



Increasing the power of the wind



Environmental benefits

- Increased production of renewable energy
- Decreased use of non-renewable energy sources
- Reduced GHG emissions

SKF Nautilus increases reliability, reduces weight and cost, and ultimately lowers unit costs for wind energy.



SKF Nautilus increases wind energy production and efficiency

Population growth, increasing industrialisation and the rapid modernisation of developing economies are all increasing global energy demand. To minimise climate change and resource depletion associated with energy generation, there is intense and growing interest in developing renewable energy sources.

Wind power is an advanced and widespread technology that is used around the world to generate renewable energy.

To meet wind industry requirements, SKF offers a variety of products and services that improve the functional efficiency and cost effectiveness of wind turbines. With a focus on mainshaft efficiency, SKF has developed its SKF Nautilus bearing portfolio.

SKF Nautilus bearings have been specifically designed to support the mainshaft in wind turbines between 1.5 and 6 MW, and as such, they are absolutely critical to the performance of the turbine as a whole. The SKF Nautilus range extension brings a number of important improvements in design and functionality which provide increased reliability, reduced weight and cost and ultimately lower unit costs for wind energy.

A typical 3 MW wind turbine, operating with a 30% capacity factor (a figure typical for a good on-shore location) can produce around 8 GWh per year of renewable electricity, displacing around 6,000 tonnes of CO₂e (based on a global grid average electricity factor of 0.749 kg/kWh). The SKF Nautilus range extension, and other SKF products and solutions, help make this possible.

SKF BeyondZero solutions can help reduce CO₂ emissions, preserve limited resources and protect the environment from the use and spread of toxic substances. For more details, including documentation of reduced environmental impact, visit www.beyondzero.com



Meeting the demands of the wind industry

Operational benefits

- High reliability and operational safety
- Easy to mount, replace and maintain
- Reduced operating and maintenance cost
- Compact and weight saving turbine designs
- Reduced risk of bearing contamination

Operational features

- Bolted inner ring
- Integrated carrier and seal
- Pre-greased
- Single-pocket segmented cage
- Corrosion protection
- High-friction coating

SKF Nautilus enables sustainable development

With its customized SKF Nautilus bearing portfolio, SKF offers a mainshaft bearing solution for every wind turbine drivetrain concept for use in on- and offshore turbines.

Presently, wind turbine drivetrains utilize one of three concepts: turbines with gearboxes, hybrid turbines and gearless turbines (direct drive). Whereas turbines with gearboxes were once standard, the latest trend is to design direct drive turbines with permanent magnet technology, which are lighter and more compact.

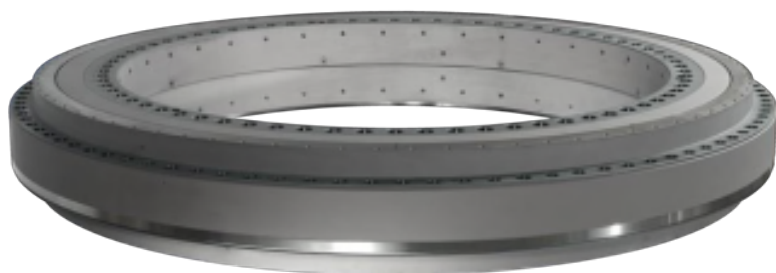
To satisfy the overall market trends, SKF recently introduced a range extension to the SKF Nautilus bearing portfolio. This range extension improves ease of installation, increases reliability and operational safety, enhances maintainability and reduces operating and maintenance cost, while increasing turbine productivity, availability and profitability. Additionally, these improve-

ments will ensure the efficiency of wind turbines in extreme conditions and climates, such as those found in offshore applications.

New features include a bolted inner ring, sealed and pre-greased unit, and corrosion protection:

- The bolted inner ring allows the bearing to be attached directly to the rotor hub and mainframe, thus reducing bearing pre-load variations and resulting in higher operational reliability and safety, easier mounting, replacement and maintainability;
- Units can also be delivered sealed and pre-greased, which reduces the risk of bearing contamination during assembly; and
- Optional corrosion protection ensures high reliability and performance even in harsh offshore environments.

Ultimately, the new enhancements will help reduce the total cost of energy production throughout the whole value chain.



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