

Measurement of wind power at solar container communication stations





Overview

Can a solar-wind system meet future energy demands?

Accelerating energy transition towards renewables is central to net-zero emissions. However, building a global power system dominated by solar and wind energy presents immense challenges. Here, we demonstrate the potential of a globally interconnected solar-wind system to meet future electricity demands.

What is a wind energy model?

The wind energy model used to estimate the power generation of a wind farm system with the nominal by 100 kW on-grid connection. The estimation of wind farm power generation is tested by different system configuration in various number and specification of the wind turbines.

How much electricity can a solar-wind power plant generate?

Our estimates suggest that the total electricity generation from global interconnectable solar-wind potential could reach a staggering level of $[237.33 \pm 1.95] \times 10^3$ TWh/year (mean \pm standard deviation; the standard deviation is due to climatic fluctuations).

Can a 100 kW solar PV power plant convert wind energy into electricity?

Results indicated a potential conversion of 69 % of wind energy into electricity using an optimally configured wind farm system comprising 200 units of 0.5 kW turbines. Similarly, a 100 kW solar PV power plant could convert up to 35 % of solar irradiation into electricity.



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