TIMKEN



Pictured above is damage seen in the field on spherical roller bearings used in three-point mount turbines.

TIMKEN® TAPERED ROLLER BEARINGS EXTEND MAINSHAFT BEARING AND GEARBOX LIFE, REPLACE STANDARD SPHERICAL ROLLER BEARING ASSEMBLY

CHALLENGE

A power producer invested in a multimillion dollar, three-point mount wind turbine that was supposed to last for 20 years – or more. Instead, it failed after six or eight. It's a challenge that began plaguing wind power producers across the industry. The problem resided in the turbine mainshaft. Ever-changing loading conditions combined with slow operating speeds caused damage to the single spherical roller bearing in the main bearing position.

The geometry of a spherical roller bearing causes surface wear and damage (roller skidding and micropitting) on the upwind rollers. It can result in spalling and related bearing damage.

Premature bearing replacements significantly increased field repair and operation costs, with the crane service alone costing $120,000 or more.

TIMKEN SOLUTION

Joining forces with a customer in the U.S., Timken engineers developed the Timken® tapered double inner (TDI) mainshaft roller bearing. It's a drop-in replacement for spherical roller bearings in three-point mount turbines that requires no modifications to the turbine.

The true rolling motion of the tapered roller bearing improves system stiffness and significantly reduces adhesive wear, sliding, skidding and smearing which can extend the life of the mainshaft.

Another major benefit of a mainshaft supported by a tapered roller bearings is it significantly reduces axial movement of the mainshaft. This reduces thrust loading into the gearbox, which will help extend the life of the gearbox.



RESULTS THAT MATTER

IMPROVED BEARING LIFE

EXTENDED MAINTENANCE-FREE OPERATIONS

DECREASED LOAD ON THE GEARBOX

REDUCED AXIAL DEFLECTION BY **67%**

SAVE MORE THAN **$120K** IN MAINTENANCE & REPLACEMENT COSTS

The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets bearings, gear drives, automated lubrication systems, belts, brakes, clutches, chain, couplings, linear motion products and related industrial motion rebuild and repair services.

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