Large wind temperature deviation generator vibration

How to reduce vibration in a wind turbine?
Drivetrain is a heavily loaded mechanical system in a wind turbine. It may be subjected to excessive loads and built-in vibration issue due to different reasons. Rotatory controls and torque control algorithmcan be used to reduce the vibration of drivetrain components.

Can vibration signal analysis be used to detect faults in wind turbines?
Vibration signal analysis has emerged as a promising technique for fault detection due to its effectiveness in identifying machinery problems. However, non-stationary vibration signatures produced by wind turbines present challenges for traditional diagnostic approaches.

Do wind turbine vibrations affect the normal operation of a wind turbine?
Excessive wind-induced vibrations not only affect the normal operationof wind turbines but also cause damage to wind turbines or even collapse. Dueñas-Osorio and Basu [3]indicated that the malfunctioning of acceleration-sensitive equipment in wind turbines might increase the annual failure rate during normal operating conditions.

How does a wind turbine resonant condition affect vibration intensity?
Furthermore, a small difference in characteristics can have a big influence on the vibration intensity when the wind turbine operates close to the resonant conditions. Most of the damping controls proposed were installed in the nacelle for the first mode of the wind turbine, which is low natural frequency.

Why do wind turbines vibrate a lot?
However,this trend leads to a reduction in wind turbine natural frequencies and structural damping ratios,resulting in a significant increase in wind-induced vibrations. Excessive wind-induced vibrations not only affect the normal operation of wind turbines but also cause damage to wind turbines or even collapse.

Should a fully coupled wind turbine model be used in vibration control research?
Therefore,a fully coupled wind turbine model should be adopted in vibration control researchto study the effectiveness of the proposed control method more accurately.

Based on the holistic coupled dynamic analysis model of wind turbines, this paper proposes a virtual TMD algorithm for ATMD control to reduce the along-wind vibration of the tower. Also, the optimum design of the virtual ...

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maintenance cost for a wind turbine. In this paper, a new condition monitoring method based on the Nonlinear State Estimate Technique for a wind turbine generator is proposed. The ...

patterns that are far more varied than traditional generators. Analysis of a wind turbine vibration signal is therefore more complex and as such, makes detecting and diagnosing faults more ...

This paper aims to present in detail the problems associated with wind turbine vibration and a thorough literature review of the different mitigation solutions. ... It could reduce the standard deviation of the normal ...

The results of the study carried out in this paper using actual wind turbine vibration dataset reveal that the CNN approach surpasses SVM and RF techniques in achieving higher accuracy and...

An extensive review of artificial intelligence (AI) driven methodologies for wind turbine condition monitoring in the last 10 years (2010-2020) is given in Chatterjee and Dethlefs (2021), where ...

This paper describes the parameterized modeling method of the stator end of large turbine generator units. The parametric expressions are given for the end windings of the upper and ...

is a new trend for above 10MW class wind generators. High temperature superconducting (HTS) machines are famous for low weight, small size, and high efficiency. ... increased forces and ...

In fact, the attempts in the literature at using temperature and sound and vibration data [26] are usually based on the integration of multiple time scale analysis, as in [25] or in [27], where ...

In this case, generator drive-end bearing temperature and vibration are combined into a model considering weekly error metrics. Primarily, this paper provides a novel approach to combine multiple normal behaviour ...

Wind speed versus vibration relationships of neighbouring turbines (a) ... as wind speed, generator speed and generator powe r, ... Study of weather and location effects on wind turbine, Wind ...

The obtained performance prove that this control algorithm can effectively reduce the standard deviation of the edgewise blade vibration up to 48% ... Operation of a large wind ...

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