



TIMKEN

**WIND
ENERGY
AFTERMARKET
SOLUTIONS**

The Timken Experience: **QUALITY AND PERFORMANCE**

The Timken name stands for quality, reliability and durability. We provide wind turbine owners and operators with smart, cost-effective wind-energy solutions that help improve turbine performance, extend equipment life and lower total cost of ownership.

MAIN SHAFT BEARING

COMMON PROBLEM:

Life Limiting Wear

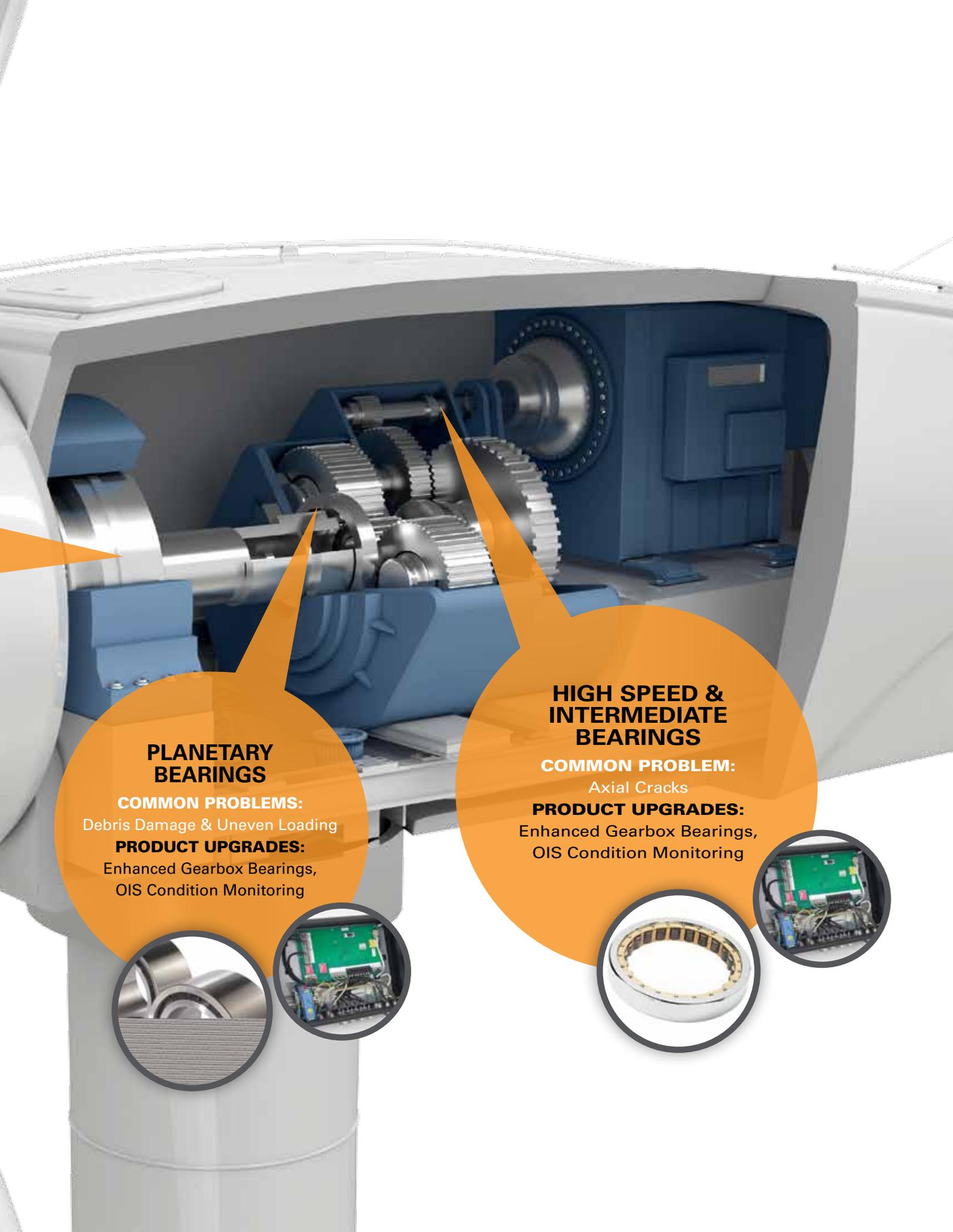
PRODUCT UPGRADES:

Wear Resistant SRB,
Lube Systems Solutions,
OIS Condition Monitoring

SERVICE SOLUTIONS:

Uptower Inspection





PLANETARY BEARINGS

COMMON PROBLEMS:

Debris Damage & Uneven Loading

PRODUCT UPGRADES:

Enhanced Gearbox Bearings,
OIS Condition Monitoring



HIGH SPEED & INTERMEDIATE BEARINGS

COMMON PROBLEM:

Axial Cracks

PRODUCT UPGRADES:

Enhanced Gearbox Bearings,
OIS Condition Monitoring



PRODUCT UPGRADES

Wear-Resistant Spherical Bearings for Main Shafts

Timken® Wear-Resistant DLC-coated bearings significantly reduce wear and can result in more life under poor lubrication environments, low lambda conditions and debris contamination. Combined with a split cage to compensate for uneven loads and enhanced internal geometry to better accommodate thrust loads, we design Timken® spherical roller bearings for superior performance in 3-point mount turbines.

Enhanced High Speed Gearbox Bearings

To help protect against brittle flaking, axial cracking and roller skidding Timken recommends case-carburized, wear-resistant cylindrical roller bearings and Timken tapered roller bearings.

Enhanced Gearbox Planet Bearings

A combination of case-carburized steel, Wear-Resistant DLC-coated engineered surfaces and matched internal clearance cylindrical roller bearing sets help protect against uneven loading and debris damage in gearbox planetary positions.

Lubrication Solutions

Timken grease formulas help increase performance and bearing life in critical wind applications. Automatic lubrication systems reliably deliver the grease.

OIS Condition Monitoring

Timken offers the Online Intelligence System (OIS) condition monitoring platform for both direct drive and modular wind turbines. Available as a portable system or for permanent installations, the OIS combines advanced vibration analysis and shock pulse techniques to deliver superior damage detection at both low and high speeds.

Bearing Heaters

Timken offers an assortment of high-quality induction heaters suitable for up-tower and shop use. They quickly and safely heat and radially expand gears, rings, couplings, bearings and other components for easy installation and removal.

TIMKEN

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 high-performance mechanical components, including bearings, belts, chain, gears and related mechanical power transmission products and services.

Stronger. Commitment. Stronger. Value. Stronger. Worldwide. Stronger. Together. | Stronger. By Design.

www.timken.com



*This label distinguishes
Timken upgraded products
in wind energy applications.*