

Construction of wind and solar complementary power stations for solar container communication stations in Tunisia

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Can a multi-energy complementary power generation system integrate wind and solar energy?

Simulation results validated using real-world data from the southwest region of China. Future research will focus on stochastic modeling and incorporating energy storage systems. This paper proposes constructing a multi-energy complementary power generation system integrating hydropower, wind, and solar energy.

What is a wind-solar-hydro-thermal-storage multi-source complementary power system?

Figure 1 shows the structure of a wind-solar-hydro-thermal-storage multi-source complementary power system, which is composed of conventional units (thermal power units, hydropower units, etc.), new energy units (photovoltaic power plants, wind farms, etc.), energy storage systems, and loads.

What are the multi-energy complementary operation models of hydropower-wind-PV hybrid system?

Next, based on different utilization principles of wind power and photovoltaic, the multi-energy complementary operation models of the hydropower-wind-PV hybrid system, the hydropower-wind-PV hybrid system including pump stations, and the hydropower-wind-PV hybrid system including reversible hydro units are established.

How to optimize wind and solar energy integration?

The optimization uses a particle swarm algorithm to obtain wind and solar energy integration's optimal ratio and capacity configuration. The results indicate that a wind-solar ratio of around 1.25:1, with wind power installed capacity of 2350 MW and photovoltaic installed capacity of 1898 MW, results in maximum wind and solar installed capacity.

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