

Why is multi-energy storage important?

Multi-energy storage system employing different types of ESS helps to meet the complementary coordination between different types of energy storage, which is important in improving system flexibility, reliability and economy. Because of these advantages, the researches on hybrid energy storages of electricity and heat in RIES gradually rose.

Does integration of multi-energy storage systems reduce the operating cost of RIES?

The integration of multi-energy storage systems utilizes the time-of-use tariff for price arbitrage and reduces the operating cost of RIES. Fig. 9 displays the wind power dispatch and wind curtailment under the original strategy S0 and the strategy S3 of multi-energy storage system.

How a multi-energy storage system improves wind power consumption?

The configuration of multi-energy storage system improves the ability of wind power to be consumed. By storing excess power from wind turbine, the utilization rate of wind power can reach 91.3%. The stored power is released during the peak demand, which reduces the power purchase of the grid.

What is hybrid energy storage?

The hybrid energy storage was introduced in different systems and fields to promote the interchange and collaboration between electricity and heat, such as nearly zero energy community, combined cooling, heating and power system, and power generation system of wind-photovoltaic-battery-molten salt thermal storage.

What is a multi-energy storage optimal configuration model?

5. Conclusions A multi-energy storage optimal configuration model considering PDN and DHN were established to optimize the installation position and capacity of EES and TES to minimize the comprehensive cost of RIES. Three methods were compared by computation efficiency and optimum results.

What is a two-stage optimization model of multi-energy storage configuration?

A two-stage optimization model of multi-energy storage configuration is developed. The sites and capacities of hybrid energy storages in power and thermal networks are optimized. Three methods to determine the installation locations are compared. The economics performances at different configuration strategies are compared.

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