

What are the differences between grease lubricants for wind turbine pitch bearings?

It is apparent that there are significant differences between the greases, i. e., different base oil types, base oil viscosities between 13 and 420 mm<sup>2</sup>/s, different thickener types, NLGI classes from 1 to 2 are compared. The lack of a red line in the grease compilation shows the complexity of grease lubricants for wind turbine pitch bearings.

Do wind turbine bearings need lubrication?

Furthermore, due to the constant rotation of the hub, the used lubricant must remain in place. Therefore, the pitch bearings in wind turbines are usually lubricated with grease. Several publications already focused on grease composition for wear reduction of oscillating rolling element bearings ,,,.

What is the use of Grease in wind turbines?

The grease is highly suitable for lubricating bearings that operate under both radial and axial loads, such as on wind turbine main shafts. It is suitable for extreme pressure, low temperature applications. It offers good corrosion protection, and has good water resistance. It operates in a temperature range of -30 to 110 °C.

Which lubricants are used in pitch bearing of wind turbines?

The lubricants contain additives and solid lubricants, which may influence the wear behaviour. Since the focus of the work is the comparison of industrial grease lubricants, which are used in pitch bearing of wind turbines, the chemical composition of the greases is not fully known.

Do wind turbine pitch bearings wear?

The combination of oscillating operation, high loads, and mixed lubrication often leads to wear. Grease lubricants in wind turbine pitch bearings should be designed to avoid such wear. Due to different available grease lubricants, the anti-wear properties are investigated under downscaled wind turbine pitch bearing conditions.

Are pitch bearings lubricated with grease?

Therefore, the pitch bearings in wind turbines are usually lubricated with grease. Several publications already focused on grease composition for wear reduction of oscillating rolling element bearings ,,,. Due to the instationary and heterogeneous operating conditions in wind turbines these results are not directly transferable.

Value of Grease Analysis  
 o Screening analysis of entire wind turbine 2x/yr (up to 14 samples) for ~\$350/yr  
 o Some problems can be corrected up tower for <\$2000  
 o Single bearing failure can ...

In bearing life tests, Grease A resulted in more than 1.65 times higher life, compared to Grease B. Based on our testing, we concluded that grease quantity, type, and consistency all play a role in operating torque and ...

liability of wind turbines and their subcomponents, an area which overall has received a lot of attention. The motivation for this current review is the observation that the wind industry has ...

The same for wind power bearings can also be used for wind power bearings in the lubricating grease in the size and concentration of abrasive particles, oil viscosity, temperature and moisture, and other oil condition ...

The Riffel test has been developed to simulate bearing conditions in wind turbine applications. It has become a key performance requirement for obtaining wind turbine builder approvals. It is ...

The right grease can help prevent premature bearing damage in turbines fleetwide; seal out environmental contaminants; prevent wear and micropitting; reduce friction during operation; provide rust ...

Xia et al. [130] prepared a new type of wind turbine bearing grease (base oil is poly-olefin, thickener is lithium composite soap) by adding dibutyldithio-carbamate (T351) and ...

o Wind turbine main bearings pose distinctive lubrication challenges related to size, operating conditions, location and environment. o Grease formulations and performance tests must consider multiple competing ...

SKF LGWM 1 is a low consistency, mineral oil-based grease. The grease is highly suitable for lubricating bearings that operate under both radial and axial loads, such as on wind turbine main shafts. It is suitable for extreme pressure, ...

efficient and reliable wind turbines Green wind power will play an increasingly important role in reducing global carbon emissions over the next few decades. The next-generation, carbon ...