms and peer-to-peer (P2P) trading markets have become important solutions to this problem .

Who are the market participants in a shared energy storage system?

As shown in Figure 1, the market participants primarily include prosumers, the DSO, and the shared energy storage systems managed by the DSO. Prosumers are users who possess both generation capacity and load demand, such as energy communities and industrial campuses.

How do you achieve P2P energy trading between residential and commercial prosumers?

Problem oriented. Achieve P2P energy trading between residential and commercial multi-energy prosumers with a generalized model including commonly used energy supply technologies and multiple demand-side management measures, e.g., demand response, electricity storage, and thermal storage. Method-oriented.

Why do prosumers use energy storage devices?

Energy storage systems can quickly store or release electricity, playing the role of “peak shaving and valley filling” for the power system. Therefore,

prosumers can utilize energy storage devices to consume excess renewable energy or to fill the power gap when there is a shortage of renewable energy .

Is energy storage an effective strategy for energy storage systems?

This can be an effective strategy for energy storage systems because it allows the system to capture the price difference between low and high electricity prices and can generate revenue for the system owner (Badanjak and Pandžić, 2021, Hussein et al., 2012).

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