High-speed transportation of wind power generation

A vehicle alternator can be used as a wind turbine generator in multifarious applications, including automobiles, tractors, and other industrial transportation systems with a wide operating speed range (400-8000 rpm) [6] that are available in many standard output voltages (12, 24, 32, or 48 V). According to Ani et al. [7], the efficiency of the alternator is ...

IET Electrical Systems in Transportation; IET Energy Systems Integration ... the main disadvantages of SCIMs used in wind power generation include high starting current and poor starting torque. ... It was shown that these outer-rotor Vernier PM machines can offer low-speed operation to directly capture wind power and enable high-speed rotating ...

At a wind speed of 6 m/s, the generator"s output power reaches 165.76 mW, which can transmit the data of the light sensor to a computer via Bluetooth for real-time display ...

Abstract: Wind and solar energy are used to power a moving train. It was designed to be a self-sufficient engine. Trains that operate on the basis of this technology are referred to simply as trains. The emphasis of recent research has been on developing a precise and high-speed transportation system, with magnetic

The cumulative installed and grid-connected capacity of wind power and photovoltaic power generation in both areas is among the top in China. Xinjiang abandoned ...

As electric machines and drives are core components in wind turbines, it is a pressing need for researchers and engineers to develop advanced electric machines and drives for wind power generation.

With the gradual depletion of global fossil fuels and the deterioration of ecological environment, countries all over the world attach great importance to the utilization and development of clean energy to achieve a low-carbon economy [1, 2].As one of the clean and renewable energy sources, wind power is the most potential and available renewable energy ...

Conversion of wind energy into the car is described in this figure and shows the relationship between the wind speed and energy production considering mean hours (10 MPH ...

A high-quality wind speed measurement is essential in reducing the uncertainties in predicted energy production and economic feasibility assessments of a proposed project. ... Another consideration of offshore WPPs is easy transportation by ship. As the size of wind turbines gets larger, the turbine components will inevitably be larger in size ...

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The piezoelectric module can provide a higher voltage value at both low and high wind speeds, and can effectively utilize energy even at low wind speeds. The ...

The wind speed-power output curve of a Wind generator (WG) is fundamental in establishing a wind turbine model. Typically, wind turbines require a certain starting wind ...

The benefits obtained from cased wind turbines in terms of wind speed and power coefficient enhancements were analyzed considering a variety of different studies found in the literature. Read more ...

A significant mismatch between the total generation and demand on the grid frequently leads to frequency disturbance. It frequently occurs in conjunction with weak protective device and system control coordination, inadequate system reactions, and insufficient power reserve [8].The synchronous generators" (SGs") rotational speeds directly affect the grid ...

The power generated by the wind speed is 10.7 m/s before being optimized using the back propagation neural network method worth 321 watts, while the optimized power results are 409 watts.

The world"s first high-speed railway (HSR) was operated in Japan in 1964, achieving significant economic effects [1].HSR is important infrastructure that drives integrated economic development [2].The benefits of HSR include short travel time, low transportation costs, a large railway share in the transportation market, and the promotion of HSR industries.

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2.1 Turbine modeling. A wind turbine generator for power electronic equipment (Abdullah et al. 2011) is governed by the operation of variable-speed wind turbines.The reasons for using variable-speed operating wind turbines include possibilities for reducing stress and control of active and reactive power.

The share of wind-based electricity generation is gradually increasing in the world energy market. Wind energy can reduce dependency on fossil fuels, as the result being attributed to a decrease in global warming. This paper discusses and reviews the basic principle parameters that affect the performance of wind turbines. An overview presents the introduction and the background of ...

2 · Heydari, M. & Smedley, K. Comparison of maximum power point tracking methods for medium to high power wind energy systems, 20th Conference on Electrical Power Distribution ...

1. Introduction1.1. Background and motivation. During the past several decades, high-speed railway technologies played an increasingly significant role in the development of the transportation industry all over the world (Jia et al., 2017).High-speed railway is widely recognized as one of the most efficient ways to solve

the travel and transportation troubles.

1 Introduction. Frequency of a power system deviates from its nominal value after a severe power imbalance between generation and consumption [].Owing to the increasing penetration of renewable energy sources (RESs), mainly wind and photovoltaic (PV), electrical grids can suffer more frequency stability challenges [].RESs are intermittent and uncertain ...

In the context of large-scale wind power access to the power system, it is urgent to explore new probabilistic supply-demand analysis methods. This paper proposes a wind power stochastic and extreme scenario ...

A wind-generator (WG) maximum-power-point-tracking (MPPT) system is presented, consisting of a high-efficiency buck-type dc/dc converter and a microcontroller-based control unit running the MPPT ...

2.1 Wind turbine modeling. The wind is a clean, free, and readily available renewable energy source. It can be defined as the kinetic force of air in motion flowing through per unit volume [16, 17].This kinetic force can be captured by a wind turbine, which can convert it into electric energy through rotation of turbine blades that power an electrical generator [8, 18].

In general, wind energy potential can be affected by multiple environmental factors including the location of wind resource measurement, wind speed (m / s) at height of wind turbine hub, turbulence intensity (the ratio of standard deviation of fluctuating wind velocity to mean wind speed), air power density (k g / m 3) where the turbine system is located, wind ...