Wind power and photovoltaic power generation dispatch

The proposed model can simultaneously forecast the future wind and photovoltaic power generation in the same region, which significantly improves the accuracy of regional short-term power generation forecasting compared with the separate forecasting model [8] and traditional multi-task learning frameworks include Share-Bottom [9], [10], MMoE [6] and ...

With the higher penetrations of wind power and photovoltaic power in systems, the randomness of their output adds amounts of uncertainty to system generation planning and scheduling. This paper defines the risk indices of spinning reserve which measure the tension level of system spinning reserve on the basis of temporal characteristic of the forecasting ...

This paper proposes a new power generating system that combines wind power (WP), photovoltaic (PV), trough concentrating solar power (CSP) with a supercritical carbon dioxide (S-CO2) Brayton power cycle, a thermal energy storage (TES), and an electric heater (EH) subsystem.

The integration of large-scale wind and photovoltaic power into modern power grids leads to an imbalance between the supply and demand for resources of the system, where this threatens the safety ...

In the past two decades, clean energy such as hydro, wind, and solar power has achieved significant development under the "green recovery" global goal, and it may become the key method for countries to realize a low-carbon energy system. Here, the development of renewable energy power generation, the typical hydro-wind-photovoltaic complementary ...

Vigorous development and utilization of renewable energy will help achieve my country"s dual carbon goals. This paper constructs a day-ahead optimal dispatch model for windsolar-pumped-storage joint operation system and explores the day-ahead optimal dispatch results under different typical weather conditions. The results show that the introduction of pumped storage ...

The inherent variability and uncertainty associated with wind and solar power generation are captured using probabilistic methods. Specifically, we employ Gaussian, Weibull, and log-normal probability density functions (PDFs) to model load demand, wind speed, and solar irradiance, respectively.

The results demonstrate the following: 1) The proposed model can effectively determine hydropower output schemes that can coordinate wind and solar power output to reconcile peak shaving and ...

In 2016, Sun et al. found that the maximum penetration rate of wind-photovoltaic power was about 10% for a large-scale and long-distance transmission system [41]. The penetration rate (access level) for

wind-photovoltaic power in the Tianzhong UHV DC line in 2015 was 9.36%, which is consistent with Sun"s research.

For the power generation system of wind, photovoltaic, hydro, thermal and out-purchased electricity, taking the minimum economic cost of thermal power generation as the objective function, an optimal dispatching model including the complementary system of wind-photovoltaic-hydro-thermal-out purchased electricity is proposed.

To solve the power dispatch problem caused by the uncertainties of wind power, photovoltaic generation and load, it is necessary to research economic dispatch of power systems including wind power ...

These constitute key factors for the realization of power mutual assistance and complementary dispatch of power generation in the broad area of renewable energy. ... the standardized data set of wind/PV power generation and key meteorological factors are obtained by using normalization method, which is shown in Eq. (8). (8) x norm = x i-x min x ...

This paper proposes a generation dispatch model based on the maximum entropy principle. The objective is to find an optimal generation dispatch strategy that minimizes the generation cost and satisfies the security constraints of power systems, while taking into account the uncertainty of wind power. Since in many situations, only partial information of the ...

Xia et al. proposed a multi-time scale coordinated dispatch model using the complementary operating characteristics of a wind power generation-photovoltaic generation-thermal power units-hydroelectric pumped ...

The wind power can actively participate in the power grid dispatch, improving the wind power absorption capacity and system operation economy ... a general method for calculating the hybrid wind-solar power ...

However, some studies have the following problems. Firstly, there are many articles that focus only on the optimization of the dispatch of "small power systems" such as wind-thermal, wind-hydro-thermal, wind-thermal-pumped storage, hydro-thermal-wind-photovoltaic, etc. [6, 7, 9, 11, 13, 14].However, for an actual power system, its power source composition should ...

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