Alignment of wind turbine gearbox and generator

How can a wind turbine generator be aligned?
We can quickly and safely align your wind turbine generators and shafts using the latestLaser alignment technology. The equipment is capable of aligning gearboxes to generators and to check for Yaw.

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.

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.

What is a wind turbine alignment fixture?
A wind generator alignment fixturemounted on a generator flange. This Laser alignment fixture will fit on most Siemens turbines. A wind turbine fixture which can be mounted on a brake disc with a magnetic base. This is a flexible laser fixture that will fit on most Siemens turbines.

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.

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This study aimed to evaluate the efficiency of different ISO VG 320 oil formulations used in a 2.5 MW wind turbine gearbox. Two commercially available lubricants, a mineral oil and a polyalphaolefin (PAO) lubricant,

were tested under realistic operating conditions using a customized test rig.Measurements showed that the overall efficiency of the mineral ...

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 energy efficiency of the wind turbine.

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.

The gearbox, generator, and other critical components of a wind turbine depend on the proper alignment of the gearbox shaft with the generator shaft. Misalignment can cause vibration, premature bearing wear, and even lead to cracks in key components, resulting in operational failure.

Generator Components. Most wind turbine generators are designed to run at a fixed speed so that the AC electricity is generated at the required frequency. Typically, the components of a large wind turbine generator driveline are the rotor, hub, input shaft, gearbox, disc brake, and generator (see Figure 1).

Bioinfo Publications 302 FAILURE ANALYSIS OF BEARING IN WIND TURBINE GENERATOR GEARBOX Journal of Information Systems and Communication ISSN: 0976-8742 & E-ISSN: 0976-8750, Volume 3, Issue 1, 2012 ...

After pre-alignment is completed we need to mount the lasers on the gearbox brake disk and generator coupling hub. This step is extremely easy. The GO Wind and XA Wind kits by VibrAlign are configured with customized magnetic mounting hardware for each OEM"s turbine design, including GE, Siemens, Gamesa, Mitsubishi, Vestas, Nordex, and Suzlon.

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 ...

Of all the mechanical maintenance problems in wind turbines, shaft alignments are probably easiest to understand. The high-speed shaft between a gearbox and generator is a critical point of failure. Their ...

electrical generators for wind turbines are not viable in the far-term and an automated winding process of annular generators must be given serious design and investment consideration. 6. GEARBOX DESIGN OPTIONS . The weakest link of a size wind turbine has been utility their gearbox. As turbine sizes increased, the design gearboxes able of

Shaft Alignment & Wind Power. 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 of ...

Wind turbines are notoriously flexible structures. Thus, changes in wind speed and direction, generator load, and temperature can have a very significant effect on the shaft alignment between the gearbox and generator.

A generator, which is coupled to the output shaft of the gearbox. The generator"s stator rotates, changing the wind energy to electricity. ... 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 ...

Alignment of generator and gearbox. ... Learn more about our shaft alignment systems for wind turbines. Flatness measurement of tower flanges. If flatness measurement of the flanges is difficult depends, among other things, on the diameter of the tower. Smaller diameters (up to 4 meters) are usually straightforward to measure.

Misalignment between gearbox and generator is the first common problem. Paul Berberian of Easy Laser, a company that manufacturers wind turbine alignment tools, explains, "Misalignment is easy to detect and correct, but there are no standards per se because everything moves around so much.

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