

The online partial discharge measurements in the winding of turbine generator consider a widely used method for diagnosing the quality and evaluating performance of the stator winding insulation ...

From a sample of more than 1200 wind turbine generators, most winding insulation failures were attributed to mechanical failure of the support structure. The effects of humidity, salinity and water droplets on the generator winding insulation offshore WTs are reviewed in . These can increase the occurrence of partial discharges that can be the ...

Plant managers and asset managers are not interested in diagnostic test results. Instead, they want to know when a motor or generator stator winding will fail. Since about 50% of machine failures are caused by winding insulation failure [1,2], it is obvious that they want to know the remaining (or residual) life of the windings.

Most turbines have three blades which are made mostly of fiberglass. Turbine blades vary in size, but a typical modern land-based wind turbine has blades of over 170 feet (52 meters). The largest turbine is GE's Haliade-X offshore wind turbine, with blades 351 feet long (107 meters) - about the same length as a football field.

The maximum designed generator stator winding insulation temperature for the wind turbines is 155°C, which corresponds to a Class F rated insulation material. Multiple linear regression analysis is a statistical method ...

Generator condition monitors (GCMs) are used to detect stator core lamination insulation burning in hydrogen-cooled machines. They detect particulates from burning core lamination insulation.

Fault diagnosis and preventive maintenance techniques for wind turbine generators are still at an early stage compared to matured strategies used for generators in conventional power plants.

Research on fault detection (FD) and condition monitoring (CM) of rotating electrical generators for modern wind turbines has addressed a wide variety of technologies.

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wind turbine generators. We conduct: ... measurement and testing to reveal issues such as copper cracks or poor connections, o Identifying insulation problems ... To give an overall indication of generator winding and .

insulation health, we have also developed a . health score,

The inter-turn insulation of stator winding for wind turbine generator (WTG) usually suffers the repetitive impulse over-voltages when the converter is connected to the winding terminals. The long-term effect of repetitive impulse over-voltages may lead to the development of inter-turn insulation defects and/or the occurrence of inter-turn insulation fault ...

To give an overall indication of generator winding and insulation health, we have also developed a health score, calculated from the results of electrical measurements. This allows operators to compare the condition of machines of identical design or serving the same function, and finetune the maintenance strategy of large wind turbine fleets.

The adoption of the tip-up test enables the insulation properties measurement. Based on the tip-up tests" findings, the interfacial polarization process starts at 75% RH under 60°C, while ...

Wind turbines are a novel field of research regarding partial discharge diagnostics since they are subjected to a variety of aging factors, which are different from conventional turbines. In this respect, particular attention should be paid to the multi-factor stressing of insulation and their consequences on the partial discharges.

Bearing voltage of a 5.5 MW wind-turbine permanent magnet synchronous generator is studied. ... generator winding parameters and stray capacitance parameters based on experiments is proposed to ...

Bearing current problems frequently appear in wind turbine systems, which cause wind turbines the break down and result in very large losses. This paper investigates and compares bearing current problems in three kinds of wind turbine generators, namely doubly-fed induction generator (DFIG), direct-drive permanent magnet synchronous generator (PMSG), ...

This article reviews the literature and international and national standards concerned with factory and maintenance hipot testing of turbine generators, although much of the article is also applicable to hydrogenerators ...

Insulation testing of your generator windings is a data acquisition method that--if completed during regular maintenance cycles--can help you understand the health of your equipment. A good part of a wind turbine technician"s time is spent checking, lubricating, and inspecting ...

The PWM voltage pulses output by the inverter reaches the stator winding of the wind turbine generator through the cable. Due to the impedance mismatch between the motor and the cable, the voltage at the motor end rises under the action of the circuit wave process; on the other hand, electromagnetic oscillation occurs within the motor winding. Higher overvoltage is ...

5.5 MW wind-turbine permanent magnet synchronous generator is studied. The bearing voltage equivalent circuit is modelled by studying the internal system structure of the generator, and an extraction method of cable parameters, generator winding parameters and stray capacitance parameters based on experiments is proposed to simulate the system.

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To show the described methods including faults, a straightforward model of an individual thermal measuring point of a wind turbine generator is designed by the authors in [15]. The model is ...

Abstract--Wind turbine generators are subjected to unusual environments and stresses. In this paper we will discuss several types of wind generator insulation failure mechanisms as well as forensic analysis results of several different manufacturers' systems. The types of generators studied include induction,

Failure in the rotor winding insulation of doubly-fed induction generators (DFIG) used in wind turbines is common due to the harsh environment and operating stresses. However, rotor insulation testing is difficult and costly due to limited accessibility of wind generators installed inside the nacelle at remote locations. Therefore, remote and automated insulation testing can ...

From a sample of more than 1200 wind turbine generators [44], most winding insulation failures were attributed to mechanical failure of the support structure. The effects of humidity, salinity and ...

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