Wind turbine generator alignment regulations

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?

When should a turbine alignment be performed?
Anytime a gearbox or generator is replaced,an alignment should be performed. Because of the movement of the tower and other dynamic forces,a best practice is to re-check the alignment six months after the initial install and a minimum of every year after. Consult your turbine's maintenance manual for recommendations.

How fast should a wind turbine be aligned?
Check with the turbine manufacturer for specific safety requirements,but generally the brake should be engaged,dead bolts locked,blades pitched at 9:00,and the nacelle up against the wind. Alignment should not be tried in wind speeds ~over 8 m/s.Does tower movement affect alignment measurements? All movement can affect the laser measurements.

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.

IEC 61400-1:2005, Wind turbines -- Part 1: Design requirements; IEC 61400-3, Wind turbines -- Part 3: Design requirements for offshore wind turbines; IEC/TS 61400-13:2001, Wind turbine ...

The initial settings of the generator and transmission are the basic settings made during the installation of the wind turbine. These settings include the correct positioning of the generator and transmission, ...

The alignment process involves ensuring that the rotor shaft and generator shaft are perfectly in line, both horizontally and vertically, so that rotational energy can pass from one to the other without ...

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Soft foot must be corrected before alignment. A machine with a soft foot condition will continue to move during alignment, making a good job virtually impossible. Because of the generator ...

The FIXTURLASER shaft alignment instruments are custom made with firmware features that ensure high measurement accuracy and with mounting hardware that is ideally suited for optimal alignment ...

International collaboration supported by the U.S. Department of Energy"s Wind Energy Technologies Office has led to the development of standards for the wind energy industry.

This study aimed to improve wind resource utilization efficiency and overcome the effects of wind fluctuation on wind power generation systems (WPGSs). A novel WPGS and a method of ...

Explore expert techniques for wind turbine calibration and alignment in wind electric power generation.

The workstream on Reference Designation Standards for Wind Power Systems - Wind Turbine Generator (RDS for WTG) was established in May 2020 to align Reference Designation Standards ...

Proper shaft alignment of a wind turbine is critical for these reasons: Wind turbines are attached to the tops of tall masts, often several hundred feet in the air. They must be engineered to withstand the ...

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