Wind power direct drive generator hoisting

What is a direct drive wind turbine?

Because the direct-drive wind turbines do not have a gearbox, mechanical noise is reduced as well as fewer rotating components. Moreover, this type of wind turbine has a single main bearing for the rotor assembly and generator, which additionally reduces the number of moving parts, as well as the maintenance and repair costs.

What is a direct drive generator?

Direct-drive generators have low operational rotation speeds of around 10 rpmand high torques are developed through the generator structure (Wilson,2010; Carroll et al.,2015; Márquez et al.,2018). Fig. 1 depicts a typical wind turbine direct driven powertrain configuration with a permanent magnet electrical generator,"PM".

Does oating wind turbine motion affect direct-drive generator air gap integrity?

Sethuraman et al. (2014) investigated the effects of the oating wind turbine motion on direct-drive generator air gap integrity and showed that the air gap stability of the generator is more sensitive to magnetic forces if the supporting frame is relatively rigid.

Can generative Design Optimize multi-MW offshore wind turbine electrical generators?

The results achieved for the structure in question during the generative design process open the door to a distinct perspective of the optimization of multi-MW offshore wind turbine electrical generators as a wide range of structural configurations can be discovered and evaluated.

How to reduce load on the drivetrain of a wind turbine?

The mitigation of loads on the drivetrain of the wind turbine and an increase of power capture at the turbine level is addressed in the literature onturbinecontrol byoptimizingthegeneratortorque,blade pitch,andyawsteeringcontrols(asshownin,e.g. ,vanBinsbergen

What is a wind turbine drivetrain?

This paper presents the state-of-the-art technologies and development trends of wind turbine drivetrains - the system that converts kinetic energy of the wind to electrical energy- in different stages of their life cycle: design,manufacturing,installation,operation,lifetime extension,decommissioning and recycling.

The direct-drive radial flux synchronous generator is considered as the modern wind turbine drive train. Both the electri-cally (e.g., Enercon) and permanent magnet (PM; e.g., ...

The following chapter about direct-drive generator systems for wind turbine applications deals with the main aspects which determine the design of such generators, ...

Wind power direct drive generator hoisting

This paper investigates the benefits and challenges of the multi-MW direct-drive offshore wind Vernier generators. It is worth noting that the comparison of generator ...

A direct-drive generator for large-scale wind turbine provides higher energy density in comparison with a gear train type generator. An AFPM (Axial Flux Permanent ...

Vibration analysis is an effective tool for the condition monitoring and fault diagnosis of wind turbine drivetrains. It enables the defect location of mechanical subassemblies and health indicator construction for remaining ...

o Self-hoisting cranes could be used across both direct drive and geared wind turbines, to replace major components such as blades, generators and bearings as well as drivetrain components ...

Fig. 2 shows the typical configurations for direct-drive wind turbine electrical generator supporting structures. Download: Download high-res image (334KB) Download: ...

III. Permanent Magnet Direct Drive Generator The heart of this system is the Permanent Magnet Direct Drive Generator. Unlike conventional systems that rely on gearboxes to increase the ...

Hoisting wind turbine generator Wind load Nonlinear analysis Introduction With the wide application of clean energy wind power, the hoisting of wind power equipment brings us great ...

Rotor and stator support structures of significant size and mass are required to withstand the considerable loads that direct-drive wind turbine electrical generators face to maintain an air ...

2. Direct-Drive Generator Concepts 2.1. Sizing Constraints A direct-drive solution couples the generator shaft directly to the wind turbine pro-peller. Assuming the same mechanical output ...

The combination of the fractional frequency transmission system (FFTS) and the direct-drive wind turbine generator will be beneficial to the development of the offshore wind ...

Six Northern Power 100 kW direct drive wind turbines produce power for Unalakleet, Alaska. ... Siemens has also made a change in regards to the generator. In the past, direct-drive ...

Generally, two types of wind turbine drive trains can be distinguished, namely the gearbox and the direct drive wind turbine (Li and Chen, 2009). The first gearbox wind turbines ...

Direct-drive technology is the basis for direct-drive wind turbines; as Shown in the image below, the synchronous generator is directly powered by the rotor. A direct-drive wind turbine"s generator speed is equivalent to the ...

Wind power direct drive generator hoisting

A sophisticated Direct Drive with synchronous Generator. ... E-nacelle with Equipment customised for each Wind Turbine. Well-thought-out modular system is the basis for a new generation of ...

Web: https://sailesindustrialmachinery.co.za