SolarInvert Energy Solutions

Operation principle of wind-solar hybrid communication base station

Overview

Why are hydro-wind-solar hybrid systems suitable for hydropower stations in Southwest China?

Furthermore, electric power generation from the wind and PV plants can support the hydropower stations in the dry season. For this reason, hydro–wind–solar hybrid systems are suitable for the renewable-energy bases being established along the cascade reservoirs in Southwest China to satisfy the rising demand for power transmission. Table 2.

What is a joint distribution model for wind and solar power?

Building on the autoregressive moving average (ARMA) model and improved vine-copula theory, a joint distribution model for wind and PV power is built with measured data to capture the spatial and temporal correlations between wind and solar plants, and sufficiently representative scenarios for renewable energy generation are explored.

How can a large-scale hydro–wind–solar hybrid system be predicted?

Assuming that the natural inflows are accurately predicted, the operational strategy of the large-scale hydro–wind–solar hybrid system can be determined under various scenarios for wind and PV power outputs, based on ARMA and the vine-copula method. All our experiments were implemented with Python 3.6 on a laptop with four 1.80 GHz CPUs.

Can a wind-solar hybrid system meet the power transmission demand?

Although the previous short-term optimization results show that a hybrid system with nearly 40% wind–solar penetration can meet the power transmission demand with high efficiency in the average water season, the penetration rate may not be optimal considering the operation over a full year.

Can integrated hydro–wind–PV system meet the delivered output?

As shown above, the integrated hydro–wind–PV system can meet the delivered output easily with rapid adjustability from cascade reservoirs. However, the power output from hydropower stations is constrained in the dry season, during which reliable generation from the whole system is threatened.

Can integrated hydro–wind–PV systems be used in Southwest China?

Currently, many wind farms and solar arrays are under construction in Southwest China, and the penetration of intermittent renewable energy is growing rapidly. The operating characteristics of the integrated hydro–wind–PV system may present changes for various sizes of wind and PV plants.

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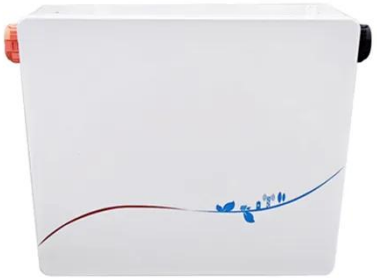

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The invention discloses an assembled wind-solar hybrid self-powered communication base station, which comprises support components, a transmission tower and a power supply ...

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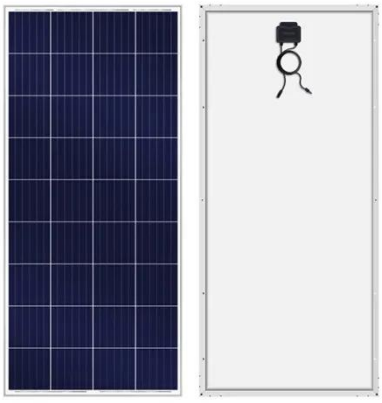

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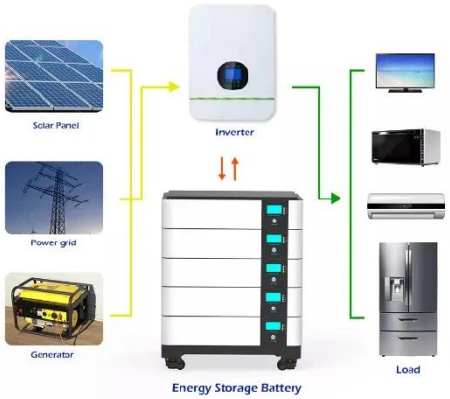

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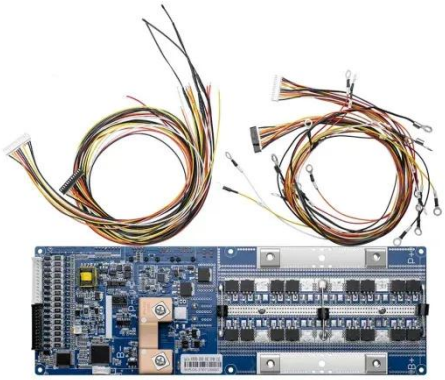

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