Wind turbine generator air gap

Overview

In the generator, rotor components and stator components are separated by an airgap. During operation, a magnetic field generated by permanent magnets and/or wound magnets mounted on the rotor passes through the airgap between the rotor to the stator. The passage off the magnetic field through the. Funding for the work was provided by the DOE Office of Energy Efficiency and Renewable Energy, Wind Energy Technologies Office. The authors would like to thank Michael Maness (analyst, National Renewable Energy Laboratory, Strategic Energy Analysis Center) for his inputs on cost modeling, Cameron. An effective Permanent Magnet Generator may be DIY constructed by replacing the rotor with a new, smaller rotor with permanent magnets fastened around the circumference. Some designs that I have seen have left me concerned with the average air gap. Sentences or parts of sentences quoted.

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GeneratorSE: A Sizing Tool for Variable-Speed Wind Turbine ...

The stator current, Is, lags behind the induced voltage but ensures the lowest power rating requirements on the generator while ensuring the torque produced in the air-gap field is at maximum.

Method and apparatus for wind turbine air gap control

This invention relates generally to electric generators, and more particularly, to methods and apparatus for controlling an air gap between a rotor and a stator in a wind-powered turbine

A novel axial air-gap transverse flux switching PM generator: Design

In fact, by combining the features of a flux-switching machine into a transverse flux generator with an axial air gap, it is possible to improve the performance of a direct-drive wind turbine ...

Generator Air Gap

Think about big steam or gas turbine generators running at 3000 rpm (50 Hz) or 3600 rpm (60 Hz). Even the tiniest change in the air gap-down to a few microns-can throw the whole system ...

A magnetic analysis of ferrofluid-gaps for direct-drive wind turbine

Multi-megawatt permanent magnet (PM) direct-drive (DD) wind turbine generators (WTGs) require a substantial amount of expensive rare-earth PM material in their

Comparison of a Direct Drive Wind Turbine with and

In this paper a more detailed simulation model is depicted, which calculates realistic deformation of the wind turbine and in particular the displacement between the generator-rotor and

Dynamic reluctance air gap modeling and experimental evaluation of

This paper focuses on design and the evaluation of electromagnetic performance of the five phase permanent magnet synchronous generator (FP-PMSG) for direct-drive wind power ...

Towards an Integrated Design of Direct-Drive Wind Turbine

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-gap ...

Comparison of Different Model Depths of a Direct Drive Wind ...

The end of the chapter focuses on the causes of air gap displacement in a direct drive generator and describes the main factors, which have an impact on the generator air gap deflection.

Wind turbines and air gaps in the generator

Is it feasible to deliberately construct the

rotor with a large air gap and then fabricate arced iron pole pieces to mount over the magnets and so reduce the average air gap?

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