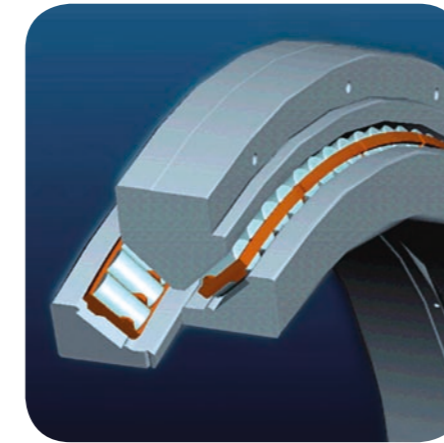


### A bearing solution that takes it all

The double row tapered roller bearing for wind turbines (Nautilus) is designed for heavy, complex loads. Two rows of tapered rollers, arranged back-to-back, lock the unit axially. A large number of rolling elements, offering extreme precision between the raceways, gives massive load carrying capacity. In addition the double row taper roller bearing has a large diameter making it strong enough to withstand yaw and tilt moments. It is a taper roller bearing that can be pre-loaded.

The only forces that reach the generator or the gearbox are torsional – those you use for generating energy and profitability.



### Segmented PEEK cage – designed with a purpose

To minimize contact forces, the cage is manufactured in segments, making it flexible. So it can operate in a flexible environment and also with pre-load. Pre-load is desirable as it gives stiffness to the drive train and the surrounding structure.

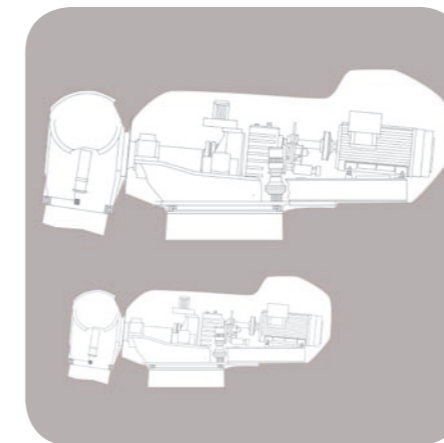
Yet everything is not just about muscle. It's also about minimizing friction. And the unique design of the SKF double row taper roller bearing for wind turbines does just that. In fact, the geometry of the cage and its superior lubricating qualities is just the beginning. The material is poly-etheretherketone, called PEEK and it surpasses all other polymer cage materials by being resistant to chemical and ageing effects.



### Lighter nacelles

In the world of SKF, the term "power density" has become increasingly common. Simply put, it's about the relationship between weight and performance. The SKF double row taper roller bearing with a PEEK cage is an excellent illustration of what this term means in practice: you can radically reduce the weight of the nacelle, opening up exciting new opportunities. The really big turbines suddenly become possible – as well as the really light ones.

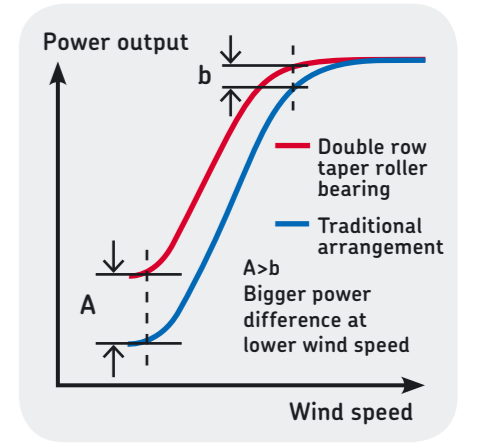
The unique design of the SKF double row taper roller bearing also gives you a positive environmental argument. Now manufacturing and installing a wind turbine requires less energy and fewer components – completely in line with a modern, sustainability-based approach.



### More output

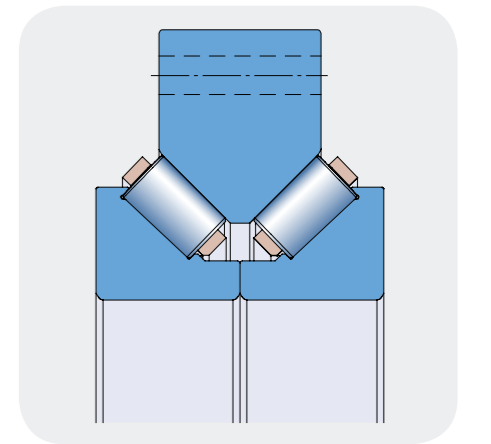
Friction is energy's most formidable opponent. That's why we fight it in every way possible. And with our double row taper roller bearing for wind turbines, we have come very far, which means you can take full advantage of even the lightest winds. And when wind speed increases you can still be calm. Low friction enables the lubricant to last longer, keeping maintenance to a minimum.

Our primary weapon – clean steel, optimized designs and precision manufacturing – have been joined by a new cage. The segmented PEEK cage has helped us to reduce friction to a minimum, without risking operational reliability.



### Whatever your design preference

Taking away the main shaft by using a double row taper roller bearing is not a utopian, desktop design. It is a proven reality. And this opportunity is not limited by your design preference. SKF double row taper roller bearings can be used for both geared and gearless wind turbine designs. We have already delivered a number of customer-specific rotor bearing solutions. And we're ready to meet the design requirements of your new wind turbines, too.



### A team of application engineers – ready and knowledgeable

"A good sailor doesn't wait for the wind. He learns to sail." When it comes to wind power, you probably think in the same way: that it's all about knowledge. And you're not alone in this approach.

At SKF, we have application engineers who focus on the same questions and issues that you wrestle with. And we want to give you full access to their experience and creativity – as well as the deep reservoir of SKF knowledge. Complex questions can get clear, qualified answers. This helps you to avoid pitfalls and identify profitable shortcuts.



# More room for more energy

Tradition says that a turbine must always have a main shaft. And two bearings for handling radial and axial loads and tilting moments.

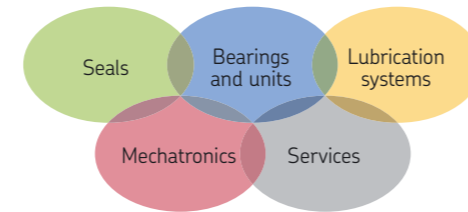
At SKF, we have another solution.

With a double row taper roller bearing designed specifically for wind turbines, you get a bearing that does the work of two. No need for an axle in between. Instead, the bearing is connected directly to the gearbox or generator and to the hub.

And you know what this means. The weight of the nacelle is reduced radically. And all dimensions shrink.

You get a bearing with a unique design that enables extremely low loss of energy. In fact, the friction in the SKF double row taper roller bearing solution is only a fraction of that found in a traditional design with two bearings and a main shaft.

Weight, measurements and friction. Three things that have always been in the way for anybody working in wind power. We're breaking down these barriers. And taking sustainability to a higher level – so that you get more room for more energy.



## The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide.

These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanical and electronics into intelligent systems), and a wide range of services, from 3D computer modeling to advanced condition monitoring and reliability systems.

A global presence assures SKF customers uniform quality standards and universal product availability.

© SKF is a registered trademark of the SKF Group

© SKF Group 2008  
The contents of this publication are the copyright of the publisher and may not be reproduced (even extracts) unless permission is granted. Every care has been taken to ensure the accuracy of the information contained in this publication but no liability can be accepted for any loss or damage whether direct, indirect or consequential arising out of the use of the information contained herein.

Publication 6152/I EN - January 2008

Printed in Sweden on environmentally friendly paper.

# What if your main shaft just disappeared?

