

Drive profitability

Improve overall equipment efficiency and sustainability with SKF machine tool solutions for powertrain manufacturers





Cut metal,

SKF gives machine tools the power to run faster, longer and cleaner

As a powertrain manufacturer, you face many challenges. From reducing total cost of ownership and environmental impact, to increasing overall equipment efficiency. You also need to access automotive services, solutions and spare parts quickly and locally anywhere in the world, and find technical support from knowledgeable experts that speak the local language.

SKF understands these challenges. With decades of machine tool expertise and a wide range of automotive application experience, SKF provides a full range of products and expert services that enable machine tools to run faster, longer and cleaner – and help powertrain manufacturers maintain, monitor, repair and optimize assets throughout their operating life. Plus, with our worldwide network, we deliver these services and solutions locally around the globe.



not profits

Real-world results

Case study: SKF helps machine tools run faster by increasing spindle speed

A leading provider of CNC machining centres for the automotive industry needed to bring high-quality parts and new designs to market faster than the competition – while at the same time saving costs.

SKF provided the machine tool manufacturer with relubrication-free, sealed, ready-to-mount super-precision angular contact ball bearings with ceramic balls. Working closely with our engineers, the manufacturer was able to increase spindle speed by 50% without a significant rise in temperature. Now, the manufacturer can deliver different and maximum spindle speeds in one single machine tool, thereby reducing downtime and saving money.

Case study: SKF helps machine tools run longer with expert all-brand spindle service

An automotive factory in China required a solution that would help them achieve both manufacturing excellence and longer spindle lifetimes for more than 150 machines producing around 150 000 car engines per year.

SKF provided, and continues to provide, the factory with expert spindle services, which saves the factory approximately 30% in costs per year thanks to longer spindle lifetimes compared to the previous OEM spindle repairer. SKF also provided specialized maintenance training, which has enabled machine operators to proactively identify when spindle repairs are needed. In addition, because the customer has various spindle types, they benefit from SKF's ability to repair almost any type of spindle.

Case study: SKF helps machine tools run cleaner while improving performance

A leading powertrain manufacturer based in Germany produces around 150 000 cylinder heads per year in its machining center line. The challenge was to reduce operational costs and energy consumption, while increasing air quality for operators and increasing the quality of the machined pieces.

SKF engineers worked with the manufacturer to outfit the line with advanced lubrication solutions including SKF LubriLean Minimal Quantity Lubrication (MQL) systems. The savings reached 54% in energy consumption and CO₂ emissions. Water consumption was reduced by 90% in comparison with the previous cooling pumping system. These lubrication solutions have also helped to extend tool life and improve the surface quality of the machined parts.

One source for high-value solutions and best-practice services



Professional spindle services

At more than 20 Spindle Service Centres worldwide, SKF experts recondition spindles and make performance upgrades. More than just replacing the bearings, SKF spindle services include cost-effective ways to help extend spindle service life while optimizing component quality, cutting-tool performance and more.

SKF spindle hotel stores your exchange spindles and manages replenishment. This service provides fast, local delivery, secured storage, immediate readiness and instant shipment.

On-site spindle services help boost uptime and save money with on-site spindle checks and adjustments.

Predictive maintenance solutions

SKF Machine Tool Observer MTx is an on-line monitoring system that continuously observes and records signals and extraordinary events of machine tool spindles, such as exceeding the threshold of a sensor value, activating an email-based alert and storing all parameters for post-event analysis and root-cause tracing, supporting preventive maintenance.

SKF Spindle Assessment Kit consists of an SKF Microlog Analyzer that enables reliable, cost-effective condition-based maintenance by making it easy to check for imbalance, bearing condition, spindle run out, rigidity, speed and running accuracy. The kit can also be integrated with a maintenance management system.

Additional condition monitoring solutions include:

- Basic condition monitoring tools to check temperature, vibration, speed and more
- Wireless MicroVibe for vibration analysis

Bearings for improved performance

Super-precision bearings provide everything from higher speeds, accuracy, rigidity and carrying capacity to lower heat generation and vibration levels. SKF offers super-precision angular contact ball bearings and cylindrical roller bearings, customized SKF super-precision bearings, precision lock nuts and more.

Super-precision bearings with NitroMax can extend bearing service life when compared with bearings made of carbon chromium steel. When operating under full-film lubrication conditions, this ultra-clean steel can significantly increase bearing service life (+300%). Under thin-film lubrication conditions, the service life-extending effect is even more significant (+800%).

Super-precision hybrid bearings with ceramic balls reduce friction up to 15% compared to all-steel versions. This decreases temperature at high speeds and extends bearing service life.

SKF Energy Efficient (E2) bearings reduce frictional losses by 30% or more beyond the already efficient SKF standard bearings. Applications include electric motors, pumps, conveyors or other medium- or light-load applications.

Standard SKF bearings are well known for their superior quality and long service life.



Lubrication solutions

Lubrication for dry machining: In comparison with high-pressure cooling pump systems, SKF LubriLean Minimal Quantity Lubrication (MQL) systems can help reduce energy consumption as well as significantly reduce water and lubricant usage. Studies from the automotive industry demonstrate, for example, that energy savings of 54% can be achieved in the production of cylinder heads. In some cases, the savings can be much higher, even up to 92% savings in energy consumption.

SKF Lubrication Management: Our experts are available for consulting and training to optimize lubrication conditions by applying the “5R” approach: the right lubricant, in the right amount, reaches the right point, at the right time, using the right method.

Additional lubrication solutions include:

- Spindle unit oil and grease lubrication systems
- SKF Compact Greaser for linear guides and rolling bearings
- Centralized lubrication system upgrades for machine tool's linear guides, gear racks, ball screws and chains
- A full range of space-saving centrifugal and screw spindle pumps for reliable and efficient supply of coolant fluid
- Bearing greases, including special grease for machine tool spindles and testing of lubricants to determine usability

Maintenance tools

Bearing heaters set the standard for induction heaters for bearing applications. They're equipped with many features to help prevent bearing damage during mounting.

Bearing pullers allow easy dismounting while safeguarding against damage to the bearing or to the bearing seating during dismounting.

Additional SKF assembly tools include:

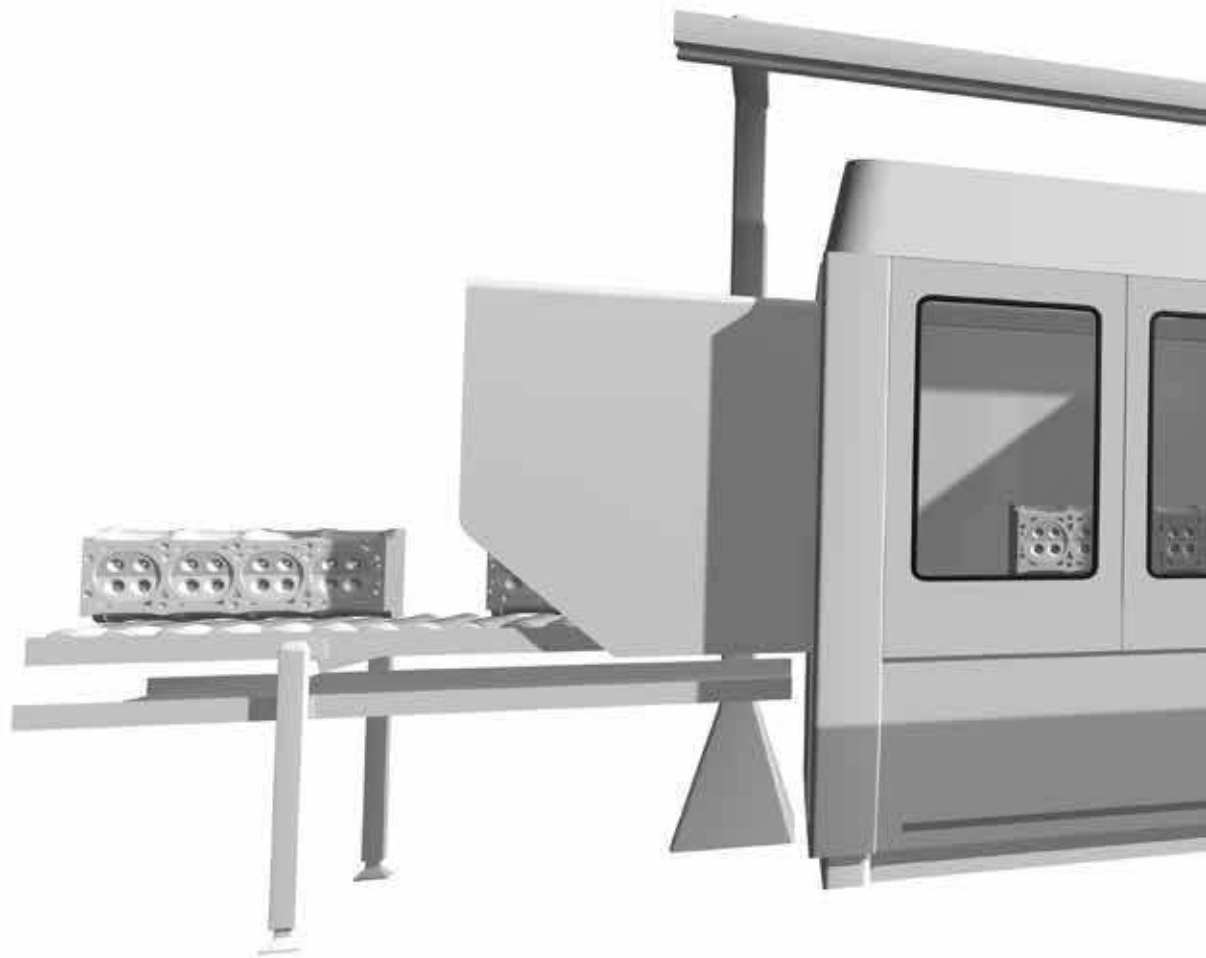
- Hydraulic and mechanical bearing mounting/dismounting tools
- Alignment tools
- Gauges/shims for bearing mounting

Optimized sealing solutions

Machined seals are designed with top quality materials and sizes up to 4 000 mm (single piece) and up to 10 000 mm and above (welded). We develop seal profiles quickly and offer a wide variety of material options based on the requirements of your application.

Training and technical support

SKF's training and technical support course portfolio is designed around the SKF Asset Efficiency Optimization (AEO) process. A wide variety of courses are offered covering topics that include maintenance strategy, asset reliability, condition monitoring, work control processes, proactive maintenance and more.



SKF solutions for machining processes in powertrain factories

Spindle services

- SKF spindle reconditioning and performance upgrade
- SKF spindle hotel
- On-site spindle services

Predictive maintenance solutions

- 1 SKF Machine Tool Observer MTx
 - SKF Spindle Assessment Kit
 - Basic condition monitoring tools
 - Wireless MicroVibe for vibration analysis

Bearings

- 1 Super-precision bearings
 - SKF Energy Efficiency (E2) bearings
 - Standard bearings

Machined seals

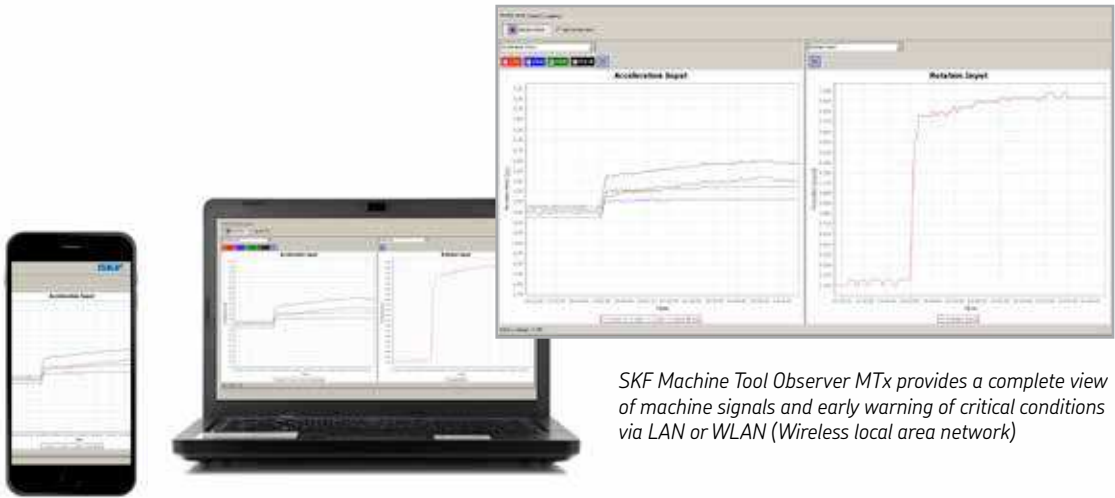
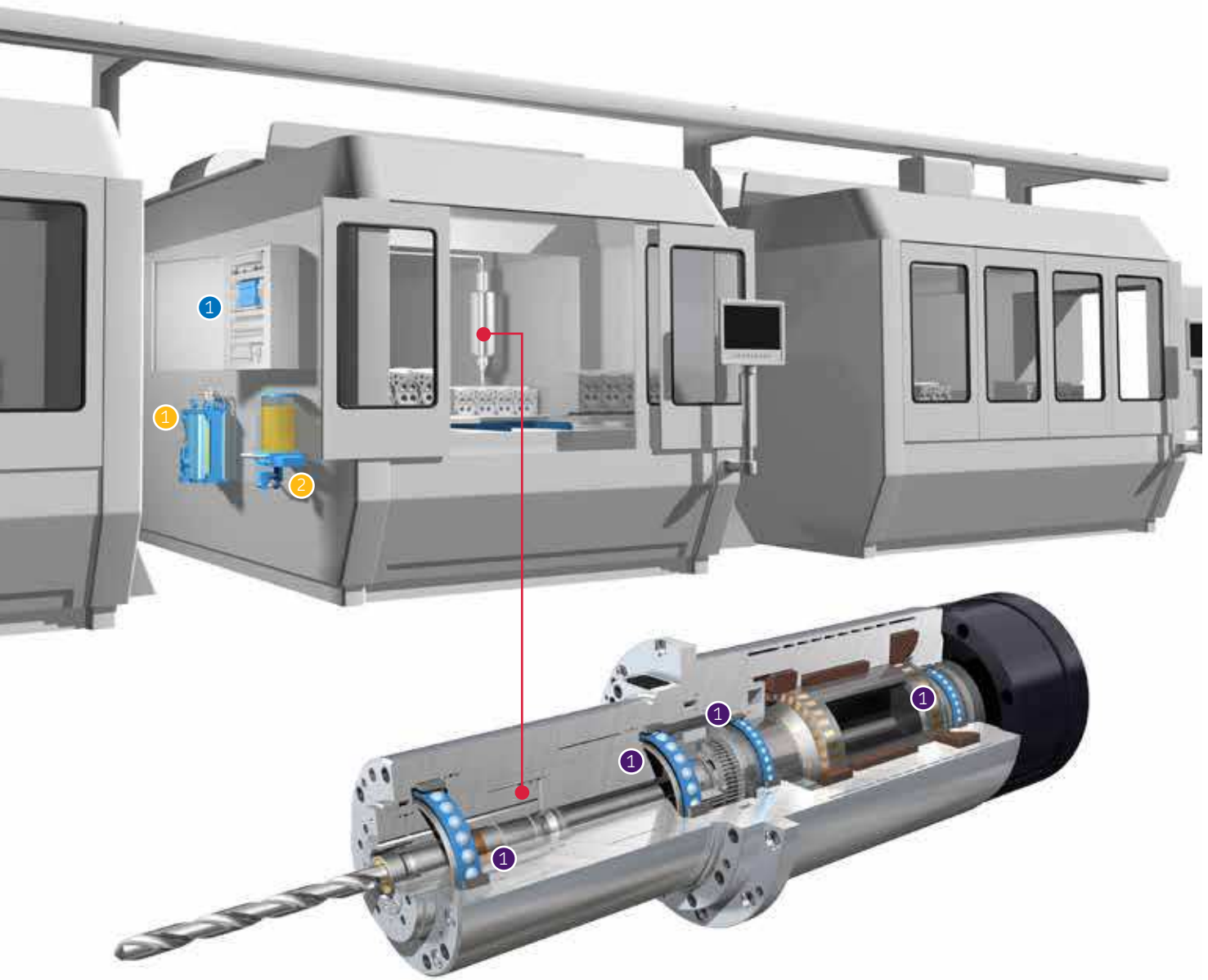
Lubrication solutions

- 1 Lubrication for dry machining; SKF LubriLean Minimal Quantity Lubrication (MQL) Systems
- 2 Centralized lubrication systems and spare parts
 - Spindle bearings lubrication
 - Coolant pumps
 - Bearing greases
 - Lubrication management

Maintenance products

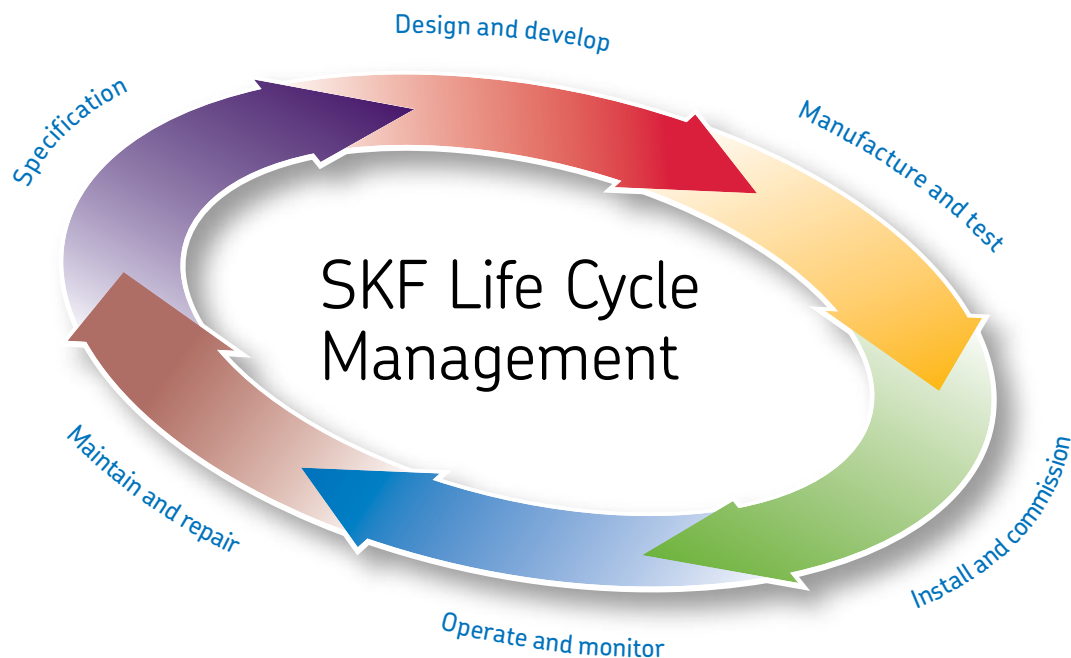
- Bearing heaters
- Bearing pullers
- Hydraulic and mechanical bearing mounting and dismounting tools
- Alignment tools
- Gauges/shims for bearing mounting

Training and technical support



SKF Machine Tool Observer MTx provides a complete view of machine signals and early warning of critical conditions via LAN or WLAN (Wireless local area network)

A proven approach with proven benefits



Asset Efficiency Optimization (AEO)

SKF contributes to AEO in every step of automotive manufacturing, including powertrain production. By taking an AEO approach, SKF is able to provide effective solutions to efficiency, reliability and environmental challenges.

Reducing total cost of ownership (TCO)

The need to reduce TCO of assets is critical to profitability. SKF solutions help by minimizing maintenance and reducing costs for operation and maintenance. How? In part, by increasing overall equipment efficiency (OEE). For machine tools, this means reducing downtime, unplanned stops and spindle failures, while increasing throughput, cutting-tool life and both machining speed and accuracy. We accomplish this with high quality solutions that incorporate proven technology.

SKF also contributes to reduced TCO by helping manufacturers achieve higher levels of machine tool utilization, which is supported not only by our advanced monitoring solutions, but our application knowledge as well.

Reducing environmental impact

Improving sustainability and reducing both waste and costs are important goals for automotive and powertrain manufacturers. On the one hand, achieving these goals requires increasing energy efficiency and improving environmental performance of machining operations. On the other, it means reducing everything from CO₂ and green house emissions to waste, materials and lubricant usage.

Examples of SKF solutions that contribute to these goals include Minimum Quantity Lubrication, Lubrication Management and hybrid bearings that reduce friction and heat generation. In addition, technical training for operators and maintenance people is available in local languages. This helps to assure correct usage of the systems and eliminate over-greasing and lubricant waste.

SKF Authorized Distributors: partners in machine tool services



Supply chain efficiency

With a wealth of machine tool expertise and local knowledge, SKF Authorized Distributors make conducting business with SKF simple. Our distributors can analyze your previous year's consumption and convert it into SKF designations.

Working with our distributors also contributes to supply chain efficiency through inventory optimization. Distributors can hold and manage your replacement bearings and complementary components stock to reduce your need for storing it on site.

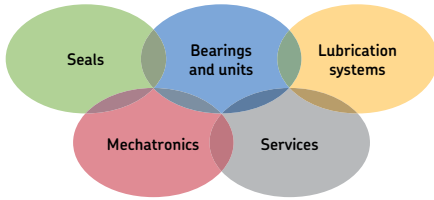
Best availability, best value

Our distributor network helps ensure the best availability and the best value from Trouble-Free Supply (TFS) and Trouble-Free Operation (TFO) contracts that:

- Classify critical components
- Reduce stock costs
- Reduce rush orders
- Reduce waste and obsolete items
- Increase machine availability

A local partner

With SKF distributors, you have a local partner for specialized machine tool maintenance, reliability services and training with the support of SKF Solution Factory – a global network of unique facilities, all which combine SKF expertise in bearings, seals, lubrication and mechatronics to deliver solutions that improve your asset performance.



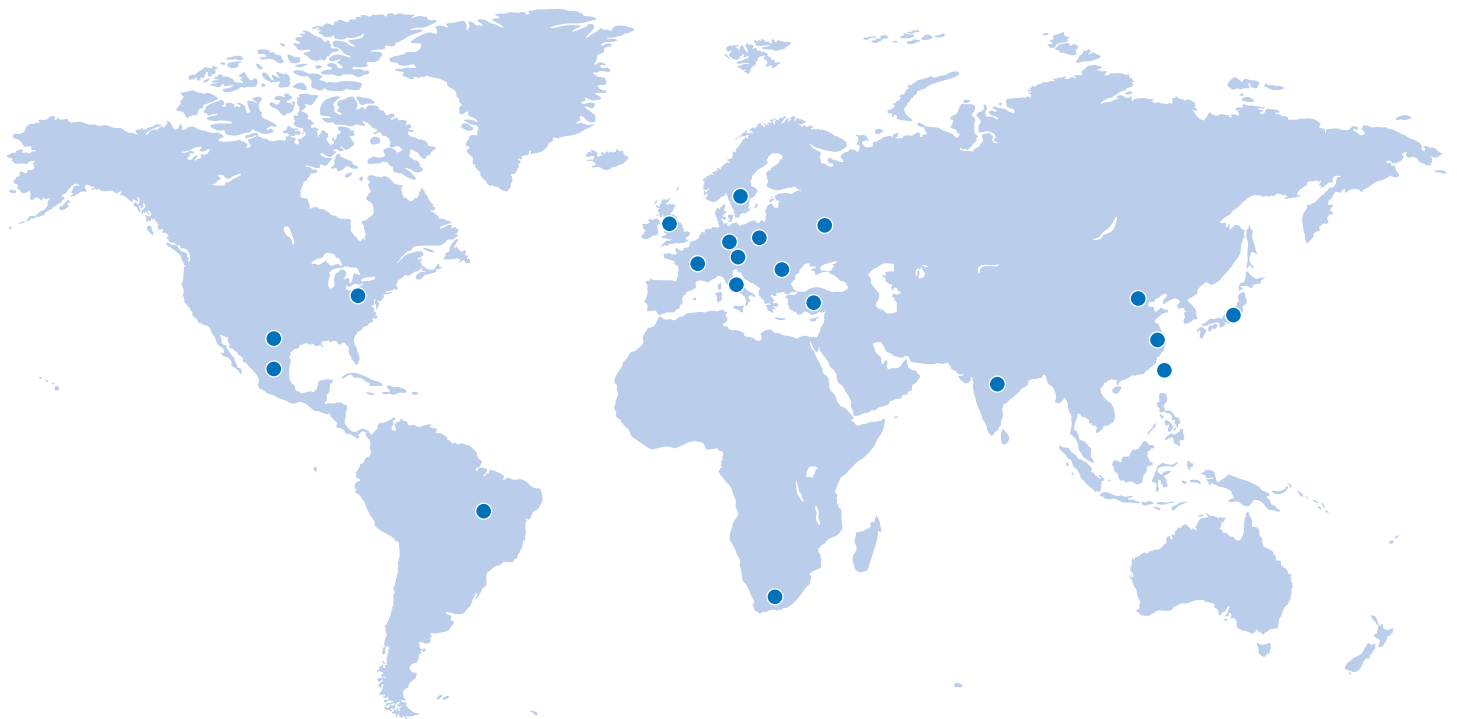
The Power of Knowledge Engineering

Combining products, people, and application-specific knowledge, SKF delivers innovative solutions to equipment manufacturers and production facilities in every major industry worldwide. Having expertise in multiple competence areas supports SKF Life Cycle Management, a proven approach to improving equipment reliability, optimizing operational and energy efficiency and reducing total cost of ownership.

These competence areas include bearings and units, seals, lubrication systems, mechatronics, and a wide range of services, from 3-D computer modelling to cloud-based condition monitoring and asset management services.

SKF's global footprint provides SKF customers with uniform quality standards and worldwide product availability. Our local presence provides direct access to the experience, knowledge and ingenuity of SKF people.

SKF spindle service centres



For more info about SKF spindle service centres, scan the QR code at right.



skf.com | skf.com/machinetool

© SKF and BeyondZero are registered trademarks of the SKF Group.

™ NitroMax is a trademark of the SKF Group.

© SKF Group 2015

The contents of this publication are the copyright of the publisher and may not be reproduced (even extracts) unless prior written 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.

PUB 61/S2 15486 EN · February 2015

Certain image(s) used under license from Shutterstock.com