Impeller wind power generation system

What is wind power generation?

Wind power generation is the process of converting wind energy into electric energy. This is achieved by using a wind generating set that absorbs wind energy with a specially designed blade,converting it to mechanical energy,which then drives a generator to produce electricity.

How does a wind power generation system work?

Traditional wind power generation technology uses a rotor to transmit wind energy to a gearbox and then to a generator to generate electricity[,,]. The engine room is equipped with turbines,transmission systems,gear boxes and generators ,which are very heavy,and the tower must have high strength .

What are the components of wind power generation system?

A wind power generation system typically consists of three main components: wind turbine,generator,and grid interface converters. The generator is one of the core components,with different technologies including synchronous generator,induction generator,and doubly fed induction generator.

What are the different types of wind power generation technologies?

There are the following wind power generation technologies such as synchronous generator,induction generator,and doubly fed induction generator. In terms of configuration,wind power generation system normally consists of wind turbine,generator,and grid interface converters where the generator is one of the core components.

What is hydraulic wind turbine?

Hydraulic wind turbine uses hydraulic transmission systemto replace the large-volume and large-mass gearbox and post-processing equipment,such as converter and frequency converter. Power generation quality is further improved by flexible transmission,and there are also advantages in terms of construction cost.

What is a hydraulic energy storage system in a wind turbine?

Wind turbine power flow during operation . Hydraulic energy storage system integrated in hydraulic wind turbine plays a very important role in absorbing wind energy pulsation,stabilizing generator speed,power smoothing and so on. It is an indispensable part of hydraulic wind turbine.

Designing a wind turbine system that can generate power with high efficiency requires a thorough understanding of the principles of aerodynamics and structural dynamics ...

A technology of wind power generation system and helical impeller, which is applied in wind turbine components, wind energy power generation, wind turbines, etc., can solve the problems of difficulty in processing and manufacturing, and achieve the effects of increasing rotational torque, reducing starting inertia, and reducing frictional resistance.

The multi-impeller wind power generation system consists of a small unit, a supporting structure, a yawing slewing bearing and a tower. The supporting structure is a spatial three-dimensional truss structure, and all the small units are connected to the same side of the supporting structure in a mechanical mode. The bottom of the supporting ...

The invention relates to a screw impeller wind power generation system, which is mainly characterized in that a screw impeller is formed by assembling a plurality of vertical impeller members along the axial direction, each vertical impeller member is formed by splicing and assembling a plurality of horizontal impeller members along the radial direction of the screw ...

The invention relates to a speed acceleration impeller for wind power generation. The speed acceleration impeller comprises an impeller cylinder body, wherein a plurality of blade bases used for connecting blades are uniformly distributed on the outer wall of the impeller cylinder body; a gear ring is fixedly connected onto the inner wall of the impeller cylinder body; a plurality of ...

A technology of wind power generation system and current mirroring, which is applied in the direction of wind power generation, wind power engine, wind power motor combination, etc. It ...

The invention discloses a boosting type multi-impeller-assembly wind power generation system which comprises a base arranged on the ground and a supporting rod vertically arranged on the base. A generator is arranged at the top end of the supporting rod, and a main fan is arranged on the generator. The main fan is further provided with an auxiliary fan.

One of them is the lag between peak wind power and peak wave power, ... SSTC, and MTC - suitable for different water depths based on the STC integrated power generation system, with applications for water depths of 320, 80, and 20 m, respectively. More novel wind and wave integrated systems have been proposed in addition to these classical ...

The invention discloses a multi-impeller-assembly wind power generation system. The multi-impeller-assembly wind power generation system comprises a base arranged on the ground, and a supporting rod vertically arranged on the base. A power generator is arranged at the top end of the supporting rod, a main fan is arranged on the power generator, and sub-fans are further ...

The invention discloses a multi-impeller wind power generation system, which is a system for realizing conversion from wind energy to electric energy by mounting a plurality of rows of small...

wind direction detector in the system to the impeller controller, and the energy conversion efficiency ... M/s. at this time, the wind power generation system has just run; The wind speed at point B is 10 m/s, reaching the maximum wind speed; The wind speed at point C is 10 m/s, reaching a stable state. ...

Large-scale wind turbines have become the trend of the wind power industry. However, the main factors restricting the large scale wind turbines are frequent replacement of carbon brush and slip ring and the harmonic of the stator current in double-fed induction generator, plus converters" large volume, high cost, and high failure rate in full power converter ...

The utility model relates to a spiral impeller wind power generation system which is characterized in that the spiral impeller is assembled by a plurality of vertical impeller components along the axial direction. And each vertical impeller component is spiced and assembled by a plurality of horizontal impeller components along the radial direction of the spiral impeller. The spiral ...

Wind power generation technology refers to that under the action of the wind, the impeller of the wind turbine rotates, the wind energy is converted into the mechanical energy of the impeller, and then transmitted to the generator through the transmission system, which drives the generator to rotate and converts the mechanical energy into electric energy.

An impeller for wind power generation includes: a plurality of blades; and a hub which is provided with a rotating shaft at a center and around which the plurality of blades are arranged at substantially equal intervals in a circumferential direction. The blade is formed to extend while widening a width toward an outer periphery of the impeller, a line segment connecting a ...

For this reason, there is a need for an impeller and a wind turbine system that can install a plurality of wind turbine generators in a limited area, efficiently generate power from the...

The multi-impeller wind power generation system adopts integral yawing, namely the supporting structure drives all small units to yaw together. The control device controls the impeller rotating speed of the small units in the designated group according to the yaw requirement, and reduces the yaw resistance moment by utilizing the aerodynamic ...

Wind power generation technology refers to that under the action of the wind, the impeller of the wind turbine rotates, the wind energy is converted into the mechanical energy ...

A technology of wind power generation system and helical impeller, which is applied in wind turbine components, wind energy power generation, wind turbines, etc., can solve the ...

This paper proposes the impeller wind turbine, which uses more effectively the wind energy and depends only on the acting area of the vanes. The vane wind turbine is designed to increase the drag...

The invention discloses a type of a tower frame connection supporting structure of a multi-impeller wind power system, which comprises the following components: a front pillar (101), a rear pillar (102), a coupling part (200) and a support structure (300). A plurality of small units (400) of the multi-impeller wind power generation system are fixed on a supporting structure (300), and the ...

The invention discloses a buffering boosting type multi-impeller-set wind power generation system. The buffering boosting type multi-impeller-set wind power generation system comprises a base arranged on the ground and a supporting rod vertically arranged on the base, a power generator is arranged at the top end of the supporting rod, and a main fan is arranged on the ...

The integration of the impeller and the generator is structurally distinct from conventional generators. It is mainly composed of a deflector cover, stator, rotor and impeller. ... fuzzy logic control and neural network control have been studied in wind power generation systems, but there is little research on intelligent control in marine ...

Since wind power is a promising source of sustainable, clean, and reliable electricity, it is anticipated that wind power will account for much greater proportion of power generation in the coming years. This chapter aims to provide background information on what entails wind power generation and the design of modern wind turbines. 2.2 Previous ...

The invention discloses a wheel-shaped impeller, which comprises a plurality of vanes, a rim, spokes and a power output shaft; the rim is fixed on the power output shaft positioned in the radial center of the wheel-shaped impeller through the spokes; the vanes are evenly distributed and fixed on the rim; and the diameter of the rim is larger than the radial length of the vanes.

The invention discloses a cascade floating foundation for a multi-impeller wind power system. The cascaded floating foundation includes a floating structure and a mooring line coupling. The floating structure mainly comprises a transition section and a floating box or a floating pontoon. The number of floating structures is not less than 2.

The wind turbine is one of the core components of the wind power generation system and is responsible for converting the mechanical energy transmitted by the wind wheel into electrical energy. The wind turbine contains ...

The terms "wind energy" and "wind power" both describe the process by which the wind is used to generate mechanical power or electricity. This mechanical power can be used for specific tasks (such as grinding grain or ...

Due to the volatility and uncertainty of offshore wind power generation, the intelligent monitor and prediction [86] technology is critical to improve the operation efficiency and maintenance level of large-scale offshore wind farms. Therefore, digital construction and intelligent O& M are the dominant paradigms for offshore wind power generation.

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