Demagnetization of wind turbine generator

This paper analyzes the low-voltage ride-through performance of a doubly-fed induction generator-based wind turbine under balanced grid fault. An improved ...

With horizontal axis wind turbines the weight is a big concern as the generator is mounted on top of the wind turbine tower. Although much work have been done on the electrical properties for this 12 kW DDPMSG 7, 8, ...

This study aims to determine the risk of demagnetization for a 12 kW direct driven permanent magnet synchronous generator. Furthermore, as the prices on PMs have ...

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Generators used in Wind Power Plants. ... Demagnetization occurs in the permanent magnet and the power factor cannot be controlled in this system. Instead of a PWM converter set, uncontrolled converters are also used in the ...

During severe grid fault, doubly fed induction generator (DFIG)-based wind turbines (WTs) demand switching to transient controls (e.g., demagnetization control) to suppress fault current. However, the transient stability considering LVRT control under weak grid fault has not been explored. To fill the gap, this paper firstly established the transient model of DFIG- based WT ...

Model for Partial Demagnetization of Permanent Magnets", IEEE Transactions on Magnetics, vol. 50, no. 12, pp. 1-5, December 2014. V S. Sjökvist and S. Eriksson, "Study of Demagnetization Risk for a 12 kW Direct Driven Permanent Magnet Synchronous Generator for Wind Power", Energy Science and Engineering, vol. 1, no. 3, pp. 128-134, September 2013.

The risk for partial demagnetization for the ferrite 12 kW generator has been investigated and compared to the risk for the NdFeB generator, showing that both generators have a reliable design if ...

This letter analyzes the transient stability of DFIG-based wind turbines (WTs) with demagnetization control during weak grid faults. It is firstly pointed out that there exist transient ...

This paper analyzes the demagnetization performance of the ferrite Permanent Magnets in the dual rotor radial flux permanent magnet generator. Two different partial demagnetization mechanisms in the DRRFPM generator are modeled and demonstrated. The 2D finite element analysis (FEA) is employed to accurately

analyze the distribution of ...

However, this low power factor will cause demagnetization. The armature current may cause quenching of the SC wires during a three-phase short circuit. Demagnetization of the ...

This paper analyzes the ability of a doubly fed induction generator (DFIG) in a wind turbine to ride through a grid fault and the limitations to its performance.

1 INTRODUCTION. Direct-drive permanent-magnet synchronous generators (DDPMSGs) are a popular choice in several small wind turbines installed in the United States. 1, 2 As the costs of installing these small wind turbines continue to rise, 3 many of the original equipment manufacturers of these small wind turbines are pursuing measures to improve the cost ...

See It Why it made the cut: This affordable turbine can survive most climates. Specs. Swept area: ~2.5 square meters Height: Adjustable as needed Certification: N/A Pros. Survives most ...

This article investigates the combined partial demagnetization and static eccentricity fault in an Axial Flux Permanent Magnet (AFPM) Synchronous Generator. The machine is simulated using 3D FEM, while the EMF spectrum is analyzed in order to export the fault related harmonics using the FFT analysis. Firstly, the partial demagnetization fault, ...

This paper presents the Co-Simulation of a Small Wind Turbine (SWT) with Permanent Magnet Synchronous Generator (PMSG). It combines Simulink, Maxwell and Simplorer software"s to show the ...

This paper presents a control strategy for enhancing the low voltage ride-through (LVRT) capability of a doubly-fed wind power generator based on its mathematical model. The control strategy utilizes grid magnetic flux-oriented vector control. A dual inverter control system is designed based on this strategy, and a simulation model of the wind turbine"s LVRT capability ...

A new method for detecting demagnetization faults in axial flux permanent magnet synchronous wind generators is presented in this study. Demagnetization faults occur in the case of total or partial loss of the magnetic ...

The large-scale wind energy conversion systems (WECSs) based on doubly-fed induction generators (DFIGs) are very popular in recent years due to the numerous ...

The large-scale wind energy conversion system (WECS) based on a doubly fed induction generator (DFIG) has gained popularity in recent years because of its various economic and technical merits.

A new methodology for detecting demagnetization faults in axial flux permanent magnet synchronous wind

generators is presented in this study. Demagnetization faults occur when a partial or total loss of the magnetic ...

This article delves into the post-demagnetization torque ripple of fractional-slot surface-mounted PM wind power generators after short circuit faults. Firstly, demagnetizing magnetomotive force from three-phase short circuit (3PSC) currents is modelled and demagnetization distribution pattern is analyzed. Then, this article investigates the post ...

This generator is introduced in a large-scale wind turbine which can be used in a big wind farm. This generator is used in gearless configuration. The work focuses on the geometric sizing and the ...

Abstract: Demagnetization control is the most commonly used low voltage ride through (LVRT) method for doubly fed induction generator (DFIG)-based wind turbines (WTs). ...

Since the stator of DFIG-based wind turbines is directly connected to the grid, it is dramatically affected by transient situations that may occur on the grid side. In order to meet grid code requirements, reactive power support must be provided to keep the DFIG connected to the grid during the transient state. To achieve this, Low Voltage Ride Through (LVRT) ...