

Wind turbine generator winding failure

The findings in this research attributed 32% of those generator failures to bearing failures; 19.6% to stator wedges; 17% to rotor faults, (including connections); and 11% to stator-winding shorts. (Editor's Note: Led by Shermco's Kevin Alewine, this study was published by the American Wind Energy Association [AWEA] in 2016.)

Reviewed in this paper will be several wind turbine generator applications where this is a common failure mode, some possible weaknesses in the design of the coil/slot configurations and some possible solutions to avoid a repeat failure after repair. ... A review of electrical winding failures in wind turbine generators. K. Alewine William Chen ...

Including current production and the many new projects under way, U.S. wind energy peak capacity should pass 75,000 MW nameplate capacity by the end of 2015, according to the American Wind Energy ...

Shipurkar U, Ma K, Polinder H, Blaabjerg F, Ferreira JA. A review of failure mechanisms in wind turbine generator systems. In: 17th European Conference on Power Electronics and Applications (EPE'15 ECCE ...

Wind turbine generator failure modes analysis and occurrence. Proc. Windpower, Dallas, Texas (May 2010) ... [13] K. Alewine, W. Chen. A review of electrical winding failures in wind turbine generators. Proc. IEEE Electrical Insulation Conference (EIC), Annapolis, MD, USA (June 2011), pp. 392-397. Crossref View in Scopus [14] J. Carroll, A ...

WMEP states that 0.15 failures/turbine/year, with an average of six days per failure have been found to rise significantly as the wind turbine ages. Data published by Alewine and Chen[5] says that the cause of failure in generators is assumed evenly split between bearing and winding-insulation failures.

A wind turbine generator reliability study is performed and explained in this paper. The study was performed due to the findings by Shipurkar et al. (2015), Alewine et al. (2012), and Liu et al. (2018) that bearing failure to be the main cause of generator failure. Another main reason for performing this research is the recent finding of the new IEEE Standard 841 ...

According to a survey funded by Allianz Insurance, for medium and high voltage motors, stator winding failures accounted for 66 % of the total number of failures ; the IEEE working group published data on generator failures in 1979, showing that stator windings Winding insulation problems account for 40 % of shutdown faults ; the survey by the Commission ...

The large scale deployment of modern wind turbines and the yearly increase of installed capacity have drawn attention to their operation and maintenance issues. The development of highly ...

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According to the data, the percentage of structural failures is considerably lower than blade failures. The maximum number of wind turbine blade failures occurred in 2013, while the minimum number ...

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 ...

Wind turbine generator failures are one of the primary reasons for increased operations and maintenance (O&M) costs and generation asset downtime. Generator issues continue to ...

Fan or heater failures accounted for 7.9 % of failures, while winding failures accounted for 7.1 % of failures. 4.2 % of failures with generator temperature abnormalities were attributed to other causes [12, 13]. ... With the enhancement of wind power generator capacity, the scale of the generator gradually increases, while the sealing protection of the ...

Alewine K, Chen W (2012) A review of electrical winding failures in wind turbine generators. IEEE Electrical Insulation Magazine 28(4): 8-13. Crossref. Google Scholar. Asefi M, Nazarzadeh J (2018) A fast transient model for bearing fault analysis in induction machine drives. IEEE Sensors Journal 19(5): 1897-1904.

Understanding the types of failures and how often they might occur in a fleet of turbines is instrumental to developing a proper maintenance procedure and testing regimen. By reviewing ...

At a certain wind speed, the failure rate of the wind power plant is calculated by summation the failure rates of the composed components in that speed and given in Figure 17. The output power of the understudied wind turbine during 2017 by considering the wind speed data of Manjil region is determined and presented in Figure 18. For adequacy ...

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