

TIMKEN® ULTRAWIND TAPERED ROLLER BEARINGS

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TIMKEN® ULTRAWIND TAPERED ROLLER BEARINGS DELIVER SIMPLICITY, RELIABILITY, PERFORMANCE

Wind energy is an industry in which bearings play a significant role in defining and improving reliability. Proper bearing design and application review are key factors in helping to increase wind turbine availability and reduce maintenance costs.

For main shaft designs in both gear and gearless wind turbines, tapered roller bearings provide features that address concerns related to:

- + Bearing life/capacity
- + Stress and roller load management
- + Roller skidding and smearing
- + System stiffness and turbine assembly

As the wind energy industry evolves toward multi-megawatt onshore and offshore turbines, the need for sustainable bearings solutions increases. This is where Timken's expertise comes in.

Now, the company that invented a tapered roller bearing introduces its new series of tapered roller bearings in ultra-large size ranges to the wind energy market.

Ideal for original equipment manufacturers developing multi-megawatt wind turbine designs, this series of bearings – called the Timken® UltraWind Tapered Roller Bearings – optimizes drive train simplicity, reliability and performance. It features a customized main shaft bearing system approach that combines a double-row or two single-row tapered roller bearings, seals, lubrication and condition monitoring.

Timken® UltraWind tapered roller bearing features and benefits include:

- + Saving on capital equipment costs with the simplified drive train design
- + Having the highest bearing life ratings in the industry as certified by Germanischer Lloyd
- + Pre-setting the internal clearance to facilitate ease and accuracy of the assembly



- + Ensuring the pre-loaded bearing has superior stiffness to manage the motion of the main shaft and rotor
- + Designing the bearing raceway profiles to control maximum stress levels to provide greater product durability
- + Optimizing the cage design for capacity and roller retention, including both steel and polymer configurations

The Timken® UltraWind tapered roller bearing is part of a main shaft system solution that takes into consideration the bearing's "total health" and can be customized to suit a customer's specific design arrangements. Bearing designs can accommodate most styles of wind turbine designs with variable bolt circles, shaft-mounted and shaftless designs, rotating inners and outers, gear and gearless wind turbines.



TIMKEN SOLUTIONS FOR SUSTAINABLE WIND POWER

For Modular Wind Turbines, Direct Drive Wind Turbines And Hybrid Wind Turbines



Timken® Middle Frequency Induction Heaters help you efficiently install bearings and gears, while protecting the work piece from damage.

Timken® Wind Energy Seals offer a variety of sealing options to meet the demanding requirements of the main shaft bearing. They are available in elastomeric, PTFE and EcoTum labyrinth styles.

Timken® Wind Energy Lubrication System is an engineered system that meters the flow of grease in and out of the main shaft bearings, optimizing bearing and seal performance. It ensures that fresh grease is provided over the lifecycle of the bearing, and that old grease is purged.

Timken® Online Intelligence System provides advanced condition monitoring of key turbine components. Utilizing shock pulse HD, this unit – combined with Timken® services – provides unmatched data collection and analysis.

Timken® Wear-Resistant Bearings use our advanced tribological and metallurgical knowledge to solve the wear issues that cause you downtime. Timken wear-resistant bearings are available as tapered, cylindrical or spherical roller bearings.

THE TIMKEN EXPERIENCE

With Timken®, you get friction management and power-transmission expertise, precision manufacturing capabilities and world-class engineering. It's all part of the value that Timken brings to the wind industry, including:

Advanced solutions that work: We collaborate with turbine and gear drive designers to explore the wide range of operating parameters commonly experienced by wind turbines. Using our proprietary engineering system – Timken Syber Wind Bearing System Analysis – we can identify enhanced friction-management solutions for each application. Syber Analysis improves gearbox design, predicts potential damage and reduces product development time and costs.

Total system approach: We work with customers to apply the right product for the right application. Our solutions are designed to improve reliability and performance of main shaft and gear drive applications while helping to increase productivity and reduce cost of ownership.

Unparalleled engineering expertise: We're passionate about developing technical solutions and services that enable our

customers' equipment to run harder, faster and longer with enhanced durability and superior performance. We have nearly a century of unmatched expertise in mechanical power transmission, anti-friction bearing design, tribology, metallurgy, clean steel making, precision manufacturing, metrology and engineered surfaces.

Unique global network: We simplify logistics with a global manufacturing footprint that allows us to supply most products locally. With nearly 150 technology, manufacturing, sales and distribution facilities in 26 countries and territories, we are committed to meeting customer needs anywhere, any time.

Valuable lifecycle perspective: Throughout the entire bearing lifecycle, Timken is there to help maximize equipment performance. For turbine operators, Timken provides a full range of support to maximize equipment performance and reduce the total cost of ownership, from replacement bearings and upgraded solutions to remanufacturing services, condition monitoring and lubrication systems.

THE TIMKEN COMPANY

The Timken Company helps keep the world turning with innovative friction management and power transmission products and related products and services, enabling our customers' machinery to perform longer and more efficiently. Timken is Where You Turn® for better performance.

FOR MORE INFORMATION

To learn more about our expanded series of wind energy products and services, contact your local Timken representative or visit www.timken.com.

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, gears, belts, chain and related mechanical power transmission products and services.

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

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