Wind turbine generator alignment process

How is wind turbine alignment done?
Wind Turbine Alignment is normally done by treating the gearbox as the stationary machine,and the generator as the moveable machine. The misalignment is measured almost exclusively with a laser shaft alignment tool.

Do wind turbines need to be aligned?
Precision alignment is recommended by most wind turbine manufacturers for optimal operation and reliability. Generator efficiency can also be affected by misalignment (angular and offset). The following questions--and answers--will help you to enhance the productivity and longevity of your turbine. What needs to be aligned in a wind turbine?

How long does it take to align a wind turbine?
The first turbine was aligned early in the morning in moderate wind speeds of approx. 2-5 m/s,the alignment went smoothly and we completed the alignment in about 45 minuteswith excellent alignment results. The second turbine proved to be challenging. After lunch,the wind had picked up a little but was still acceptable.

Why should a wind turbine shaft be aligned?
Properly aligned shafts are able to spin freely and not induce other unwanted forces to the system. These unwanted forces will damage and/or destroy bearings,seals,and couplings,and eventually the gearbox or generator. Precision alignment is recommended by most wind turbine manufacturers for optimal operation and reliability.

How difficult is it to align turbine-generator sets?
The alignment of turbine-generator sets poses unique challenges that only the best laser shaft alignment systems can overcome. Not the least of these is the difficulty of turning the shafts (either coupled or uncoupled) and the methods employed in turning them.

What happens if a wind turbine is misaligned?
These unwanted forces will damage and/or destroy bearings,seals,and couplings,and eventually the gearbox or generator. Precision alignment is recommended by most wind turbine manufacturers for optimal operation and reliability. Generator efficiency can also be affected by misalignment (angular and offset).

Precision shaft alignment is the process of aligning the centerline of the shafts of one or more rotating machines. When the shaft centerlines are co-linear they can turn freely, and the external forces that ...

Current methods to detect a change in the alignment of turbines are based on wind direction in-situ comparison in case of redundancy of the device on the nacelle or by comparing wind ...

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Precision alignment of the generator to the gearbox in a wind turbine (the high speed shaft) is critical to proper operation. 60 percent of wind turbine downtime is related to drive train failure: gearbox, generator, main ...

Due to the continuous upscaling of wind turbine generators new problems are expected to arise during the installation of the turbines. ... 77 78 F. Research questions Research-question What ...

Wind turbine misalignment and alignment degradation during the operational lifetime of a wind turbine are both common issues that wind farm operators battle with. Since the individual ...

In 2022 the first 12 MW offshore wind turbines are expected to be installed. Due to the continuous upscaling of wind turbine generators new problems are expected to arise during the ...

In the authors" study "Monitoring the alignment of the wind turbine shaft in real time using laser measurement", an example of the use of laser measurements to determine ...

ters and one wind vane) to detect an alignment change of the wind direction measurement device during operation. Re-sults and discussion of a demonstration case with a test wind turbine ...

The Need for Accurate Shaft Alignment in Wind Turbines. Wind turbines operate in some of the harshest environments on earth. From the turbulent winds of coastal regions to ...

Learn how wind turbines operate to produce power from ... The terms "wind energy" and "wind power" both describe the process by which the wind is used to generate mechanical power or ...

Precision alignment is a vital first step in preventing mechanical failure in wind turbines. whether the OEM, an O& M contractor, or an O& M team performs the alignment, good tools and training are not optional.

The ECO GE is custom-made with firmware and fixtures designed specifically for GE 1.5x and 2.5x. These precisely designed fixtures make generator-to-gearbox alignment easy inside any nacelle - safeguarding reliability and optimizing the ...

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