

The multi-energy complementary ecosystem (MCE) has the advantage of making full use of renewable energy and removing the dependence on carbon-based energy, which can achieve ...

Large-scale multi-energy complementary bases, integrating thermal power generation and energy storage, represent a viable approach to mitigate the instability of renewables. Optimal ...

The increasing integration of wind and photovoltaic energy into power systems brings about large fluctuations and significant challenges for power absorption. Wind-solar-hydro-storage ...

Wind, solar, and other renewable energy sources along with roofs, wastelands, and other spatial resources are abundant in rural areas. This paper presents a rural multi-energy ...

The application of a multi-energy integration system composed of wind, solar and hydrogen storage units can satisfy the load demand at ports and overcome the shortcomings of single energy source. ...

The utilization of renewable energy sources and the development of energy storage technologies have enhanced the interconversion of various energy sources to slow down global ...

Hydro-wind-solar multi-energy complementation is not a simply numerical sum, but it takes full advantage of the output complementary feature of wind, solar, hydropower and pumped ...

It is not possible to balance multiple objectives like economy, carbon emissions, and wind and solar energy curtailment. Furthermore, there are numerous equipment that have multiple ...

This paper makes a review of the research on complementarity of new energy high proportion multi-energy systems from uncertainty modeling, complementary characteristics, planning ...

Abstract At present, most island energy supply is highly dependent on long-distance transportation of fossil energy, which give rise to high cost and risk of energy supply system. ...

In this paper, an absorption heat pump with multi-energy complementary was built to provide combined cooling and heating. Solar energy was collected through an evacuated tube ...

Identifying the primary sources of exergy destruction is a powerful method for promoting the high-efficiency operation of multi-energy supply systems. Advanced exergy analysis ...

Consequently, this article, targeting the current status of multi-energy complementarity, establishes a complementary system of pumped hydro storage, battery storage, and hydrogen ...

Multi-energy complementary integrated energy system (MCIES) is considered as a promising solution to mitigate carbon emissions and promote carbon peaking and carbon neutrality. Currently, the ...

Abstract Multi-energy supplemental renewable energy system with high proportion of wind-solar power generation is an effective way of "carbon neutral", but the randomness and volatility ...

The developments of energy storage and multi-energy complementary technologies can solve this problem of solar energy to a certain degree. The multi-energy hybrid power systems using solar ...

To cope with this issue, a novel comprehensive evaluation framework for multi-energy complementary ecosystems is proposed in this study. First, a 5D comprehensive evaluation criteria ...

On the basis of summarizing the technical routes of multi-energy complementary system at home and abroad, the key technologies of multi-energy complementary were discussed, including various ...

The study on the solar energy heat pump in China is relatively late. The experimental devices of the solar heat pump heating system as well as the measuring instrument system were ...

Solar-geothermal multi-energy system (MES) can give full play to energy advantages and are one of the most important ways to solve the instability of renewable energy heating. ...

On this basis, considering the energy cost and system loss, a regulation strategy for optimizing the operation of the multi-energy complementary systems in oilfield well sites is proposed. ...

The multi-energy complementary power generation system, incorporating wind, solar, thermal, and storage energy sources, plays a crucial role in facilitating the coexistence and mutual ...

A multi-energy complementary system driven by solar energy and central grid is proposed to supply electricity and cooling/heating, in which a dual-tank thermal storage system is ...

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