

Case Study: Application of Motionics Wireless Dial Indicators (BlueDial) in Wind Turbine Gearbox Maintenance

Year: 2020

Location: United States

Hardware: [BlueDial Wireless Dial Indicator](#) – BD10-783

Software: [MultiGage Reader](#)

Application:

Certain models of wind turbine gearboxes will systematically develop a problem where the high-speed bearing outer race spins in the housing bore. This leads to egg-shaping of the hole, then to gear tooth misalignment, and ultimately, destruction of the gearing in the gearbox.

To prevent this condition from destroying the gearbox, the company in this case has developed a field repair that corrects the problem. This process involves boring the hole oversize, installing a sleeve, and then putting an anti-rotation device in the outer race of the bearing. This prevents the outer race from spinning.

To conduct this repair, the gearbox must be mostly disassembled. Then, a boring bar is used to cut out the damaged material and then install a sleeve made from similar material to the gearbox case. This ensures that the thermal expansion range of the installed sleeve is close to the same as the housing.



Fig. 1 Shop application of gearbox repair method



Fig. 2 Shop application of gearbox repair method

The BlueDial wireless dial indicator is critical to the success of this process. This is due to the fact that the bearing bore that requires repair is located inside the gearbox, so no conventional dial indicator could be seen by the machinist in order to measure and then adjust the angle of the boring bar to verify perfect alignment with the hole.

BlueDial will transmit readings via Bluetooth to a smart device using Motionics' MultiGage Reader application, so the user can view and record readings without having to look at the indicator face itself. The remote reading of the indicator allows the machinist to mount the indicator on the end of the boring bar and sweep the bore to set the alignment, and then again to verify that the final bore dimension is correct to fit the OD of the bearing.



Fig. 3 Shop application of gearbox repair method



Fig. 4 BlueDial transmits readings wirelessly

This repair method could not have been developed without the use of BlueDial. The company in this case currently has three crews in the field performing these repairs on a regular basis, and the BlueDial indicators have been working faultlessly.