Wind-gathering and speed-increasing wind power generation device

How does wind speed affect the output power of a speed regulating generator?
The outer rotor speed nout of the speed-regulating generator increasesfrom zero with the rise of wind speed v since the wind speed reaches cut in value vin,and the output power of the speed-regulating generator to the power grid is Pf.

What is speed regulating wind turbine?
Therefore,the new concept of speed-regulating wind turbine is presented. That is to say,variable wind speed is regulated to a constant speedby the speed-regulating device between the wind turbine and the generator,so synchronous is driven to output constant frequency electric power.

How has technology changed wind power generators?
Meanwhile, the rapid development of power electronics technology has enabled a technological transformation in wind power generators over the past three decades (for example, from fixed-speed low-power wind turbine generators to variable-speed high-power wind turbine generators) 17, 19, 29.

How does wind speed affect output power?
The outer rotor speed nout has already reached the rated value noutN since the wind speed exceeds v?N,whereas the output power Pf of the speed-regulating generator has not reached the rated value PfN; thus,the output power Pf continues to increaseas the wind speed rises while the outer rotor speed keeps stable.

Can speed regulating wind turbines reduce the capacity of generator and converter?
Based on the analysis of the characteristics of two kinds of speed-regulating wind turbines mentioned above, a new type of driving chain of speed-regulating wind turbine is proposed in this paper, which achieves speed regulating and generating simultaneously in a certain period of time to reduce the capacity of generator and converter.

Are truncated-cone-shaped wind gathering devices effective for straight-bladed vertical axis wind turbines?
The truncated-cone-shaped wind gathering device proposed in this study was proved to be effectivefor both the static toque characteristics and output power performance improvement of straight-bladed vertical axis wind turbine based on numerical simulations and wind tunnel tests.

In wind turbine design, the Tip Speed Ratio (TSR) is a critical element. The tip speed ratio is calculated by dividing the speed of the turbine blade tips by the wind speed. The maximum tip ...

1 INTRODUCTION. Wind power, as a renewable energy source, has witnessed a remarkable surge, growing at an average annual rate of 30% over the past two decades, ...

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In the current environment where all countries in the world are facing energy problems, research on wind power generation systems is also increasing. This article aims to ...

In this curve, the density of measured wind speeds peaks at around 0.75 m/s. The bottom curve shows a higher wind speed region, where the density of wind speed ...

The schematic diagram of a common type MW class wind power speed-increasing device. ... Since coastal wind power generation often requires carrying out ...

Energy shortages and environmental pollution are becoming increasingly severe globally. The exploitation and utilization of renewable energy have become an effective way to ...

Integrating renewable energy sources into power systems is crucial for achieving global decarbonization goals, with wind energy experiencing the most growth due to ...

The wind gathering and accelerating wind power generation device not only improves the wind speed and improves the power by cubic equation of the wind speed but also improves the ...

A combined power generating device using solar and wind energy is provided, which comprises a generator and an airflow generating device. The airflow generating device comprises a wind ...

Keywords: wind power generation, time series forecasting, space embedding, hidden feature, long short-term memory. Citation: Man J, Xu K, Wang D, Liu Y, Zhan J and ...

on SVG+SC in Wind Power Gathering Area. Appl. Sci. 2022, 12, ... rapid development of the static reactive power generator SVG device represents the latest ... response speed. The ...

The invention has a name of a wind-collection speed-increasing typed wind power generator, relating to the utilization of new energy. The wind-collection speed-increasing typed wind ...

Based on a semi-submersible wind-tidal combined power generation device, a three-dimensional frequency domain potential flow theory is used to study the hydrodynamic performance of such a device.

The increased velocity (Invelox) wind turbine system is a novel wind energy collection device. This system can collect and accelerate the air flow through a funnel and a ...

The wind speed increasing ratio can be reached from 1.2 to 1.5 in the height range of 20 m-50 m. ... The wind-powered complementary streetlights [72], which efficiently collect wind energy ...

HAWTs or VAWTs, where HAWTs are extensively opted in wind power industry for their better wind energy

harvesting performance. Moreover, depending on wind generator operating ...

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