Wind turbine generator rotor outer ring

What are the components of a wind turbine?
This contains all the components that sit on top of the tower, except the rotor system. It includes main shaft, gearbox, generator, brake, bearings, nacelle frame, yaw mechanism, auxiliary crane, hydraulic system, and cooling system. 1. Rotor System The rotor system captures wind energy and converts into rotational kinetic energy.

What is a gearbox in a wind turbine?
A gearbox is typically used in a wind turbine to increase rotational speed from a low-speed rotor to a higher speed electrical generator. A common ratio is about 90:1,with a rate 16.7 rpm input from the rotor to 1,500 rpm output for the generator.

What is a wind turbine rotor shaft made of?
The stated potential of GJS manufactured in permanent metal moulds and its unknown specific material properties led to the research project "Gusswelle". The main objective is the optimization of design possibilities for wind turbine rotor shafts. Therefore, a raw hollow rotor design shaft made of EN-GJS-400-18-LT chill cast is developed.

Can lightweight rotor shaft design be used in a wind turbine?
Through the application of the lightweight design methodology to the rotor shaft for a wind turbine,20% material could be savedin the trumpet section of the optimized hollow rotor shaft in comparison to the raw design,but with fulfilment of the failure criterion.

Is inner ring creep relevant for hollow rotor shafts of wind turbines?
Therefore,inner ring creep is highly relevantfor hollow rotor shafts of wind turbines with thin walls and low contact pressure. The prediction methodology for inner ring creep used in this case is based on the finite element simulation of the main shaft fatigue test bench.

How to improve the efficiency of a wind turbine?
The wind turbine is either vertical axis or horizontal axis wind turbine. To increase the efficiency the gear driven generator has been replaced by directly driven generator. This paper recounts the design optimization of inner and outer rotor permanent magnet synchronous machine of rating 500 KVA, 3.3 kV, 3-phase, and 600 rpm.

Generator rotor faults mainly include rotor winding faults and rotor body faults. The main reason for rotor winding failure is due to the grounding and inter-turn short circuit ...

The reliability of critical wind turbine components like the generator, the gearbox and the rotor depend on the use of efficient bearings. ... The outer ring serves as housing for ...

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New concepts for Ring-Generators Lightweight Ring Generators can be used for several applications. A highlight is the construction and electromagnetic layout of the generator for ...

The speed regulating wind turbine adopts the principle of direct grid connection of generator similar to traditional hydropower and thermal power generation, that is, the speed ...

Correlation of Planetary Bearing Outer Ring Creep and Gear Load Distribution in a Full-Size Wind Turbine ... (rotor- or generator sided bearing) where the "pre-loadzone" tooth engagement ...

Two types of generators are commonly used in wind turbines; induction generators and PMSGs. Recently, PMSGs are widely preferred due to their high-power densities. Furthermore, they are low in space occupancy, ...

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 ...

Many studies have published the outer-rotor design for other machine types and applications like outer-rotor permanent magnet generator for directly coupled wind turbines ...

Fig. 1. ORPMECH for wind turbines; (a) outer rotor of the device equipped with PMs; (b) inner stator of the device (steel tube serpentine); (c) vertical axis wind turbine with its hub mounted ...

ABAQUS is utilized to conduct finite element modeling and analysis of a 5 MW wind turbine generator. The main parameters of the wind turbine are as follows. The height of ...

DTU Wind DVST measurements: outer ring temperature, ... acoustic emission Photo by Mark Dunn, NREL 65814. Generator-side (GS) Rotor-side (RS) 0º GS DVST. 270º GS DVST. Photo ...

Turbin vertikal dikopel dengan generator dengan rotor sisi luar (outer rotor). Keuntungan dari penempatan rotor sisi luar adalah baling-baling dapat langsung tersambung ...

A DFIG is characterized by a wound rotor and three slip-ring induction machines, with the stator winding directly connected to the power grid and the wound rotor interfaced with the grid through a 3-phase AC/DC/AC ...

Coaxial counter-rotating propellers have been widely applied in ships and helicopters for improving the propulsion efficiency and offsetting system reactive torques. ...

Electromagnetic Performance Analysis of Wind Power Generator With Outer Permanent Magnet Rotor Based on Turbine Characteristics Variation Over Nominal Wind ...

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In this paper two permanent magnet flux switching generator (PMFSG) are designed for 2 kW output power and 220 V phase voltage at 1500 rpm and comparatively analyzed for wind power application.

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