

For further information, please contact:

Nia Kihlström, SKF Group Communication, +46 31-337 2897; +46 706 67 28 97; nia.kihlstrom@skf.com

Colin Roberts, SKF Group Communication; +31 30 6075608; +31 653 944 111; colin.roberts@skf.com

## Releasing the Power of SKF Knowledge Engineering

Gothenburg, 07 April, 2013: At Hannover Fair 2013, SKF presents a selection of products and integrated solutions under the theme “Release the Power of Knowledge Engineering”.

In recent years, we've focused our knowledge on developing solutions and innovations that will help customers compete – not just today or even tomorrow, but far into the future. We're talking about fully case-proven solutions – with quantifiable benefits to profitability and sustainability.

The benefits of working with SKF are greater now than ever before. We have grown closer to our industrial customers, and found smarter ways to create tangible value using the knowledge we have gained. Today we follow machinery assets at every stage in their life cycle – from design right through to maintenance – helping to improve processes to produce better results.

SKF has been a leading global technology provider since 1907. Our fundamental strength is the ability to continuously develop new technologies – then use them to create products that offer competitive advantages to our customers. We achieve this by combining hands-on experience in over 40 industries with our knowledge across the SKF technology platforms: bearings and units, seals, mechatronics, services and lubrication systems. We call this SKF Knowledge Engineering.

### **SKF Knowledge Engineering is the combination of three business dimensions:**

#### **1. The cultural/geographical dimension – understanding of cultures and regions where we live and work**

SKF is a global company with a local presence. We intimately understand the demands of our customers and their customers. Wherever they are. Local expertise is supported by global industry specialists who can put those needs into perspective and draw upon successes in similar situations around the world. They in turn, are backed by a worldwide manufacturing footprint and a fine-meshed service and support network to put our solutions to work.

#### **2. The customer dimension- industries and segments**

The number of SKF customers is over two million and SKF is active in applications in around 40 specialized customer industries. Working in so many areas has given SKF the experience to develop products and services specific to industry demands – and to recognize when knowledge from one industry can be successfully applied to another. This means we have understood the application demands and conditions, and developed solutions to match, evolving even better solutions as the technology, and engineering within the industry evolves over the years.

#### **3. The competence dimension – our five technology platforms**

SKF's specialist teams who are competent in areas ranging from bearings and units to seals, mechatronics, services and lubrication, work closely together to provide advanced integrated solutions.

It is within the SKF Solution Factory network where small and medium sized OEM customers and end users can get individual support in dealing with their special challenges. Here they get access to the SKF Group's broad experience in the five platforms and can discuss with local SKF engineers in order to provide or develop custom made solutions.

A SKF Solution Factory offers a wide range of support that include: application engineering, bearing and lubrication analysis, remote condition monitoring diagnosis, engineering consultancy, linear motion systems, power transmission products, sealing solutions, energy and sustainability management, asset management systems and expertise, spindle reconditioning, bearing remanufacture, and a wide selection of training programmes.

Each SKF Solution Factory is part of a network that allows knowledge gained in one part of the world to be quickly accessed and applied in another part of the world. This speeds up the solution process and is the basis for an ever-growing knowledge pool.

#### **SKF's core competencies support our Knowledge Engineering**

Since SKF began operating in 1907, our efforts in the area of research and development have resulted in numerous innovations that have created new standards and new products and solutions in the bearing industry. In 2012, SKF recorded 663 invention disclosures, and successfully applied for 421 first filing of patent applications. Through our knowledge, SKF can help customers improve their effectiveness, making them more successful and profitable.

SKF's ability to continuously develop products and services that enhance our customers' competitive advantage is achieved in two ways: by investing in core technology areas and specialists, and by combining the resulting knowledge to address specific requirements.

#### Life cycle management:

An increasing share of SKF's research projects primarily target improving life cycle environmental performance of customer applications. This means considering the environmental consequences of a product or manufacturing process, no matter where in the product's life cycle these consequences occur.

To support this positive development and foster the use of improved environmental performance technologies, SKF has recently embarked on a programme of life cycle management. The aim is to constantly improve the knowledge of the environmental performance of SKF's products and manufacturing processes, and to put that knowledge into practice by adapting day-to-day business methods and tools.

#### Sustainability/Environment:

Sustainability has been a focus of SKF for more than 100 years. Ever since we developed the world's first self aligning ball bearing in 1907 the company has realized the importance of making operations run smoother – smoother by reducing friction. When friction is reduced, less energy is used. Today, the environmental impacts associated with energy generation from fossil fuels are well known. We at SKF are

convinced that taking care of the natural environment actually makes business sense and is the right thing to do. Now, as we make our way through our second century in business, we see an even greater opportunity – as well as a responsibility – to play a vital role in helping to address these challenges – the global challenges of environmental sustainability. In 2005, we created our BeyondZero™ concept with two goals in mind;

1. Reduce the negative environmental impact deriving from SKF operations, and
2. Increase the positive environmental impact delivered by SKF solutions by innovating and offering new technologies, products, and services with enhanced environmental performance characteristics.

By combining these goals, SKF BeyondZero is an attempt to make an overall positive contribution towards addressing the environmental challenges faced by the planet.

Another proof of SKF's commitment to sustainability and the environment is the new SKF BeyondZero portfolio and its connected targets for SKF's new climate strategy and partnership with WWF in their Climate Savers Programme. So far SKF is the only industrial engineering company to be accepted into the Climate Savers Programme. The programme aims at reducing greenhouse gases such as CO<sub>2</sub> emissions in a way that is real, measurable, and verified by external experts. And SKF has committed to developing products and solutions that contribute to these goals at all stages of the lifecycle of equipment and machines, in many automotive and specialized customer industries.

There are a number of SKF BeyondZero portfolio products and solutions demonstrated at the SKF Stand at Hannover Fair. A notable new product is the SKF drive solution for aeration blower systems used in wastewater facilities. The SKF solution can reduce energy consumption by up to 40%. It features an energy efficient high speed permanent magnet motor, active magnetic bearings (AMB) and an integrated AMB control system. When used in a 350 kW blower it may result in annual savings of 500,000 kWh, which equals a 375-ton reduction in CO<sub>2</sub> emissions.

#### Sensorization/Condition Monitoring:

Responding to the customers' need for reducing installation costs and time and to increase the life of components, SKF develops products that make efficient use of wireless technologies.

Monitoring operating conditions as close to the contact area as possible gives greater accuracy for studying the performance of a system. In addition to temperature, speed, direction of rotation and vibration, loads can be monitored via sensors by sensors attached to the outside of bearings or housings, but SKF continues this focus with groundbreaking innovations set to revolutionize condition monitoring for bearings – wireless based SKF Insight™. Break-through developments in various technologies now enable bearings to communicate their operating conditions continuously, with no external power, sensors, cables or data acquisition electronics – its all integrated inside the bearing.

The SKF Insight™ solutions include:

- Minaturized packaging of sensor technologies enables measurement of critical parameters such as RPM, temperature, velocity, acceleration, acoustic emission and load.

- Self-powered – by using the application environment itself, smart bearings can generate their own power needed to operate.
- Simplicity due to no sensors or cables to install– intelligent wireless communication technology is packaged inside the bearing enabling it to communicate within environments where traditional WiFi cannot operate.
- Smart bearing networks - communicating through each other and via a wireless gateway, bearings with SKF Insight™ form a “mesh network” and can send information relevant to their condition to the SKF cloud servers.

#### Tribology:

The interaction between lubricants and bearing steel is an essential factor, and is critical when bearings operate with marginal lubrication.

The chemical composition and mechanical properties of the reaction layer formed by the interaction between the lubricant and the bearing steel strongly influences the performance of bearings. Therefore, understanding the composition and mechanics of reaction layers is very important for SKF. Understanding, predicting and controlling the working conditions help reduce bearing friction and wear, and prolong service life.

SKF's new Extended Life spherical plain bearing and rod ends use a unique tribological system, which includes special surface treatments, grease and seals, which when combined with the internal geometry of the bearing makes these bearings robust and energy efficient.

SKF Extended Life spherical plain bearings help reduce the cost of ownership and reduce environmental impact because they last longer and do not require relubrication. For example, a single bearing with a 100 mm bore can save up to 876 g of grease per year. A tractor with six bearings of this type and size can save up to 5.2 kg of grease per year. This translates into a savings of 7.7 kg of CO<sub>2</sub>e per year. The calculations are based on grease savings and do not include the 37% reduction in frictional losses. This product is a part of SKF BeyondZero portfolio.

#### Sealing:

SKF focuses on developing new elastomeric materials and optimized seal-lip tribology to enhance sealing functions, using advanced modelling of the seals.

The new generation of materials uses new types of fillers to provide low friction. Magnetic encoders within the seals, combined with sensors, enable the transmission of information to the controlling systems. New insights into rubber aging, rubber friction and wear have been obtained, combining novel experimental methods with advanced simulations.

SKF offers machined sealing solutions for fluid power, fluid handling and power transmission applications. Some special aspects of SKF's solutions are:

- Partnerships with customers from the design phase to serial production with solutions tailor made to their needs
- Prompt manufacturing of seals and components up to 4 000 mm in diameter as one piece and larger using a special welding technique with short delivery times



- Extensive range of sealing materials including materials certified to or complying with a broad range of industry standards and regulations (FDA, NSF, KTW, NORSOK, NACE, etc.)

Aktiebolaget SKF  
(publ)

---

*SKF is a leading global supplier of bearings, seals, mechatronics, lubrication systems, and services which include technical support, maintenance and reliability services, engineering consulting and training. SKF is represented in more than 130 countries and has around 15,000 distributor locations worldwide. Annual sales in 2012 were SEK 64,575 million and the number of employees was 46,775. [www.skf.com](http://www.skf.com)*

© SKF is a registered trademark of the SKF Group.

<sup>™</sup> BeyondZero and SKF INSIGHT are trademarks of the SKF Group.

**Aktiebolaget SKF**

SE-415 50 Gothenburg, Sweden, Company re.no. 556007-3495

Tel + 46-31-337 10 00 Fax +46-31-337 28 32