

# Bearing NEWS

2023

SEPTEMBER  
ISSUE 39

BEARING INDUSTRY MAGAZINE

## *Bearing designed for* **THE CEMENT INDUSTRY**



BOCA BEARINGS  
ALLEN BAUM



RKB  
ALESSANDRO RUSSI



BOCA BEARINGS  
JASON FLANZBAUM



KG INTERNATIONAL  
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## Secure Your Spot at the Bearing & Power Transmission World Meetings 2024

After the great success of the 2023 Bearing & Power Transmission World Meetings, we are delighted to announce its return in 2024. Last year marked an incredible moment of meetings and networking with the highly global representation of 321+ participants from 42 countries. Where Distributors, Manufacturers, and Industrial Solution Providers convened, crafting connections and fostering partnerships. The next event is scheduled to take place on 10-12 June, 2024 in Istanbul. You can find the setup and agenda for the upcoming edition within this issue of BEARING NEWS magazine.

Further in this Issue, enjoy a series of classic BEARING NEWS interviews with leading industry professionals from across the globe. The first interview is with Allen Baum the founder of Boca Bearings, who shares his passion for bearings, and his son Jason Flanzbaum, who's Boca Bearings' president. Furthermore in this issue, we're going to learn more directly from RKB Sales Director Alessandro Russi about the company's status as a bearings supplier to customers in the cement industry. And will end the interviews with Karan Gupta, who became the new Managing Director at KG in 2022. We delved into the story behind KG Group, where a commitment to transparency, client-centricity, and continuous excellence has propelled

the company towards its goal of becoming a global bearing powerhouse.

### What's Rolling..

What's Rolling in the Bearing Industry. Learn details about key companies and trends, announcements, product developments, and other newsworthy advancements. All this and more can be found in this new edition of BEARING NEWS Magazine.

I hope that you will enjoy it!

**Kenan M. Özcan**  
Editor in Chief



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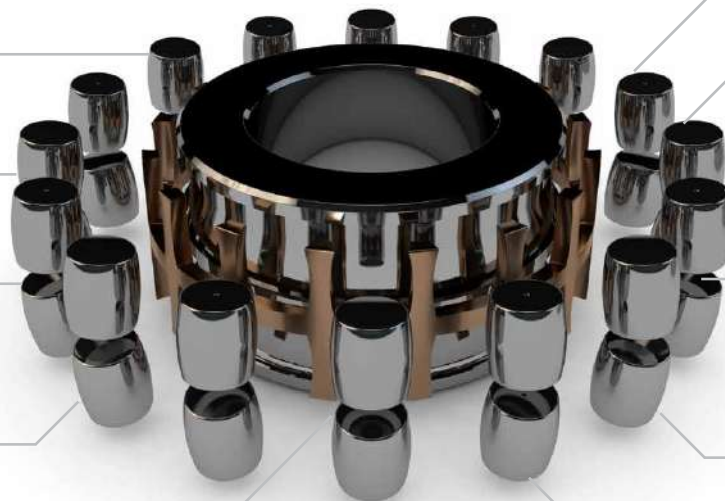
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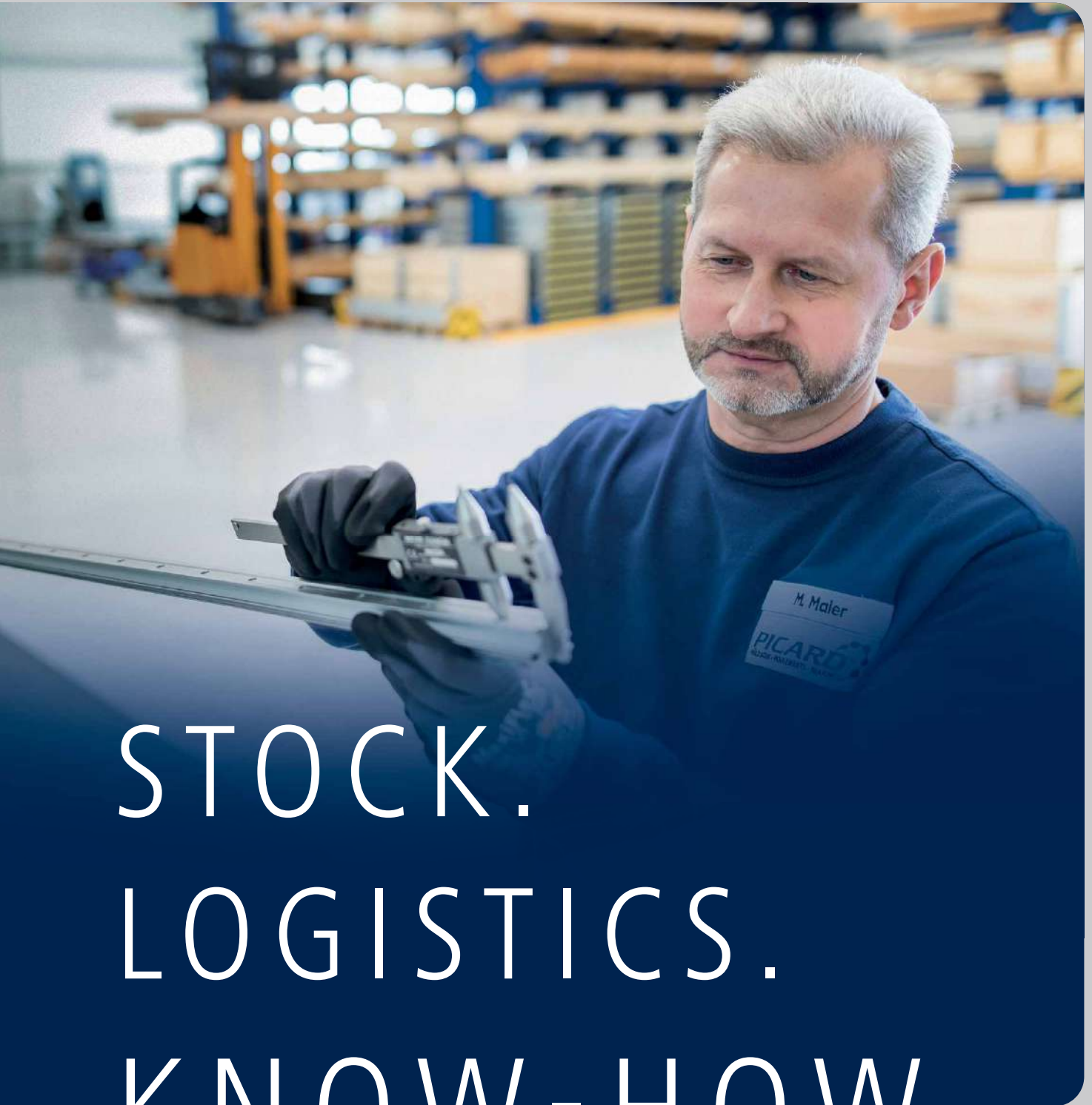


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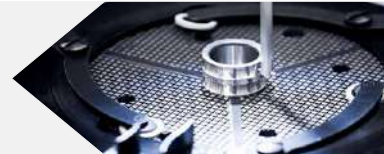
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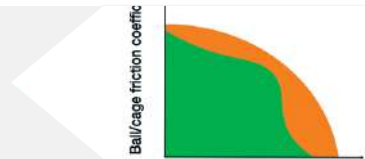


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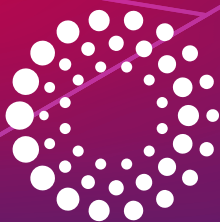
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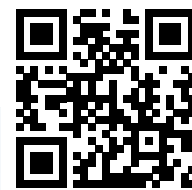
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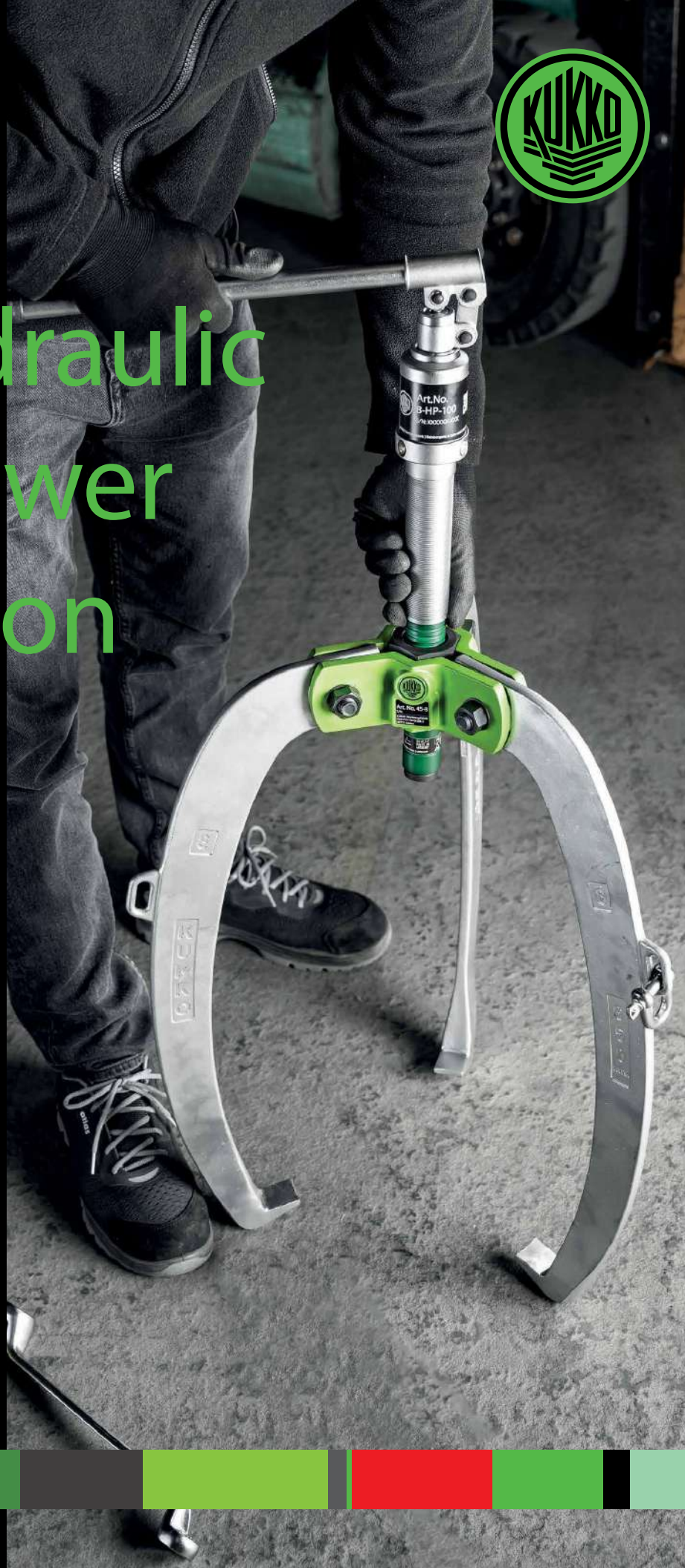


# 8-HP - Hydraulic pulling power in perfection

With the new KUKKO hydraulic spindles, pulling has never been easier. The spindles are available in six different sizes and can be combined with numerous pullers from the KUKKO range. The connection thread is compatible with thread sizes 623 to 800.

It only takes a few simple steps to turn a mechanical puller into a hydraulic one. The picture shows the screwing of the hydraulic spindle into the existing thread.

Original and premium pullers created by KUKKO.







electric and automotive sectors with metal parts obtained through stamping (a technology known and dominated by the Grupo NBI). The incorporation of Industrias Beta is an important milestone for NBI. In addition to the leap that it represents, both in revenues and in EBITDA, it makes it possible to increase production in the electric, lifting and automotive sectors, allowing greater consolidation in the market by the Group. This operation is part of the measures aimed at meeting the objectives set out in the new strategic plan prepared by NBI.

**March 1, 2023** // Liebherr's components product segment manufactures slewing bearings for floating wind turbines of Ming Yang Smart Energy, a Chinese manufacturer of wind turbines and provider of integrated solutions for clean energy. The floating structure is as reliable as its land-based counterpart: To ensure the self-alignment of these turbines, the Liebherr slewing bearings will function as a mooring-system. For this purpose, a bearing with a diameter of four metres is installed as a connecting element between the anchor buoy and the float below the sea surface. Because the slewing bearing has to withstand high pressure and corrosive environmental conditions, some components are made of stainless steel or welded on with stainless steel. In addition, the bearing has two sensors that can detect the unlikely event of water ingress.

**March 05, 2023** // Schaeffler Group closes 2022 with solid earnings. The Schaeffler Group's revenue for the reporting period amounted to 15.8 billion euros (prior year: 13.9 billion euros). At constant currency, revenue was up 9.4 percent, exceeding the guidance. The year was characterized by considerable revenue growth, which was largely attributable to an increase in volumes in the Automotive Technologies and Industrial divisions. Favorable price realization in all three divisions

further bolstered the revenue trend as considerable increases in procurement costs were increasingly passed on to the market. In 2022 the Schaeffler Group generated earnings before financial result and income taxes (EBIT) of 974 million euros (prior year: 1,220 million euros), a figure that was affected by 72 million euros in special items. EBIT before special items amounted to 1,046 million euros (prior year: 1,222 million euros). This represents an EBIT margin before special items of 6.6 percent (prior year: 8.8 percent), which was at the upper end of the guidance despite the challenging environment. The EBIT margin before special items declined predominantly due to higher material and energy prices, disrupted global supply chains, and market- and environment-based inefficiencies. Net income attributable to shareholders of the parent company amounted to 557 million euros for the reporting period, following 756 million euros in the prior year. Earnings per common non-voting share were 0.84 euros (prior year: 1.14 euros), representing a capex ratio of 5.0 percent (prior year: 4.8 percent). The reinvestment rate amounted to 0.88 (prior year: 0.74).

**March 07, 2023** // Grupo NBI formalized the definitive agreement for the acquisition of 100% of Industrias Beta. The activity of the company is focused on supplying the lifting,



**March 14, 2023** // APO-GEE, the Belgian deep-tech start-up specialized in ball bearing engineering, announces that it has engineered with the Cobweb Bearing maybe the most precise high speed bearing ever. The Cobweb Bearing is available for testing with industrial partners. For decades, designers of mechanisms were forced to accept unsatisfactory compromises to deal with hard conditions of operations (high speed, misalignment, combination of loads), with consequences in terms of noise, vibrations, excessive heat, cage breaking or bearing malfunctioning. Until today. The Cobweb Bearing improves high speed bearing performance in any condition with maybe the most precise, harmonious and smoothest functioning ever. It is designed to support the highest speeds while ensuring optimum operation at all intermediate speeds. It allows a natural adaptation of the contacts to the operating conditions, and an optimal balance between the effects of pressure and heat losses. It thus preserves service

life while increasing energy efficiency, without having to make difficult compromises. This will definitely open up the perspectives of designers of mechanical applications such as space mechanisms, dental milling machines, electrical motors or machine tools.



**March 21, 2023** // The Timken Company has issued its 2022 Annual Report, which celebrates a century since the company was first listed on the New York Stock Exchange and details its strategy to continue to scale as a high-performing diversified industrial leader. Timken's annual report summarizes the company's 2022 financial results and other recent accomplishments, including: Record sales of \$4.5 billion, a 9 percent increase versus 2021. Record earnings per share on a GAAP and adjusted basis. Top-quartile performance from 2017

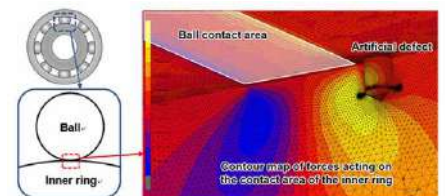
to 2021 when compared with its peer group, outperforming them across key financial metrics. The acquisitions of Spinea and GGB Bearings, further scaling Timken's presence in attractive products and market sectors. Approximately \$300 million of cash returned to shareholders through dividends and share repurchases. The ninth consecutive year of higher annual dividends and 402 consecutive quarters of dividends paid.

**March 29, 2023** // Bearings firm, Bearings & Drives Ltd has become the sole distributor of the industry leading CeramicSpeed Insulate ball bearings, considerably strengthening their offering and introducing to the UK market, the latest technology in operational efficiency, allowing UK customers day to day direct access to these products from their warehousing facilities. Constantly at the forefront of technological development and innovation, CeramicSpeed is a dedicated and leading supplier of hybrid ball bearings. With a strong presence in the European market, they are rapidly becoming the industry's most trusted supplier of advanced bearing solutions. CeramicSpeed Insulate ball bearings are custom-made for electrical motors and

a guarantee against damage caused by stray currents.



**April 10, 2023** // NSK has developed the world's first high accuracy method for predicting the life of steel rolling bearings based on statistical data of non-metallic inclusions in the steel from ultrasonic testing. Non-metallic inclusions are typically the origin of rolling contact (flaking) fatigue. This development has enabled NSK to revise up the basic dynamic load rating of applicable products to up to double the equivalent rolling contact fatigue life. This technology contributes to carbon-neutrality by enabling a reduction in the frequency of component replacement and machine maintenance and also enabling downsizing of machinery.



**April 15, 2023** // The Timken Company has completed its previously announced acquisition of Nadella Group. Nadella Group is a leading manufacturer of linear guides, telescopic rails, actuators, ball screws, rotational products and other specialized industrial motion solutions that will complement and scale Rollon's linear motion product portfolio. Based







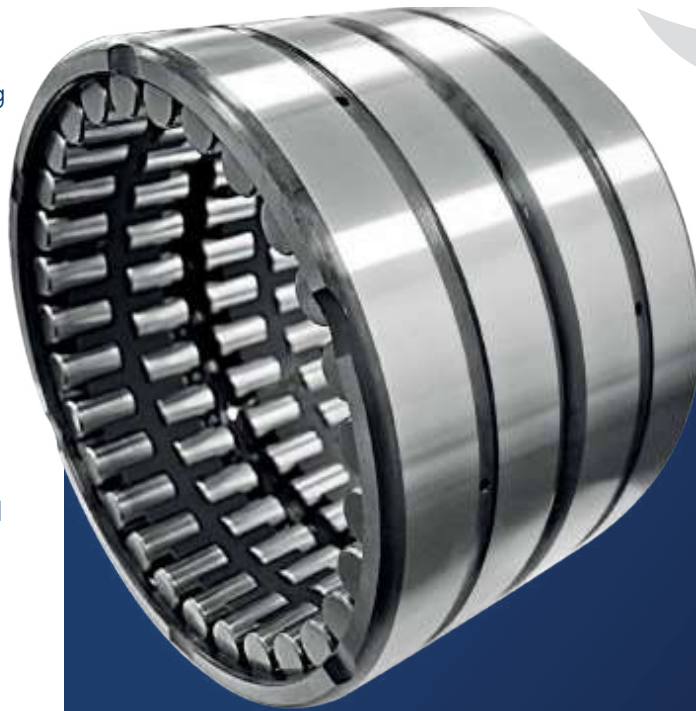
## RKB: THE **SWISS** PREMIUM BEARINGS

The **RKB** Bearing Industries Group is the **Swiss manufacturing** organization which has been operating in the **bearing industry** since 1936, with a monthly production capacity exceeding 350 tons of machined steel.

- **Development and manufacture** of technological industrial bearings
- RKB offers reliable **cost-effective solutions**
- **Huge stock** availability and short delivery time
- **Worldwide distribution** network and exports to more than 60 countries



**RKB**  
BEARING INDUSTRIES  
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### PRODUCTS

RKB offers a wide assortment of **industrial rolling bearings** and accessories that best meet **customers' performance needs**. Our catalogue, which boasts a product range of over **12.000 part numbers**, is conventionally subdivided into three main segments: miniature and small size precision ball bearings **up to 35 mm bore diameter**; standardized bearings **up to 1.925 mm outer diameter**; and technological and optimized bearings for special applications.

### SERVICES

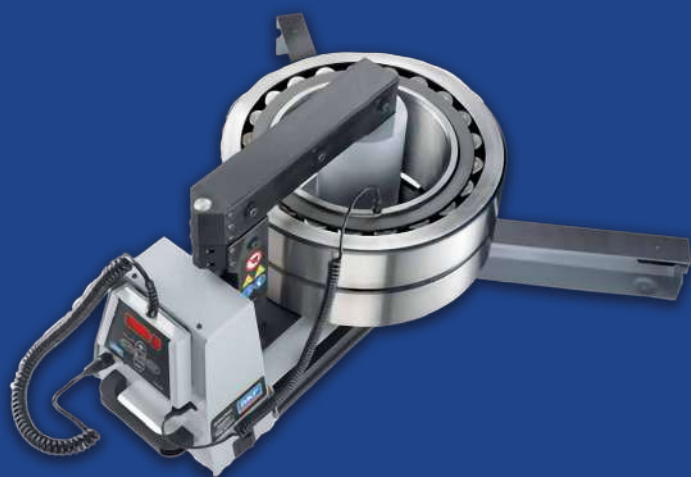
In today's business scenario, the effective management of assets is crucial to deliver value-added solutions, improve productivity and **reduce the total cost of ownership**. RKB offers a wide array of services expressly worked out to **support customers over the entire life cycle of the asset**, from early consulting projects to after-sales maintenance.

### MARKETS

RKB serves a **full range of industries all around the world**, having developed specific **knowledge** and **expertise** in each of them. Understanding the unique attributes and requirements of every industry is at the base of our **manufacturing** and marketing philosophy.

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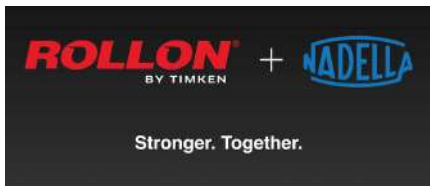
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in Italy, Nadella has 450 employees and operates manufacturing facilities in Europe and China. The company posted revenue of approximately €100 million in 2022. Adding Nadella to the Rollon and Timken family enables us to expand our product offering in attractive and growing end-market sectors.



**April 17, 2023** // Regal Rexnord's acquisition of Altra Industrial Motion, a global industrial automation and power transmission business, represents an attractive value proposition for both customers and end users. The combined company will offer improved service capability breadth, technology content and domain expertise. Altra designs and manufactures a wide range of highly engineered motion control, automation, and power transmission solutions. The combined company's enhanced power transmission portfolio creates an even more compelling partner for distributors, and better positions Regal Rexnord to offer industrial powertrain solutions in a broader set of end markets. Based in Braintree, Massachusetts, Altra has more than 9,000 associates and 47 production facilities in 17 countries around the world and generates \$1.9 billion in sales. The acquisition is expected to accelerate digital strategy, better positioning Regal Rexnord for Industry 4.0, which will be critical to future product development efforts.



**April 21, 2023** // The Austrian bearing manufacturer NKE Austria GmbH is entering into a partnership with Kugler Bimetal SA, a Swiss producer of bimetallic components and tribological surfaces. Headquartered in Le Lignon, Geneva, Kugler Bimetal specialises in solving friction problems. The well-established Swiss company with over 80 years of experience, has built its business on meeting the extreme demands that apply not only for components in wind energy, but also in aerospace, the transport sector or for hydraulic equipment. In a special process developed in-house by Kugler, for example, steel parts are coated with the Kugler Tokat lead and lead-free bronze, enabling them to withstand the harshest conditions. Besides bearings for wind power and rail vehicles, NKE produces standard and special bearings for all industrial applications. Engineering, product development, production and final processing of components, assembly, quality assurance, logistics, and sales and marketing are centralized at its Steyr headquarters. In addition to product development and application engineering, NKE provides a full range of technical services, consulting, documentation and training to support

its global network of OEMs and MRO customers and partners in over 80 countries.



**April 22, 2023** // The MOTION+DRIVES Pavilion becomes the meeting point for the bearing and power transmission professionals; and the perfect place for dealers and manufacturers of drive and control technology to present themselves at HANNOVER MESSE 2023. HANNOVER MESSE 2023 features the world's biggest concentration of suppliers of power transmission and fluid technology, components and systems. Especially in 2023 – when drive and fluid technology again take center stage at Hannover Messe – the new MOTION+DRIVES Pavilion became the ideal platform for generating new leads, exchanging ideas





Bearings and Drives feature an upgraded carriage, where the steel balls have been replaced with ceramic; invaluable, the rail has also been 'hardcoated' to enhance the wear capacity, improving the durability and corrosion resistance of the rails. In the wallpaper manufacturing industry, printing machines feature doctor blades which control the level of ink that is transferred onto the printing cylinder, working to remove any excess from the cylinder surface as it rotates and supplies the ink. Fine Decor utilises four sets of bearings and tracks per print unit, equating to a total of 64 sets across the company's 16 units. The firm produces approximately 150,000 metres of wallpaper per week, on an average run across a five day period. Steve added: "The old, non-ceramic bearings that Fine Decor were previously using would often fail resulting in the doctor blade stopping and a significant amount of downtime being incurred."

and networking with peers. You can contact [marketing@imotion.media](mailto:marketing@imotion.media) to check the details and participating at the MOTION+DRIVES Group Pavilion in 2024.

**April 26, 2023** // UNASIS International Ltd, the specialist custom bearing and tool manufacturing division of the CARTER MANUFACTURING group of companies has signed an exclusive distribution agreement with Australian company CGB Precision Products. This agreement underlines the continued expansion of Carter Manufacturing and emphasizes their growing global reach covering Europe, America, Asia and now Australasia. CGB are a highly respected company established for over 50 years and represent a perfect fit in matching Carter Manufacturing's UNASIS reputation as being at the forefront of cutting-edge bearing technology. They supply high

performance bearings and bushes, rod ends, spherical bearings, magnetic brakes, clutches, couplings, load cells, amplifiers and controllers to customers in commercial aerospace and defence industries across the Australasia region.

**April 26, 2023** // Bearings and Drives Limited is celebrating its recent success in working with Fine Decor Wallcoverings Ltd, delivering major efficiencies and securing significant cost-savings for the wallpaper designer and manufacturer. Introducing to the firm an innovative offering, Bearings and Drives has provided Fine Decor with pioneering ceramic bearings, which saw the company switch from the traditional steel option. The linear bearings provided by

**May 8, 2023** // The global automotive and industrial supplier Schaeffler presented 19 of its suppliers with the Schaeffler Supplier Award at the Supplier Day in Herzogenaurach, Germany, in honour of their exceptional performance. Georg F.W. Schaeffler, Family Shareholder and Chairman of the Supervisory Board of Schaeffler AG, and Klaus Rosenfeld, CEO of Schaeffler AG, presented the awards in the five





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Ultrasound Solutions

# BEARING LUBRICATION REIMAGINED

Remote and Real Time  
Bearing Monitoring and Lubrication



The OnTrak SmartLube is a unique remote bearing monitoring and lubrication system. Designed to **monitor and lubricate bearings remotely**. With remote condition-based lubrication you can greatly reduce bearing failures.

System uses ultrasonic sensors: identify bearing issues beyond lubrication at the earliest possible point.

All data accessible anytime, anywhere, via user-friendly dashboards.

Easy to install, affordable and scalable.

Lubricate bearings remotely with a push of a button, using always the right grease and the right amount.

System includes single point lubricators: no more lubrication issues!

Integrates with existing databases and CMMS.



## MODULAR SYSTEM

Each OnTrak is capable of 16 sensors. Easily scale OnTrak systems to thousands of sensors to one central dashboard.

## COMMUNICATION

(Ethernet, wifi or cellular).



## SINGLE POINT LUBRICATOR

Dispense lubricant with precision only when needed from up to 16 single point lubrication devices.



## MOBILE VIEW

Viewable on any network connected device; pc, laptop, tablet, phone using a standard browser.

## ALARM NOTIFICATION

Built-in events system, which is configurable, and has the ability to display, email and text any alerts the system has.

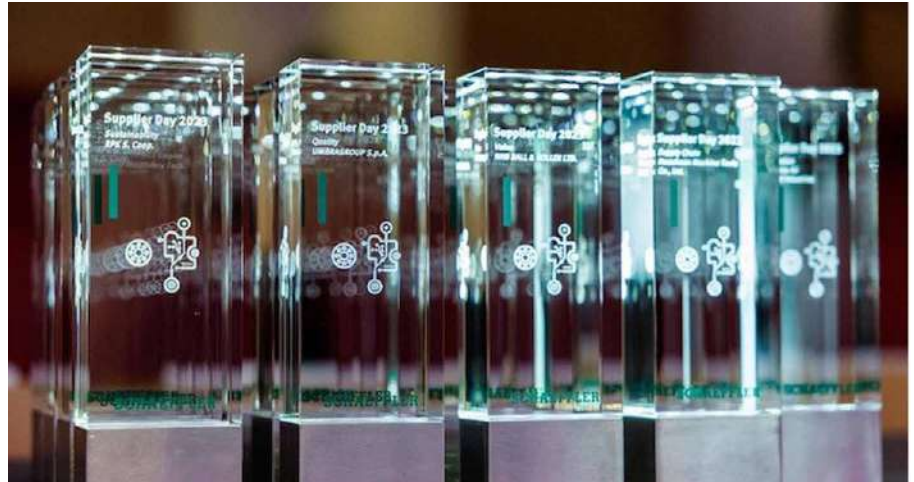
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categories of Innovation, Sustainability, Cost Efficiency, Quality, and Supply Chain before an audience of more than 450 guests. The recipients of the 2023 Schaeffler Supplier Award:

- RPK S. Coop., Spain
- FAIST Mekatronic, Romania
- POSCO, South Korea
- Shandong Golden Empire Precision Machinery Tech., China
- Trafilspec ITS S.p.A., Italy
- Draxton, Spain
- Edmund G. Friedrich & Co. GmbH, Germany
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- NHB BALL & ROLLER LTD, India
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- Hwacheon Machine Tools Co., Ltd, South Korea



- Mitsubishi Materials Corporation, Japan
- Tyrolit – Schleifmittelwerke Swarovski AG & Co K.G, Austria
- Siemens AG Digital Industries, Germany

**May 9, 2023** //Fersa Bearings Extends Strategic Partnership with Knorr-Bremse TruckServices in South America. Knorr-Bremse TruckServices brand enters the South American market, while the Spanish

manufacturer extends their partnership to also cover the region. Spanish wheel-bearing specialist Fersa Bearings has announced the extension of its strategic partnership agreement with Knorr-Bremse, a global market leader for braking systems and a leading supplier of other rail and commercial vehicle systems. The partnership which was first announced in September 2022 and originally covered Europe, has now expanded to the South American market and will see the launch



of an extended portfolio of wheel bearings and wheel hubs. Fersa Bearings is a manufacturer of powertrain and Smart Mobility solutions and high efficiency bearings and automotive components trusted by the world's leading OE and Tier 1 manufacturers. Its portfolio includes solutions for trucks, buses, and trailers, such as tapered roller bearings, wheel bearing kits, wheel-end hub units, and preset hubs.

**May 14, 2023** // There is an ever-increasing demand on designers and machine manufacturers to develop complete movement solutions that are effective, flexible and customisable. Time-to-market also needs to be kept to an absolute minimum. In the past, many linear axes would be designed from the ground up; linear rails, ball screws, couplings, motors, drives, etc. Whilst the timely provision of these components remains an important part of their business, Acorn has recognised the need to be able to offer complete movement solutions with the same level of expertise and service that they bring to our component supply. A manufacturer that very much mirrors Acorn's commitment to providing the best in supply, support and solutions is Bosch Rexroth. As a result, Acorn is delighted to announce their appointment as an LT Solution Partner for Bosch Rexroth Linear Motion Technology. Rexroth offers a very wide range of linear motion solutions, from a single component to multi-axis complete systems. With this new partnership, Acorn can offer a single source for a complete movement solution. With multi-axis systems from Acorn & Bosch Rexroth, the axes, motors, drives and cable management can come pre-assembled in one package (or the mechanical components are available separately). This vastly reduces the amount of time and complexity involved in developing a movement solution. Additionally, Acorn can also advise, specify and supply a wide range of associated products.



**May 25, 2023** // Precision bearing specialists CARTER MANUFACTURING are delighted to be building on their tier 1 supplier status in designing and manufacturing specialist aerospace bearing and tooling products for global aviation applications. A good example of this is a recent agreement with aviation giant Boeing where Carter Americas are supplying all-access proof load test torque testing tools, in addition to discussing options for also supplying swivel torque tools. Designed and manufactured by Carters' UNASIS division these specialist bearing tools offer solutions that were not previously

available, helping to increase safety and the longevity of the bearings in service. Furthermore, Carter are proud to have partnered with Boeing in designing and manufacturing a custom turnkey portable proof load test solution to work across a range of over 30 of their most popular bearings.

**June 03, 2023** // Fersa Bearings and PFI Bearings Join APRA Europe to Support Automotive Remanufacturers. This membership is an opportunity for the two Fersa Group brands to collaborate with other industry leaders in promoting remanufacturing as a sustainable







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# What's Rolling in the Bearing Industry?

solution for the automotive industry. Fersa Bearings and PFI Bearings, two leading manufacturers of precision bearings, have recently announced their membership in APRA Europe, the global association that represents the interests of automotive remanufacturing companies. The decision reflects the companies' commitment to the growth and development of the remanufacturing industry. APRA Europe promotes remanufacturing as an integral part of the circular economy and represents the interests of the industry, including free trade, an independent aftermarket, and legal certainty. As a part of APRA Europe, Fersa Bearings and PFI Bearings will contribute their expertise and repair solutions to support APRA members in enhancing the quality of transmissions, alternators and starters being remanufactured in Europe. APRA Europe promotes remanufacturing as an integral part of the circular economy and represents the interests of the industry, including free trade, an independent aftermarket, and legal certainty.

**June 13, 2023** // 321 Delegates from 42 Countries have met at Bearing & Power Transmission World Meetings in Istanbul. The program for the week started with the welcome dinner on Sunday 04 June, and continued with B2B table meetings, company presentations at the Expo area and networking lunches, breaks and many more networking opportunities among distributors, manufacturers, solution- and service providing companies till 06 June. In addition to the Bearing & Power event, most of the participants extended their stay and visited the WIN Eurasia exhibition organized by Hannover Fairs Turkey, which is the largest and most important regional industry event. More information about the 2024 edition of Bearing & Power Transmission World Meetings can be found at [www.bearing-power.com](http://www.bearing-power.com)

**June 25, 2023** // The Government of the Chinese city of Jiaxing visited on June 25th and 26th the headquarters of Fersa



APRA EUROPE Welcome

Our new members PFI Bearings and Fersa Bearings.



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Main Participants



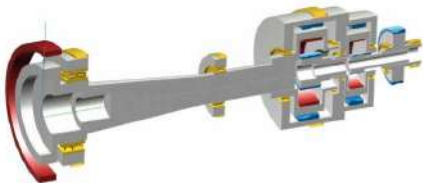
Group in Zaragoza. This visit arose from the signing of a collaboration agreement between the Chinese institution and the Spanish company and has served to

promote cooperation and trade relations with the city of Zaragoza and other local companies. Likewise, Fersa has taken advantage of this event to promote the



cooperation and the commercial and cultural relations between Jiaying, the City Council of Zaragoza, the University of Zaragoza and Sesé.

**July 21, 2023** // NSK announced that it has provided their extensive bearing data “catalogue data” for inclusion in KISSsoft® software with release 2023. With this, the engineer can execute static rating, basic and modified life rating based on load capacity numbers in line with ISO 281 and ISO 76 along with thermal rating. The bearing database in KISSsoft® gives access to up-to-date NSK bearing data in an easy to use yet detailed manner using the shaft-bearing system modeler. The following bearing types are covered: deep groove ball bearings (single row), angular contact ball bearings (single row), taper roller bearings (single row), cylindrical roller bearings (single row) and spherical roller bearings. Moving forward, NSK and KISSsoft AG will continue to update and expand on the included bearing data.



**July 27, 2023** // SKF announced that a supplier agreement has been signed with Lilium, developer of the first all-electric vertical take-off and landing (eVTOL) jet. SKF has supported Lilium on the design of electric motor bearings for the Lilium Jet's electric engine and has agreed to support the program by producing electric motor bearings for the type-conforming aircraft. After almost two years of collaborative work and a significant number of iterations, the SKF bearings are now undergoing final certification and qualification tests. With a dedicated electric aviation team and strong technical support, SKF has been able to help Lilium reduce system weight, fulfil Aerospace certification requirements and meet low-cost and short lead time targets.



**August 01, 2023** // At the prestigious Bosch Global Supplier Awards 2023, NSK was selected as one of just 46 top suppliers from approximately 35,000 companies that provide parts to Robert Bosch GmbH (Bosch) globally. NSK gained recognition in the category of Raw Materials and Components for superior quality and excellent performance as a supplier of the Bosch Group, a leading global supplier of technology and services.



**August 14, 2023** // Nexen Group, Inc., announces its X-Line of rotary indexers that deliver up to three times more torque and greater moment load capacity in a compact package. Nexen Group's new X-Line has a redesigned roller pinion and a larger gear pitch to handle higher torque capacities that deliver accuracy, fast acceleration, high-speed positioning, increased load capacity,

and true repeatability. The mounting features and the additional fastening points of the rigid cast housing in the X-Line are designed for a greater moment load capacity than a standard design. Additionally, systems can be designed for either low or zero backlash to meet the project specification.



**August 15, 2023** // SKF's ball bearing factory in Lutsk, Ukraine was hit on 15 August by Russian missiles. In a statement released on Tuesday afternoon, SKF confirmed that three of its employees died in the attack. SKF has around 1,100 employees in Ukraine, working mainly at its Lutsk factory.







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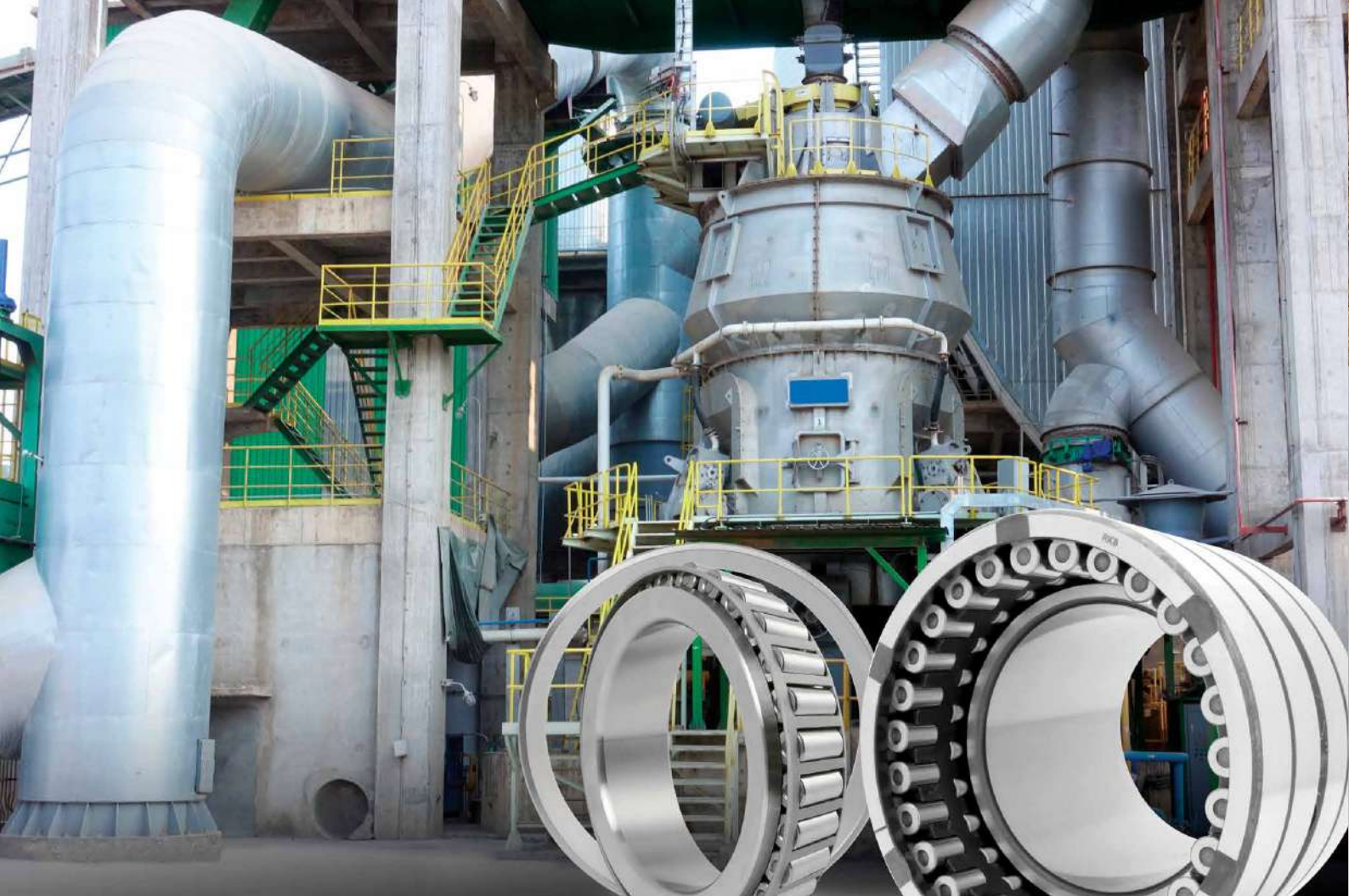




— Spherical Roller Bearings ROVSX Series Designed for Vibratory Equipment.

An Interview with the RKB Sales Director Alessandro Russi,  
about bearings for the cement industry





— Taper Roller Bearings and Multiroll Cylindrical Roller Bearings Designed for Vertical and Horizontal Mills.

The cement industry, which is RKB's third most significant sector in terms of sales share, continues to be a major topic these days due to many current and future impressive infrastructure projects. The construction and infrastructure industries, where RKB also has a notable presence providing bearings worldwide for various purposes, heavily depend on construction materials like cement, ready-mix concrete, aggregates, and precast concrete blocks. Today, we're going to learn more directly from RKB Sales Director Alessandro Russi about the company's status as a bearings supplier to customers in the cement industry.

**Hello, Alessandro! Let's start with a short introduction about your role at RKB.**

I've been a part of RKB for over 16 years. Now I lead the sales department and work closely with our field teams and extended distribution network as well as with a large number of customers from a wide range of industries.

**How do bearings contribute to the cement industry?**

As we know, no matter the industry, bearings are indispensable for the manufacturing process. For cement, they are part of every stage, from the extraction of naturally occurring minerals to their transformation into construction materials. We are supplying large volumes of bearings

for various machinery, including high-pressure grinding rolls, vibrating screens, apron feeders, separators, vibratory hammers, cone crushers, jaw crushers, hammer crushers, vertical and horizontal mills, roller presses, ball mills, rotary kilns, gearboxes, conveyors, concrete mixer trucks, and bucket wheel excavators. I hope I didn't miss anything.





— Sealed Spherical Roller Bearings Designed for Harsh Environment.

## Why RKB?

As I said previously, RKB is an increasingly major supplier of bearings for various types of equipment in the cement industry. They are designed to handle heavy loads, high temperatures, and abrasive environments commonly found in cement plants. This exceptional durability extends the lifespan of machinery, reducing maintenance costs and downtime. Only in the last month, our bearings have been shipped to cement plants in Northern Africa, Southeast Asia, and Europe.

Within the framework of our after-sales monitoring approach, we get regular feedback from the customers that use RKB bearings. They confirm the high level of operational efficiency of our bearings, their reliability and extended equipment lifespan.

In a demanding industry such as cement, various difficulties may occur. We view them as normal events which, even though not always predictable, should be accurately and timely solved. Besides

our consolidated know-how achieved in the many years of successful bearings manufacturing, cooperation with customers is paramount. We are truly attached to the idea that together we are worth more!

## How do you see the future of RKB in this sector?

RKB had significant organic growth also in the cement industry. Along with our existing regular, long-term customers, we anticipate many new ones will start using the RKB bearings. In this regard, the trial periods we also offer to this category of prospective customers have had a positive impact. Our business model values a lot this approach in building trust and win-win business relations. It is yet another aspect of the relevant return on investment provided by RKB.

We're happy to see that our hard work and investments in building an effective supply network are successful and, consequently, that the RKB's well-stocked warehouses can actually achieve just-in-time deliveries.



Alessandro Russi, RKB Sales Director

**Thank you, Alessandro!**

You are welcome! Thank you!



A man with short dark hair, wearing a dark blue blazer over a grey shirt and dark trousers, stands in a large warehouse. He is smiling and looking towards the camera. The warehouse has high ceilings with industrial lighting and tall metal shelving units filled with cardboard boxes. The floor is polished concrete.

 **"WE ARE  
THE CERAMIC  
EXPERTS"**

Jason Flanzbaum  
President at Boca Bearing Company





Allen Baum  
*The founder of Boca Bearings*

# The Florida based Bearing Company that serves the industry for almost 40 years!



In this interview, Allen Baum the founder of Boca Bearings shares his passion for all things bearings. As the leader in Ceramic Technology Boca Bearings has built a reputation for its off-the-shelf inventory, delivering superior quality products and excellent customer service.

Allen shares, “I was introduced to bearings back in Boston. I used to work for a local bearing company, where I had the opportunity to wear many different hats; one of those hats was as a purchasing manager. Through purchasing, I met and

consulted with captains of industries from all over the world. I thoroughly enjoyed the collaborating aspect of the role, and I found the bearing industry fascinating. At that point, I started to realize I had developed a tremendous passion for bearings.

This discovery coincided with our family’s move to Florida where shortly after the move in 1987 we founded Boca Bearings. Florida has proven to be the ideal location for a business like Boca Bearings. Florida is a great geopolitical location for fast,



and reliable international shipping. Additionally, it presented us with the opportunity to build a large warehouse with a significant pallet capacity. Thinking of the future we still have the ability to expand our current facilities for any expansion opportunities.

Having a copious warehouse proved tremendously beneficial in times of covid. Our office and warehouse have modern infrastructure and sufficient space to support a large staff even in pandemic times. Our team was able to stay 6 feet away, work independently, and remain working under the guidance and recommendations of the World Health Organization (WHO.) Not only did the team manage to keep our industry partners rolling but we were privileged enough to avoid any laid-offs. Our team has remained productive, and unfazed by all the external turmoil and chaos. In a world of uncertainty, the Boca Bearings team continues to thrive.

We founded Boca Bearings on three guiding core values: Radical Customer Service, Continuous Improvement, and Team Player. As part of those values, we offer this guarantee. To deliver the right bearings, for the right application or we'll replace them hassle-free.

While we take the necessary steps to ensure the right bearing for the right application, we also provide after-sale support. Our engineers are made available to our customers for optimal bearing solutions and customer satisfaction.

Our large off-the-shelf inventory allows us to supply many different industries from retail to the most complex of industries such as; space, medical, and green energy. While Boca Bearings started only servicing the retail sector with special-size bearings in no time we grew enough to be able to support various industries. Now we have a dedicated team that only serves industry, and we have become the ceramic experts in North America.

After 35 years in business, we have established a working formula that includes the tools for lean thinking, the capacity for expansion, and the right processes to deliver great customer



satisfaction. More importantly, we have a high-effort and high-knowledge team. Our team is best in class. Last year we celebrated one of our bearing expert's 24th company anniversary. This year we celebrated another team member's 34th-year company anniversary. It's team members like these who possess this level of bearing and industry knowledge that allows us to have an edge over the competition. Keeping an eye on innovation and the future we recently hired new team members as we continue to expand the industry team.

New as well as experienced team members are supported throughout their tenure at our company. As a way to support them, we developed the Boca Bearings University (BBU.) Under this program, we teach a

monthly bearings class and send out educational emails as a follow-up. Under our EOS system, we hold weekly, monthly quarterly, and off-site meetings. This has allowed us to achieve high levels of efficiency to best support our customers.

My son and, Boca Bearings' president Jason Flanzbaum has been instrumental and, oftentimes has spearheaded initiatives that have contributed to our overall success. I am confident Jason will continue to catapult Boca Bearings to greater heights.

We focus most of our time on new technologies and best-in-class quality. We recently expanded our lines of Full Ceramic and CAM Follower bearings. Our purchasing and finance departments are in alignment when investing in





new technologies and in growing our inventory with new on-demand product lines. Our drivers are growth, high quality, and innovation.

Boca Bearings also has a genuine corporate commitment to Breast Cancer awareness. For over 3 years we have run a global campaign to raise awareness for early detection. My former wife and co-founder Michele Baum many years ago succumbed to this terrible disease, thus this cause is very important and dear to me. Recently we were pleased to receive an award from

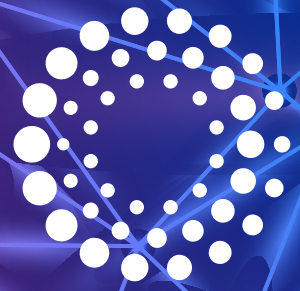
the Cancer Foundation appreciating our level of commitment. Our 2023 campaign is already in the works and we look forward to this year's campaign.

In memory of Michele, Boca Bearings also created the Allen, Dena, and Michele Baum Scholarship Fund. Last year we had 10 scholarship recipients. We were happy to see an even break with 5 female and 5 male recipients. As we grow we would like to see more female participation in all areas of STEM but especially in Mechanical engineering. Michele's legacy

lives on the success of this program.

Boca Bearings has a reliable and verifiable track record for stability, technological innovation, industry knowledge, and overall growth. We have gone through all stages of the ISO9001 audit process, and are just waiting on the formal certification. In the future, we only hope to augment on all those segments as well as in others. This is just the beginning for us. We look forward to another 35 years.





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# The importance of raw material and heat treatment for the bearing production



At NBI Bearings Europe, the quality of the raw material is one of the most critical factors to ensure a longer bearing life.

Quality at NBI is a crucial issue addressed by a highly experienced team, working closely with some of the best Spanish technology centers. NBI conducts in-depth research on bearing durability considering the manufacturing process, steel chemical composition, hardness, quench hardenability, macrostructure, and microstructure, among others.

The prior control of the material is carried out through metallographic and spectrographic examinations that are complemented by life tests on the finished product.

As a result of all the controls, NBI guarantees the life of the bearings with greater resistance to rolling fatigue due to:

- Improved steel cleanliness.
- Careful control of the size and quantity of inclusions by restricting the chemical composition and a desired carbide distribution
- The selection of the steel type (through hardening) based on the thickness of the rings and rollers and, being to one of NBI's strong points, a better heat treatment to achieve a better microstructure and uniformity of hardness in the functional section.

**NBI uses the most advanced formulas and the latest heat treatment technology to achieve high precision bearings in its plants in Spain, China, and India.**

More than €3 million invested in the installation of 3 heat treatment lines, 3 Aichelin salt furnaces, one of them equipped already with carburizing and the other two to be equipped in the

*The NBI plants in Spain, China and India have installed capacity for the production of martensitic hardening, bainitic hardening (case hardening) to cover a wide range of applications and specific requirements.*





*NBI offers extended bearing life through a combination of the use of premium steel, improved heat treatment, and optimized in-house design and manufacturing processes to meet the demands and needs of your application and achieve customer satisfaction.*

future, allow NBI to carry out controlled heating and cooling cycles to achieve the mechanical properties - desired metallurgical characteristics in the metallic parts used in the manufacture of bearings.

The application engineering team and experts in heat treatment select the most appropriate one to carry out in each bearing, depending on the application, giving it high resistance to wear, high resistance to fatigue, high structural rigidity and dimensional stability.

Coatings applied on some bearing components are an additional range of NBI products, for example, for specific requirements such as corrosion resistance (zinc coating), wear resistance (nitriding/nitrocarburizing coating), modification of the surface to improve the starting or "running-in" (blueing or coating of black oxide) of the bearing. These applied coatings are analyzed and inspected in the laboratories (metallographic, metrology and life test) that NBI Bearings has installed in each of the plants.



*Black oxide coating*

#### **NBI's goal is to maximize bearing life**

The NBI heat treatment manages to harden the functional surfaces of the bearing. It improves the mechanical and metallurgical properties of metal parts, achieving greater resistance to wear, impact resistance, residual stresses, rigidity, etc. And it also allows NBI to design bearings with desired characteristics in accordance with the application where it is used.

*More information can be found at <https://grouponbi.com>*



*NBI Bearings Europe metallographic laboratory*



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— With a length of 28 metres, a height of 8 metres and a width of 9 metres, the main bearing test bench is an extremely impressive structure.

# Testing makes the difference: new test bench for Liebherr MAIN BEARINGS

- Liebherr constructs a new test bench for the qualification of main bearings for offshore wind turbines
- By modifying the adjacent construction of the test bench, main bearings with an outer diameter of up to six meters can be tested

Liebherr's Components product segment is revolutionising wind turbine technology with the introduction of a new state-of-the-art main bearing test bench. With a maximum electrical input power of 300 kW, a maximum rotational speed of 15 rpm and an impressive test capacity of up to 125 tons, the innovative test bench ensures rigorous testing and validation of main bearings for offshore wind turbines. Liebherr thus underlines its commitment to maximum efficiency and reliability in the generation of clean and sustainable energy.

Main bearings are the heart of every rotor in wind turbines. They play a central role in the efficiency of the overall system and must, therefore, pass extensive tests. To ensure that these high requirements are met by main bearings, Liebherr-Components has constructed a new main bearing test bench at its site in Biberach an der Riss (Germany). "With this test bench, we are at the forefront

of technology in the wind energy sector. We make a decisive contribution to a cleaner and more sustainable energy supply," explains Andreas Palmer, head of slewing bearing development and design. "We have already been testing and validating main bearings in-house since 2017. The new and larger main bearing test bench enables us to put bearings with a diameter of up to six meters through

their paces, and thus move into completely new dimensions."

## Testing makes the difference

The new main bearing test bench has a maximum electrical drive power of 300 kW and a maximum bearing speed of 15 rpm. This allows it to accommodate an impressive

test weight of up to 125 tons. The test bench is used to carry out a variety of tests, including functional testing of the bearing, checking the lubrication and sealing system and recording the bearing frictional torques as a function of load and operating constellations. Part of the test programme is also the determination of the total bearing service life under specific operating conditions, as well as the bearing heat balance for various operating points. To perform these tests, two bearings are always required – a test bearing and a counter bearing. The test load is generated by plate weights or hydraulic cylinders, while an electric motor rotates the bearings. "To test a main bearing, we calculate the load on that bearing for a life of, say, six months. The main bearing is then run at overload to simulate the stress it is put under during a lifecycle of 25 years," explains Andreas Palmer. "With these tests, we validate our calculation method, among other things, in order to be able to determine the correct raceway geometry already in the design of such bearings."

### The result matters

Inspections and tests are important, because they do not only validate main bearings, but also uncover development opportunities. "This is how, for example, the demand for our superfinish for main bearings came about," continues Andreas Palmer. The superfinish refines the raceway surface. In this process, the surface is rotationally machined, so that the raceway forms an almost mirror-smooth surface. Tribology, i.e. wear, friction and lubrication, are thus optimised. As a result, superfinish ensures high surface quality and increases service life.

### Always onward, always forward

"Since 2015, we have been delivering main bearings for wind turbines at Liebherr-Components. Thanks to our new test bench, we are currently able to validate a main bearing for an 11 MW turbine," Andreas Palmer summarises. "Thus, with this test bench, we are optimally positioned for the conditions of the market and further growth in turbine size."

### About Liebherr-Components AG

*In this segment, the Liebherr Group specialises in the development, design, manufacturing of high-performance components in the field of mechanical, hydraulic and electric drive and control technology. Liebherr-Component Technologies AG, based in Bulle (Switzerland), coordinates all activities in the components product segment.*

*The extensive product range includes combustion engines, injection systems, engine control units, axial piston pumps and motors, hydraulic cylinders, slewing bearings, gearboxes and winches, switchgear, electronic and power electronics components, and software. The high-quality components are used in cranes and earthmoving machinery, in the mining industry, maritime applications, wind turbines, automotive engineering or in aviation and transport technology. Synergy effects in other product segments of the Liebherr Group are used to drive continuous technological development.*

*More information can be found at [www.liebherr.com](http://www.liebherr.com)*

—Testing slewing bearings with a diameter of up to six meters – new dimensions are possible with the new main bearing test bench.





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# What the Future Holds for Bearings

## - An Experts Insight -

As an integral part of many operations, the demand for stronger, more durable and longer-lasting bearings is on the rise – and, for many applications, conventional steel ball bearings can often not compare to their hybrid counterparts.

Steve Bacon, Sales Director at Bearings and Drives Limited, shares an insight into the latest innovative technologies in operational efficiency to achieve new competitive advantages.

With a higher performance than traditional steel bearings, hybrid bearings are a combination of steel or stainless steel rings, used in conjunction with silicon nitride ceramic balls. As new technologies emerge, rolling elements (ceramic balls) of the highest quality, which on some occasions can take up to 60 days to manufacture, can be up to 58% lighter, four times smoother and have a 70% reduced thermal expansivity which can typically run at operating temperatures between 14-47 °C lower than standard steel bearings. A combination of those pioneering

properties can heighten efficiency, ensure that the bearings are less prone to the effects of contamination and corrosion, and have a greater intolerance to heat.

If we look at CeramicSpeed bearings for example, they are also nonconductive, therefore making them ideal for use in electric motors, generators and other applications where passage of electrical currents must be avoided, offering significant advantages in terms of performance and durability over aluminum oxide coated

bearings, which are frequently offered as an alternative in these applications.

### Bespoke Solutions

Significantly, there is an opportunity for bearings to be tailored for a specific industrial application, with a combination of different ball bearings, rings, seals, cages and greases. With advancements in new material technology that make use of ceramics and coatings, the opportunities for continuous optimisation are extended –



coating options could include a hard coat, corrocoat or black oxide and cages can be formed of either steel, polyamide PA66, brass or peek for example.

Lubrication is a vital part of every bearing's optimal function, and this can also be considered to suit the application. Units can be offered with mineral or synthetic greases, or a solid lube polymer matrix, saturated with lubrication oil which can help to prevent contamination ingress and add protection in wash down environments. A specific grease could also prove useful in pharmaceutical and chemical applications, where it is critical that no liquid lubrication can be allowed to contaminate a product.

#### Benefits to the End User

While cost can often be a significant factor, the additional expense of hybrid bearings in particular is certainly not relevant to each and every bearing application. Many maintenance engineers will have experienced at least one application where repeated and frequent bearing failures have led to regular

loss of production, increased maintenance costs, as well as probable damage to other machine components. If bearings are failing on a regular basis, it is important to consider why. Could it be temperature issues, corrosion, contamination, grease problems or a combination of those factors? With new technological advancements, there could be a solution to aid the reduction of bearing failure downtime – whether it's an off the shelf product, or a bearing designed to suit your very specific, individual needs.

#### Real Life Application

At Bearings and Drives alongside CeramicSpeed for instance, bespoke bearings can be sourced and hand built in 7-10 days. For example, when working with a local dairy, where due to frequent wash downs of the machinery with aggressive caustic cleaning agents, regular cam bearings were failing approximately every 2-3 weeks and so, it was imperative to find a solution.

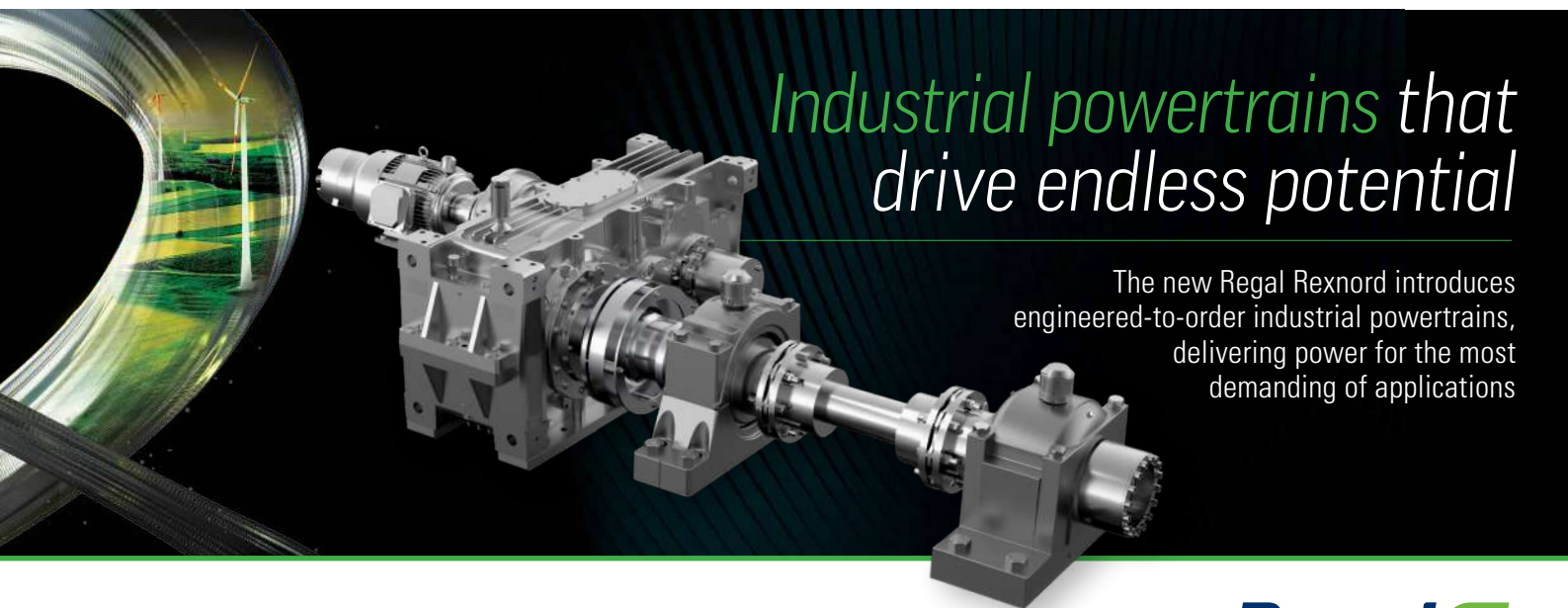
As an integral part of the production line, with the bearings located at the heart of the

machine, the failure resulted in the line being out of action for eight hours whilst it was stripped down to replace the failed bearings. By replacing the existing bearings with a CeramicSpeed Coracoated unit, with an FDA approved grease and ceramic balls, and by manufacturing 316 stainless stub shafts, the bearing life was increased to five months.

Despite the initial increased cost for the bearing and manufactured shafts, an ROI calculator indicated that savings over a 12 month period equated to in excess of a significant £250,000 per year, when all costs including loss of production are considered (based on eight bearings).

As new technologies emerge, not only can the lifespan of bearings be increased by an approximate factor of nine times, but the potential to increase production and make significant cost savings in reduced down time is unlocked.

*More information about Bearings & Drives can be found at [www.bearingsanddrives.co.uk](http://www.bearingsanddrives.co.uk).*



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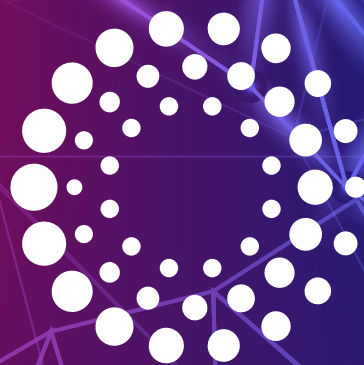
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# Bearing & Power Transmission World Meetings

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# Welcome to Bearing & Power Transmission World Meetings 2024

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The World Bearing & Power Transmission Meetings is the World's first dedicated meetup at global level where 30+ countries from all continents will be represented by delegations and the main players of the bearing and power transmission industry. The event will run for three days, with table meetings, welcome dinner, lunches and many more networking opportunities among distributors, manufacturers, solution- and service providing companies.

The event is created out of need in the current challenging global conjuncture and is a merger of all the local events which were organized earlier under the name of Bearing Expo & B2B Meetings, Conferences since 2016 in Hannover, Mumbai, Dortmund, Istanbul and Shanghai with in total 1,200 participants worldwide. The main theme at the Bearing & Power Transmission World Meetings will be the global DISTRIBUTORSHIP, MANUFACTURING, OUTSOURCING, SOLUTIONS & SERVICES.

In addition to the Bearing & Power event, the participation can optionally be extended with visiting the WIN Eurasia exhibition (07 - 10 June), organized by Hannover Fairs Turkey, which is the largest and most important regional industry event. A bus transfer for participants will be organized on 07 June for this purpose.

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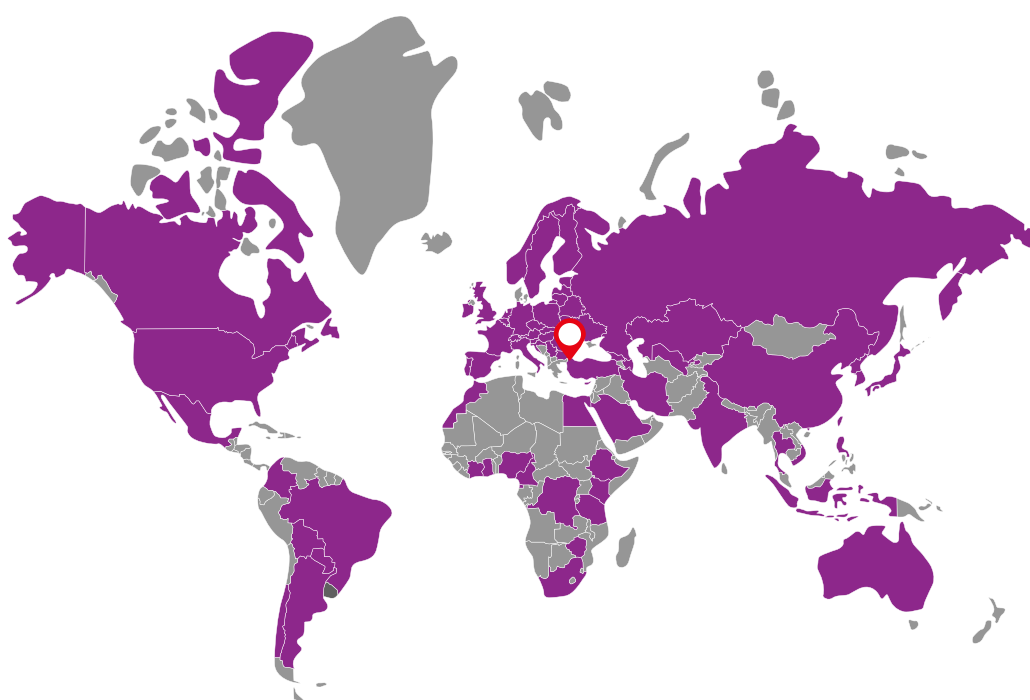
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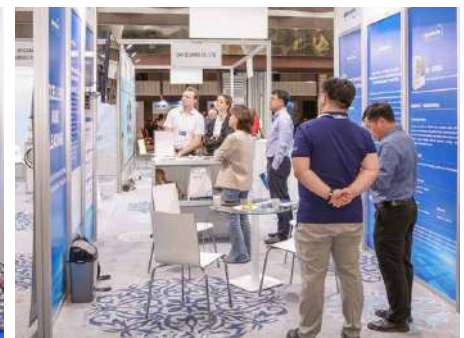
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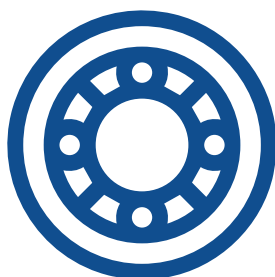
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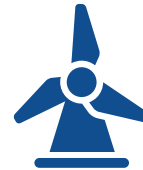
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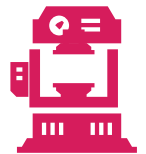
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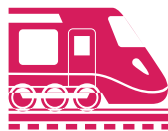
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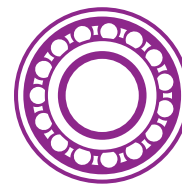
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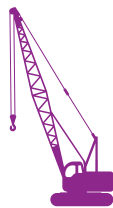
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Istanbul is today with its 20 million large population, a critical business hub who does direct business with 200 different countries in the world. For centuries Istanbul has been a key trading point, connecting the east and west, thanks to its prime location between two continents. The market stalls of the Silk Road may have been replaced by gleaming skyscrapers and major banks, the city remains one of the world's premier business destinations. This prime location helped the city to grow rapidly into a cross-continental trading hub, paving the way for its distinction as the premier international business destination it is today. Now, still thanks in part to its thriving port, Istanbul is responsible for over a half of the regional trade, making it an important meeting point for representatives from all industries.



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# **The Bearing Titans:**

## *Spearheading Dubai's Rise on the Global Bearing Stage!*



KG International, a renowned global manufacturer and distributor of automotive and industrial aftermarket products, has made a significant impact in the industry. Established in 1968 and subsequently relocating to Dubai in 1988, the company chose the city as its headquarters, transforming it into a prominent global hub for engineering parts. Though starting as distributors of global brands, KG has become one of the most popular brands in the world catering to 66+ countries with a range of 18000+ items and a 30,000+ sqm distribution hub in Dubai.

In 2022, KG welcomed Karan Gupta as its new Managing Director, who brings a unique approach to serving the industry. We delved into the story behind KG Group, where a commitment to transparency, client-centricity, and continuous excellence has propelled the company towards its goal of becoming a global bearing powerhouse.

**According to you what are the key challenges and trends in the bearing industry, and how do you plan to address them?**

There are three major challenges bearing companies are facing today:

1. Industry Fragmentation,
2. Market and supply chain volatility,
3. Counterfeiting

The fragmentation within the industry presents considerable challenges in market and account management. This significantly influences the long-term pricing of products and diminishes trust and information quality, stemming from the challenge of crafting targeted messaging. Consequently, meeting the progressively intricate demands of end customers becomes more arduous. At KG, we are actively revamping our global channel strategy and establishing direct footholds in regions characterized by specific market gaps.







**Karan Gupta;**  
*Managing Director of KG International*

Globally, we are confronted with an exceptionally demanding period marked by macroeconomic challenges that are placing substantial pressure on supply chains and cash flow, thereby imposing significant strain on worldwide operations. Illustrative disruptions include global inflation, the ongoing energy crisis in Europe, lack of currency across Asia and Africa, rampant political instability throughout these regions, currency devaluations, as well as workforce complications in Japan and China, among other challenges.

Finally, combating counterfeiting is escalating due to the global landscape becoming more interconnected, coupled with market fragmentation that involves a growing number of individuals in the counterfeit goods trade. Moreover, production sophistication techniques are making counterfeit detection more difficult. To address this concern within our brand, we are actively working on a comprehensive repackaging initiative. This project involves the integration of GTIN barcodes and anti-counterfeiting QR codes, aimed at effectively mitigating this issue.

**Can you provide insights on your product offerings and plans to expand the company's product portfolio to meet evolving customer needs?**

KG proudly offers a range of products to cater to all types of market needs

including Bearings, Filters, Gearboxes, Linear Motion products, Truck spare parts and many more. However, we take a different approach to the

— Guarding Every Gallon



“supermarket model” and stay laser-focused on promoting a few brands that align with our core beliefs to clearly articulate value to the end customer.

In the truck segment, we have launched 2 new products this year – KG Truck Solutions and KG Filters. Both offerings stand out with competitive differentiation aiming to improve the economic outlook for truck fleet owners. Through these solutions, we focus to provide competitive pricing and robust availability:

**KG Truck Solutions:** High-quality (P6) bearings with 100% quality checks and test certificate included

**KG Filters:** Premium media, strong design and packaging with quick ability to customize.

Furthermore, our collaboration with partners has led to the development of new products that address pivotal challenges faced by our customers. For instance, in collaboration with HIFI Filters, we've



— Engineered for Excellence



engineered the **KG Filtration System** to purify fuel and oil. Given the rising costs and declining quality of these resources, our system serves to cleanse fuel/oil before use, extend its life and protect the engines - our clients' most valuable asset.

**Our industry continues to move down the digital transformation value chain. How do you plan to transform, adapt, and thrive in tomorrow's digital world?**

KG has gone through significant digital transformations over the last two years. This includes the implementation of a Warehouse Management System to enhance logistics efficiency, the integration of Salesforce for best-in-class customer relationship management, and the migration of our core ERP software to the cloud-based SAP platform. This transition has yielded swifter processing times and facilitated more agile reporting. As we move forward, our focus will be on the development of an E-Commerce framework designed to facilitate both B2B and B2C business models.

**What are the biggest challenges you are facing in today's volatile macro-economic climate?**

- Strained cash flow due to shortage of currency, high inflation, and rampant currency devaluations
- Supply chain disruption due to European energy crisis and Russia-Ukraine War
- Increased credit risk around the world due to economic activity and political instability
- Inability to transact in USD due to shortages in many countries
- Workforce issues and rising cost – specially in Manufacturing

**How do you ensure consistent product quality and customer satisfaction?**

KG has one of the most sophisticated quality control protocols, a process that entails multiple thorough checks. These assessments occur at distinct stages: during production (sample checking), post-production (100% checking), and upon arrival at our Dubai distribution hub (sample checking). With dedicated teams situated in India, China, and Dubai, we



— Advanced Filtration Solutions

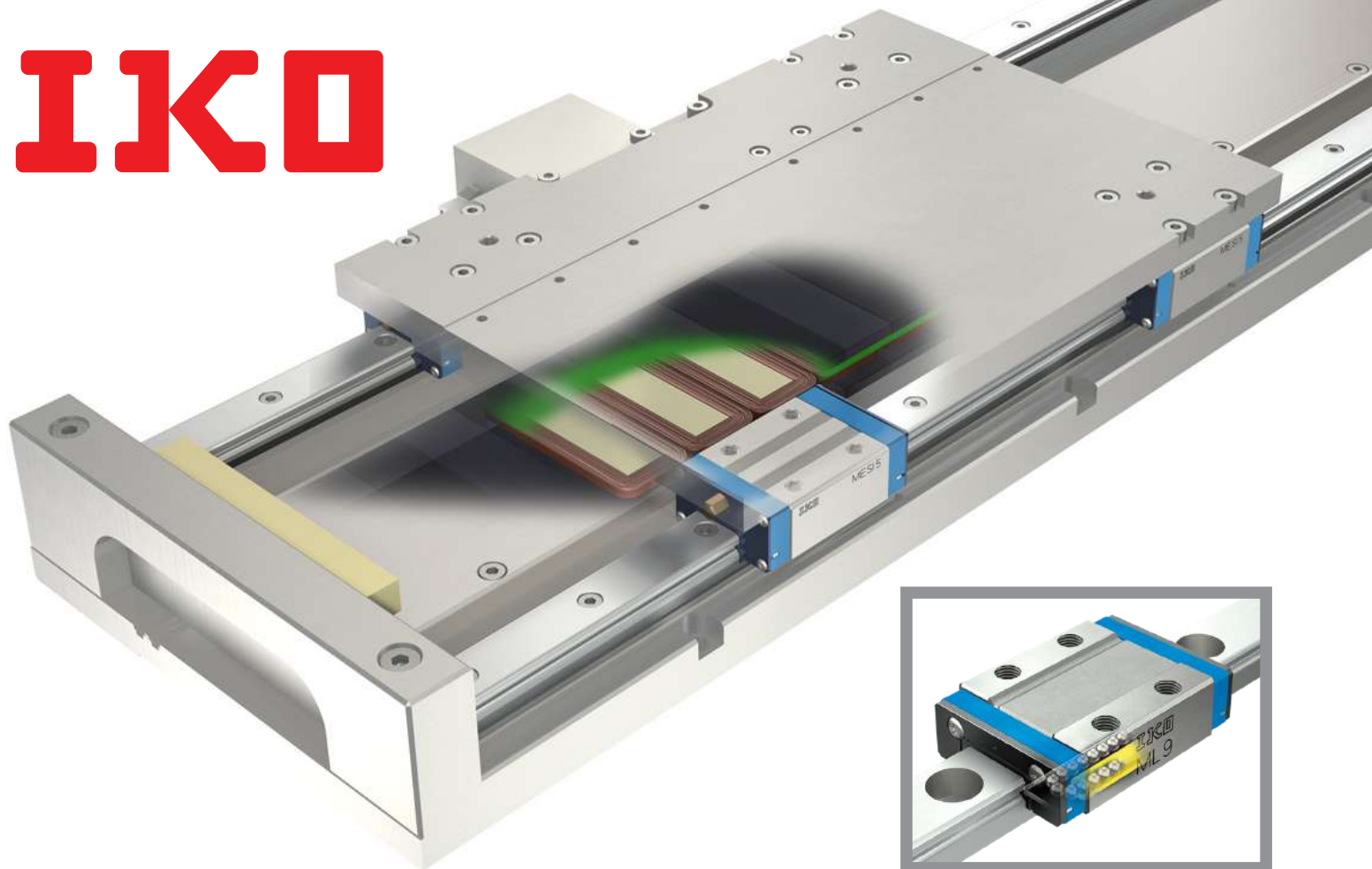
employ a state-of-the-art mechanism to facilitate these evaluations. This rigorous approach contributes to KG's impressive track record of sustaining a claim rate of less than 5 claims per annum – a benchmark that stands as an industry exemplar. Our substantial investment in maintaining this standard highlights our commitment to excellence.

**How do you plan to enhance the company's market presence and competitiveness?**

Our forthcoming strategy encompasses 3 key focal points:

- Direct engagement in high-potential markets via acquisitions or organic market entry
- Enhancement of our product spectrum to create more customized solutions and enhance our outreach to end customers
- Deployment of channel diversification strategies to directly target End Users and OEMs, including the utilization of e-commerce platform

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An increasing number of tested samples per hour and zero failures are the most important factors in bioscience analysers. Nowadays, linear motion mechanism is an indispensable part in these devices which are used widely in medical and researching facilities. Though dozens of linear bearing manufactures provides small size linear guides in the market, IKO Nippon Thompson brings unique technology and solutions to these high-end devices with our unique technology and the solution we offer:

- Excellent and accurate repeatability
- Maintenance-free
- Made from corrosion resistant stainless steel

The engineer from one of IKO's Miniature Linear Way ML users who is responsible for designing the precision scanners for their medical devices explains: "Smooth and stable linear movement without a mechanical clearance is absolutely a crucial factor for our device performance. A linear motor-driven table must have zero-compromise speed stability in order to achieve a high quality scanning of the biological membrane. IKO Linear Way brought the solution to our high demands." During the prototype designing, the engineer and IKO discussed numerous factors and finalized the specification. In addition, the end users or maintenance engineers of the devices are free from a re-lubrication thanks to IKO C-Lube technology. In addition to providing the above mentioned technical solutions, IKO worked together with the customer to plan and arrange optimized delivery control in a recently problematic supply chains system, successfully securing the customer's on-schedule production.

IKO Miniature Linear Way ML does not stop in the field of mechanical parts, but has evolved to IKO linear motor tables by incorporating their excellent performances. IKO provides the extremely thin and compact structured linear motor tables that are suitable for bio-medical, semiconductor, small automation devices. These positioning tables achieve quick positioning from A to B with more than 80% reduction of the settling time compared to the ball screw driven mechanism.

IKO provides the following size range

Miniature Linear Way ML : 1mm to 42mm in width

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# Transcending Standards *with Custom-Made Bearings*

In the industrial world, standards are often seen as the key to efficiency and performance. However, in certain situations, going beyond standards, venturing into the realm of customization, can yield spectacular results. Such is the case with the design and manufacture of special and customized bearings, a field in which WIB, with over 50 years' experience, excels.

## **A World Beyond Standard Bearings**

Standard bearings are designed to internationally recognized dimensions and shapes. Special bearings, on the other hand, differ in various respects, such as shape, dimensions, materials and the integration of external components. WIB develops these specialized bearings, sometimes using standard components, but concentrating on creating the best solution both technically and economically.

The need for custom bearings arises when standard bearings fail to meet the unique requirements of an application. Technical, commercial and marketing reasons often motivate the use of specific bearings. Customized design, particular environments, ease of assembly, cost reduction, control of the replacement market, etc. all contribute to the need for custom bearings.

## **Unleashing Boundless Potential**

When it comes to applications that push the boundaries of technology and innovation, WIB is a world-class partner. Our collaborations with manufacturers in high-stakes industries have enabled us to design and develop custom bearings that meet unique system requirements. WIB takes your vision from the drawing board to production, validating prototypes and developing solutions to meet the highest

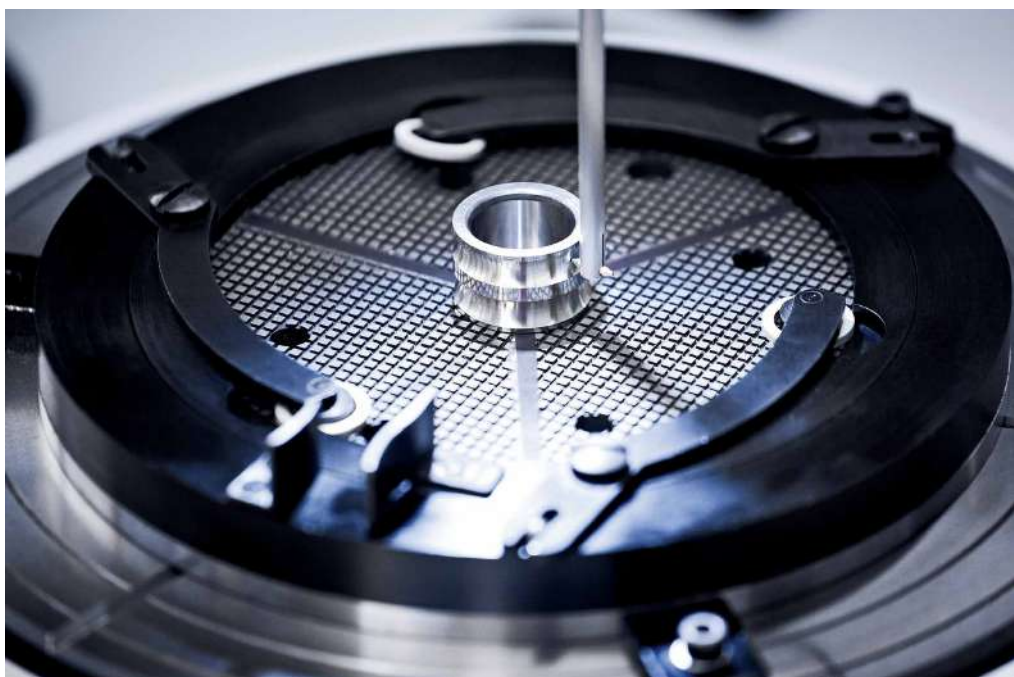
performance standards. Using our creativity and engineering expertise, we've overcome some of the toughest design challenges.

### Unparalleled Performance Across Various Scenarios

Our custom bearings have found their way into a wide variety of scenarios - from enabling superb water games in five-star hotels to ensuring that professional skateboarders can achieve peak performance. Industrial machinery, complex medical equipment and high-end tools also benefit from the superior reliability and durability of our bearings.

### The Art of Customization

At WIB, we use a range of methods to manufacture tailor-made bearings. The choice of materials can have a significant impact on bearing performance, influencing factors such as wear resistance, load carrying capacity and resistance to environmental conditions. We offer a wide range of materials, including 100 Cr6 steel, premium stainless steel and ceramic, each chosen to meet the specific needs of the application. In addition to materials, we also work on special profiles, protections, seals, lubricants, snap rings, heat treatments, contact surface treatments and much more to customize the bearing. Whether it's a profile on the inner or outer ring, a shield designed to protect the bearing from contaminants, or a special heat treatment to improve hardness, every detail is taken into account.



### An Unwavering Commitment to Swiss Excellence

At the end of the day, all these efforts are aimed at a single goal: providing the best solution for our customers. We recognize the significant impact that a single bearing can have on the overall performance of a machine or piece of equipment. That's why we make every effort to ensure that our custom bearings meet or exceed our customers' expectations.

In a world where innovation and technology are constantly evolving, WIB is proud to be at the forefront, pushing the boundaries and delivering Swiss quality and performance to companies worldwide.

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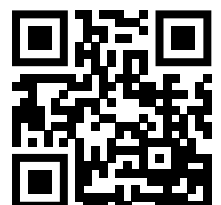


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**Ningbo Rail Transit chooses**  
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*for bearing life extension project*



## One of the world's newest metropolitan rail networks is improving the reliability and longevity of its fleet with bearings, lubricants and innovative wireless condition monitoring technology from SKF.

Gothenburg, Sweden, 24 August 2023: With an innovative technology package from SKF, Ningbo Rail Transit has extended the service life of critical refurbished bearings on 8 trainset vehicles from 800,000 to 1 million km. The project is the first commercial application of SKF's Insight Metro wireless condition monitoring system, which has been developed in China specifically for the needs of the domestic rail sector.

Insight Metro is a self-contained, battery-operated condition monitoring unit that can record speed, temperature, and vibration data from individual bearings, then transmit that data to the SKF cloud using a secure mobile network connection. The units operate autonomously for up to six months and

can be recharged in situ when required using wireless charging technology.

Ningbo Rail Transit has deployed 96 Insight Metro units across a fleet of around 200 trains that run on Line 1, a 46 km east-west route through the city. The new units will be installed on high-mileage bearings in axle units, offering an early warning of any signs of wear or damage. The units send periodic snapshots of operating data to an SKF Remote Diagnostics Service Center, where expert analysts apply advanced algorithms to derive insights about bearing health and performance. Ningbo Rail Transit maintenance teams received a monthly report on bearing condition, as well as real-time alerts if a more urgent intervention is required.

"Insight Metro offers the power of continuous condition monitoring in a package that is easier and more cost-effective to deploy across a large fleet of assets," says Hower Fan, condition monitoring development manager at SKF. "Together with SKF's advanced bearing and lubrication technology, the system is helping Ningbo Rail Transit achieve its goals of improved reliability and availability, and lower operating costs."

The metro system in Ningbo, Zhejiang Province, serves around ten million people in the busy port city and surrounding areas. Construction of the eight-line network began in 2009 and completion is expected by 2026. Line 1, where the new SKF equipment has been deployed, has been in operation since 2014.



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# JTEKT Bearings Contributes to Improvements in Medical Devices, While Reducing Environmental Impact



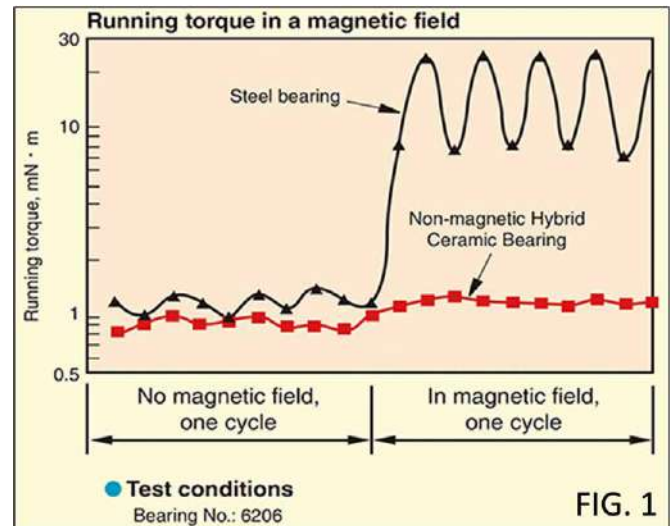
## Introduction

JTEKT Bearings, formerly known as Koyo Bearings, has a long history of designing and developing (hybrid) ceramic bearings for various applications in “special” environments and was the first company to introduce such bearings in mass-production, more than 30 years ago. This article introduces the non-magnetic Hybrid Ceramic Bearing used in MRI machines, among others.



## The challenge

If standard bearings (using high carbon chromium bearing steel) were to be used in MRI (Magnetic Resonance Imaging) machines, this could lead to disturbance of the magnetic field (influencing the scanning process), but also to fluctuations in the bearing running torque (influencing the smooth rotation of the scanner). See fig. 1.



## Environmental concerns of prevailing solutions

Although beryllium copper has been widely used as a non-magnetic material, its use has waned in recent years due to its containing beryllium, which is a substance of environmental concern.

## JTEKT's proposed solution

JTEKT proposes to use Hybrid Ceramic Bearings that use bearing rings made of non-magnetic stainless steel and rolling elements made of ceramic materials. For specs see Table 1.



Table 1. Non-magnetic Hybrid Ceramic Bearing

Component	Characteristics
Lubricant (type)	Polymeric solid lubricant (Fluoropolymer)
Lubricant (area)	Cage
Outer ring	Non-magnetic stainless steel
Inner ring	Non-magnetic stainless steel
Ball	Silicon nitride
Cage	Fluorocarbon resin
Shield	None

## Other applications

Besides the application in MRI devices, JTEKT non-magnetic Hybrid Ceramic Bearings are used also in other fields with similar requirements like: superconductivity-related applications and semiconductor manufacturing equipment.

## General notification

**Koyo Bearings** has been officially rebranded to **JTEKT Bearings** as of April 1, 2022. Please appreciate that this is only a change of brand. The company, its general structure, the products and services will remain the same. Our customers can rely on the continued good service and quality of our products in the future and our commitment to keep the same excellent business relationship with our valued partners, as in the past.

*Please do not hesitate to contact JTEKT or your nearest JTEKT distributor in case you would like to have more information about the company, products and services.*

*More information can be found at [www.jtekt-bearings.eu](http://www.jtekt-bearings.eu).*







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# Vibration and Ultrasound: *the winning duo integrated into a single versatile measuring instrument*

More than ever, production cost control affects the operations of the Maintenance Department.

While its role still consists in knowing the health condition of the machines, its associated costs must remain as low as possible. For the operator, the ideal situation is then to have versatile tools that can deliver fast and reliable diagnosis: simple instruments to solve 80% of the drifts and more advanced instruments for the remaining 20%. A combination of vibration and ultrasound techniques in the same instrument? Problems are detected by static measurements while dynamic measurements are used when a further diagnosis is required.



## Cost control

The current economic situation imposes maximum production cost control to companies. To this aim, they use more and more performing, hence more and more complex, facilities. Their aim is obvious: produce more and better. But that's not all. Companies also naturally tend to optimize the maintenance of their process, which has then a whole new dimension. Not only do they have to limit production losses, plan and optimize reconditioning, while limiting the stock of spare parts, but they also have to achieve this mission with reduced human and financial resources. They can no longer waste workers' hours doing time-consuming data collections and unnecessary analyses. Taking these aspects into account, SDT's **Vigilent** equipped with **COMMONSense** sensors is a solution that will allow for the continuous collection of data without the need for staff to collect measurements, all information are automatically available on the embedded Vigilent software so the Condition Monitoring (CM) team can analyze them sitting at their desks.

## Towards optimized maintenance

Let's address the issue in a different way: why spend time to collect and analyze measurements or why entrust a specialist to do this work, if we finally find that the equipment is in good condition? Quite ineffective, don't you think? Well, this is the case for 80% of the equipment under monitoring. The search for optimization requires the use of a tool that is simple (hence available to the largest number of users), fast (to limit collection time) and efficient (to confirm the proper operating of 80% of the machinery). But that's not all. Out of the 20% of suspicious machines, the cause of the drift is easy to solve for 80% of them. Once again, a simple tool used by an operator is the most suitable solution. Finally, further diagnosis is required for 20% of the remaining 20%. In other words, let's say that out of 1000 machines, 200 might have problems. Of those 200 machines, 160 will have problems that are easy to fix. And of the remaining 40 suspect machines, 8 will require further diagnosis. Advanced measurements carried out by a specialist are then necessary.

## Versatility is essential

Besides speed and ease of use, a versatile tool must be selected based on controlled investment costs. A measuring instrument that can address both rotating machinery and control of energy costs. The complementarity between ultrasound and vibration makes full senses here. Ultrasonic technology is the undisputed champion of energy savings: compressed air, vapor and, to some extent, partial discharges. For rotating machines, this is the simplest solution to detect friction phenomena (bearing lubrication), impact phenomena (bearing defects, including slow bearings, and gear defects) and bubble explosion phenomena in liquids (valve or pump cavitation). Vibration measurements are ideal to detect misalignment, unbalance, foundation, coupling and pulley problems, as well as aerodynamic phenomena and defects affecting electric motors.

SDT340 relies on this approach, which combines vibration and ultrasound techniques: a basic tool for those searching for optimization and efficiency of their



maintenance program. Based on combined ultrasound and vibration techniques, this versatile measuring instrument allows addressing both energy cost control and rotating machine monitoring. The technician can detect anomalies, both simply and quickly, using static measurements. Also, SDT340 benefits from advanced features for the specialist in charge of the search for breakdown causes using dynamic measurements.

### Static measurements to detect problems

Static measurements (or overall measurements) are easy to implement because their result is a number. They are collected by the technician or operator in charge of lubrication and make up the basis of a maintenance program. They allow creating trend curves and implementing alarm thresholds. They aim at making a quick decision on the condition of the machine: good or suspicious.

Here are two concrete examples:

- The first example deals with a reducer of the main transmission line on a ship. Static ultrasonic measurements allowed detecting a damage on one of the bearings:
- The second example deals with a fan, still on the same shift. The overall

measurement evidenced a velocity of 5.82 mm/s in the 10-1,000 Hz range, higher than the 4.8 mm alarm threshold recommended by the ISO 10816-3 standard. As in the previous example, the static measurements allowed the technician detecting the suspicious behavior of this fan.

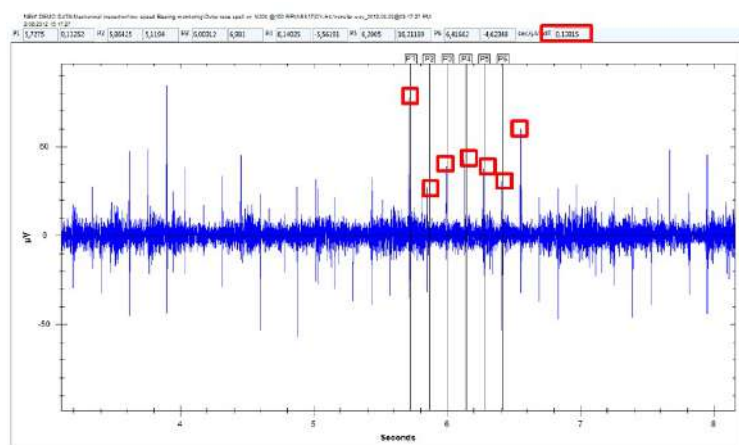
In both examples, the technician performed on-site acquisition of the signals originating from the incriminated machines. They were analyzed by a specialist who did not have to travel on site uselessly.

### Dynamic measurements for further diagnosis

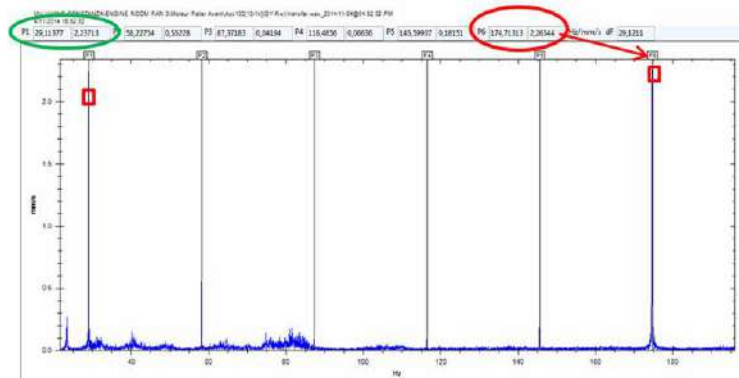
The dynamic measurement consists of signal acquisition over a selected period. It allows generating time and frequency representations (FFT). With ultrasonic technology, time representation is preferred. For instance, it can be used to detect the presence of repeated shocks through simple visual interpretation. Based on bearing reference and rotation speed, the operator will be able to identify the defect origin. Finally, from shock amplitudes, he/she will assess the defect severity. With vibration technology, frequency representation is more commonly used. Machine kinematics and knowledge of the defect vibration images will allow the specialist determining the cause of the breakdown. As previously, the severity of the defect and its development will be assessed based on the amplitudes of the spectrum lines.

Here are two concrete examples:

- The first example deals with the scaling of a bearing. The time representation of the ultrasonic signal shows the occurrence of repeated shocks every 0.138 second corresponding to the outer ring defect frequency.



- The second example deals with a fan. The velocity spectrum can be used to detect unbalance through the presence of a peak at the rotation frequency of the machine, i.e., 29.11 Hz, and a welding problem on one of the 6 fan blades through a peak at harmonic 6 of the rotation frequency, i.e., 174.6 Hz.



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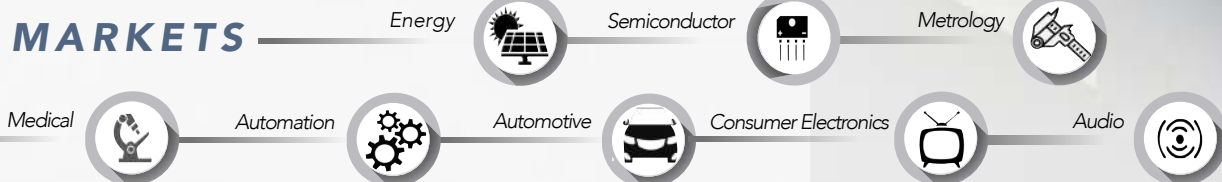
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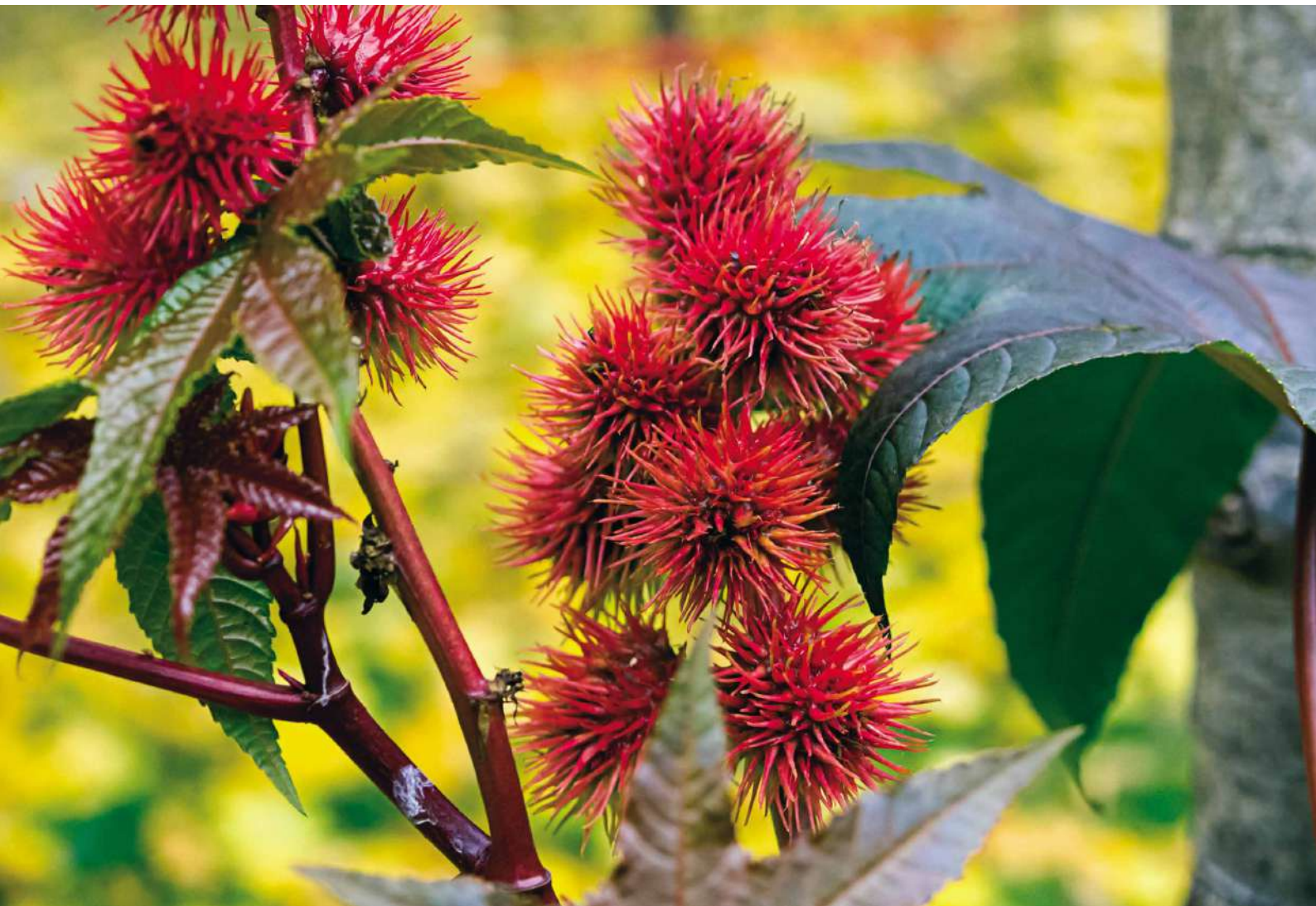


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# **NSK develops** *world's first bioplastic retaining piece* **for ball screws**

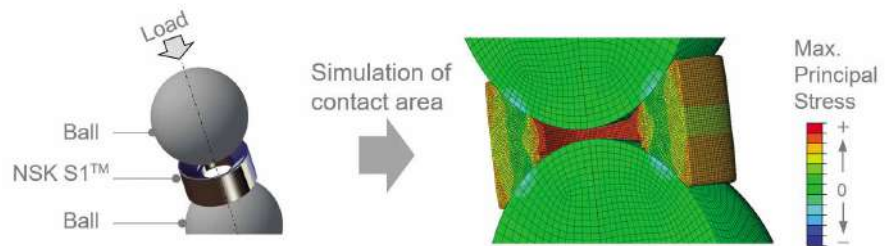
NSK S1 is the first bioplastic retention piece for ball screws to appear on the global market. Made from 100% renewable biological resources (mainly plants), the use of bioplastic for the new retaining piece reduces carbon footprint by 90% over its lifecycle in comparison with using conventional materials. The development therefore represents an environmentally sustainable choice for any European manufacturer looking to reduce CO2 emissions and meet increasingly stringent regulations.



— The use of bioplastic for the new NSK S1 retaining piece reduces carbon footprint by 90% over its lifecycle - Bioplastic made from castor plants



To emphasise the growing need for sustainable solutions, the European Commission released its Net Zero Industry Act in March 2023. A key part of the European Green Deal Industrial Plan, the Act proposes a framework of regulatory measures for strengthening Europe's net-zero product manufacturing ecosystem. Many countries are now looking to up their game on carbon-neutral initiatives, meaning that low-carbon and environmental measures are increasingly required in a wide variety of industrial machinery.



— NSK used its digital twin technology during development to ensure the bioplastic product could offer the same performance as a conventional retaining piece



— Deployed in NSK's world-class ball screws

NSK is committed to realising a carbon-neutral society. As part of this ethos, the company is increasing its use of bioplastics, which are more effective in reducing carbon emissions than conventional fossil fuel-based plastics. Ball screws are a key focus area due to their popularity in all kinds of industrial machines and systems.

Ball screws are highly efficient at transmitting force and converting motion (from rotational to linear), delivering significant energy savings. In recent years, injection moulding machines and servo presses are among many machine types switching from hydraulic to electric drive systems using servomotors and ball screws as a means of reducing power consumption. Considering such industry trends, the demand for ball screws is set for ongoing growth, particularly if sustainable solutions are available.

NSK's development of its S1 bioplastic retaining piece for ball screws (50 to 200mm diameter) makes a further contribution to achieving carbon neutrality. Drawing on its expertise in materials technology, NSK selected and validated DSM's EcoPaXX®

bioplastic (a plant-derived high-performance polyamide) as the retention piece material. As a point of note, retaining pieces sit between the balls to prevent them from colliding with each other and causing damage.

To optimise and expedite the development process, NSK deployed its digital twin technology. This advanced process enabled the creation of a bioplastic retaining piece with the same performance as a conventional product in a short period of time through the simulation of key parameters such as dimensions, shape, deformation and strength. In short, customers can now leverage the benefit of far lower CO<sub>2</sub> emissions while enjoying the same excellent performance levels associated with NSK ball screws.



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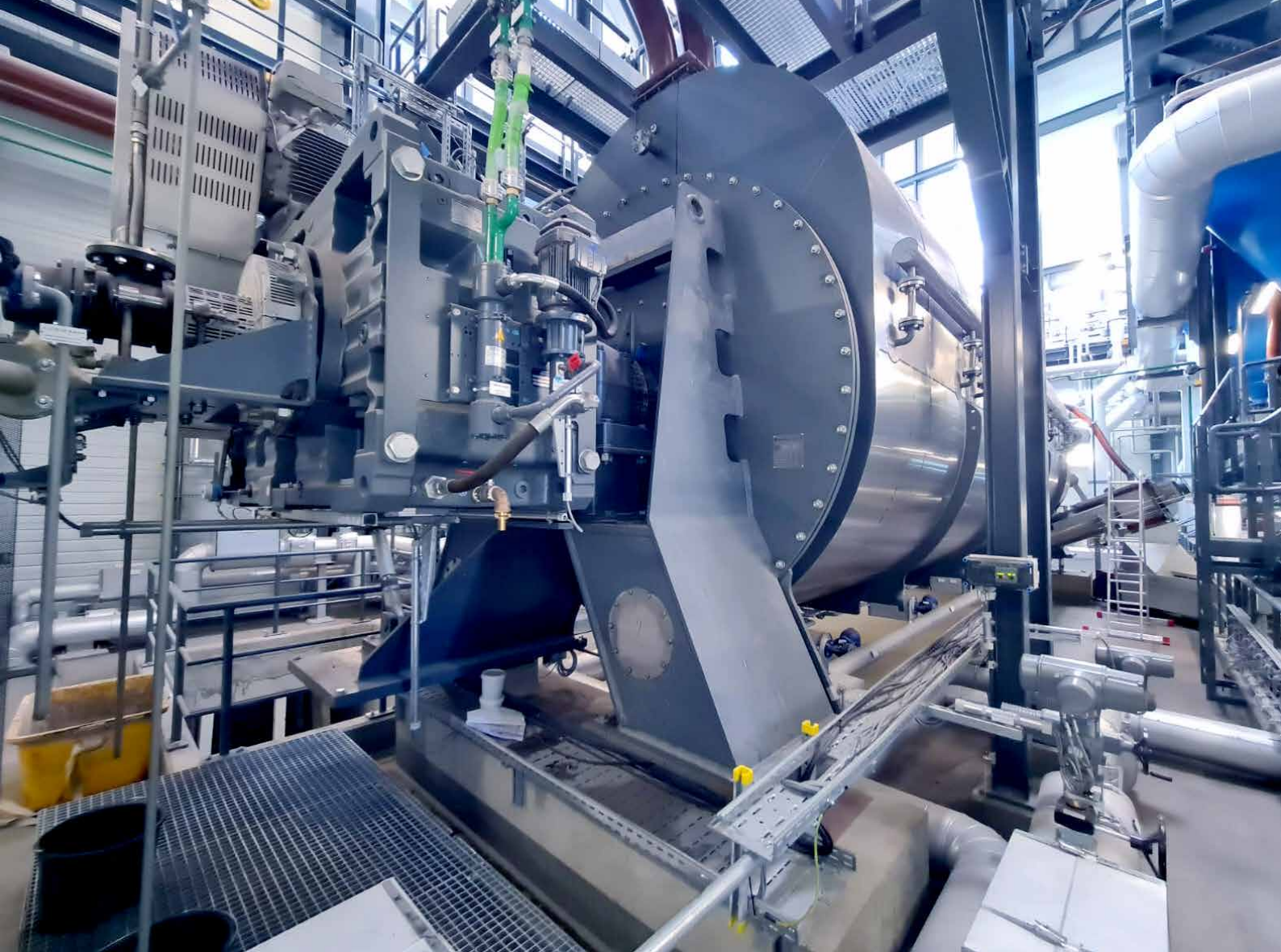
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# ***Roller Bearing Damage Detection and Condition Monitoring with SONOTEC***

Ultrasound is the technology for the first step in damage detection and has the advantage over other methods in that it can be used at all bearing speeds. Even with extremely low-speed bearings, damage can be detected at the earliest possible stage.

“

Low-speed machines like our sewage sludge dryer are difficult to monitor with vibration measurement technology. With SONOTEC's ultrasonic technology, it was possible to detect roller bearing damage and assess its condition.

*Tobby Brümmer,  
Head of Machinery Maintenance at PD Energy GmbH*

”





### Focus on sewage sludge incineration

As a 100% subsidiary of PD energy GmbH, KSR sewage sludge recycling Bitterfeld-Wolfen GmbH operates a mono sewage sludge incineration plant in the Bitterfeld-Wolfen chemical park. The plant is designed for a rated thermal output of 19.9 MWth. Running more than 8,000 hours a year, the incinerator consumes up to

260,000 tons of dewatered sewage sludge from municipal sewage treatment plants. The thermal utilization of sewage sludge in mono-incineration plants will be an important disposal path in the future. With the construction of the plant, KSR sewage sludge recycling Bitterfeld-Wolfen GmbH is making a contribution to the phosphorus recovery that will be required in Germany starting in 2029. The finite resource is

filtered out via various systems and fed back into the material cycle.

### Slow-speed disc dryer

The core process in the treatment of sewage sludge is drying. Two disc dryers are used at the site for this purpose. The redundancy of the systems is important so that one dryer can always process sewage





sludge. However, the system capacity is designed in such a way that both dryers are always running, if possible, in order to be able to achieve the appropriate utilization. Downtimes must be kept as short as possible, and if they are necessary, they should only affect one dryer at a time. "The availability of both disc dryers is extremely important to us," says Toby Brümmer, Head of Machinery Maintenance at PD Energy GmbH. In the disc dryer, the material is slowly transported from one end to the other, reducing the residual moisture. Disks heated with steam form a large contact surface where indirect drying takes place. Scrapers ensure an even process and transport of the material. The rotor turns very slowly with only 7.5 revolutions per minute.

#### **Roller bearing damage detected and evaluated**

During the commissioning phase, noises were detected on a roller bearing on one of the two dryers, whereupon a vibration measurement was initiated. "The results of the vibration measurement were not useful for us. They showed no indication of damage to the examined roller bearing," says Toby Brümmer. After a short research it was clear that ultrasonic measurement technology could help.

"We then contacted SONOTEC GmbH and asked for a measurement using ultrasonic technology," adds Toby Brümmer.

During the on-site measurement, the damage could be narrowed down to the corresponding roller bearing. The measurement effect was clear and in comparison to the second dryer, a statement about the severity of the damage could be made on-site.

The subsequent evaluation by the application engineer from SONOTEC provided further insights. It could be confirmed that the damage to the roller bearing had to be severe and very advanced. Furthermore, the data analysis revealed that the outer ring must have been severely damaged and, in particular, that one race of the double-row bearing was more severely affected. "Such details are extremely important for us to be able to identify the causes as precisely as possible.



“ We then contacted SONOTEC GmbH and asked for a measurement using ultrasonic technology

*Toby Brümmer,  
Head of Machinery Maintenance at PD Energy GmbH*

”



This is the only way to take appropriate preventive measures to prevent the problem from reoccurring," says Toby Brümmer.

### **Solution for slow-movers: condition monitoring with ultrasound**

The advantages of ultrasonic testing technology from SONOTEC are very apparent in this application. The broadband data evaluation enables an optimal adjustment to the conditions on site. In this way, characteristic values can be calculated in the range from 20 kHz to 128 kHz.

Frequency ranges with background noise can be suppressed with the adjustable filter function. The high sensitivity of the sensors enables early detection of roller bearing damage, making ultrasonic monitoring a very effective solution, especially for slow-running roller bearings. "We are excited about the statements that can be made with the help of the ultrasound data. Ultrasonic roller bearing monitoring will be an integral part of our maintenance measures for our slow-moving machines in the future," explains Toby Brümmer.

### **SONAPHONE: A modular approach with different apps and sensors**

With the ultrasonic testing technology from SONOTEC, other applications in preventive maintenance can also be performed. The device makes it possible to locate and evaluate compressed air leaks, and steam traps can be tested and their condition evaluated. Both applications are moving more and more into the focus of many companies due to ever increasing energy costs. "We are also interested in the other possible applications of ultrasonic technology," says Toby Brümmer.

With various apps and corresponding sensors, the ultrasonic testing device SONAPHONE can be easily adapted to the respective application. "This means that the investment in the testing equipment pays for itself very quickly. And the device is better utilized by using different departments. It is used between the regular routes on the disk dryers for other applications," says Toby Brümmer.



*Interview partner: PD energy, Toby Brümmer, Head of maintenance for machine technology  
Find out more about SONOTEC here: <https://www.sonotec.eu/en/>*



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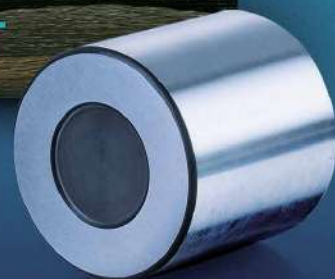
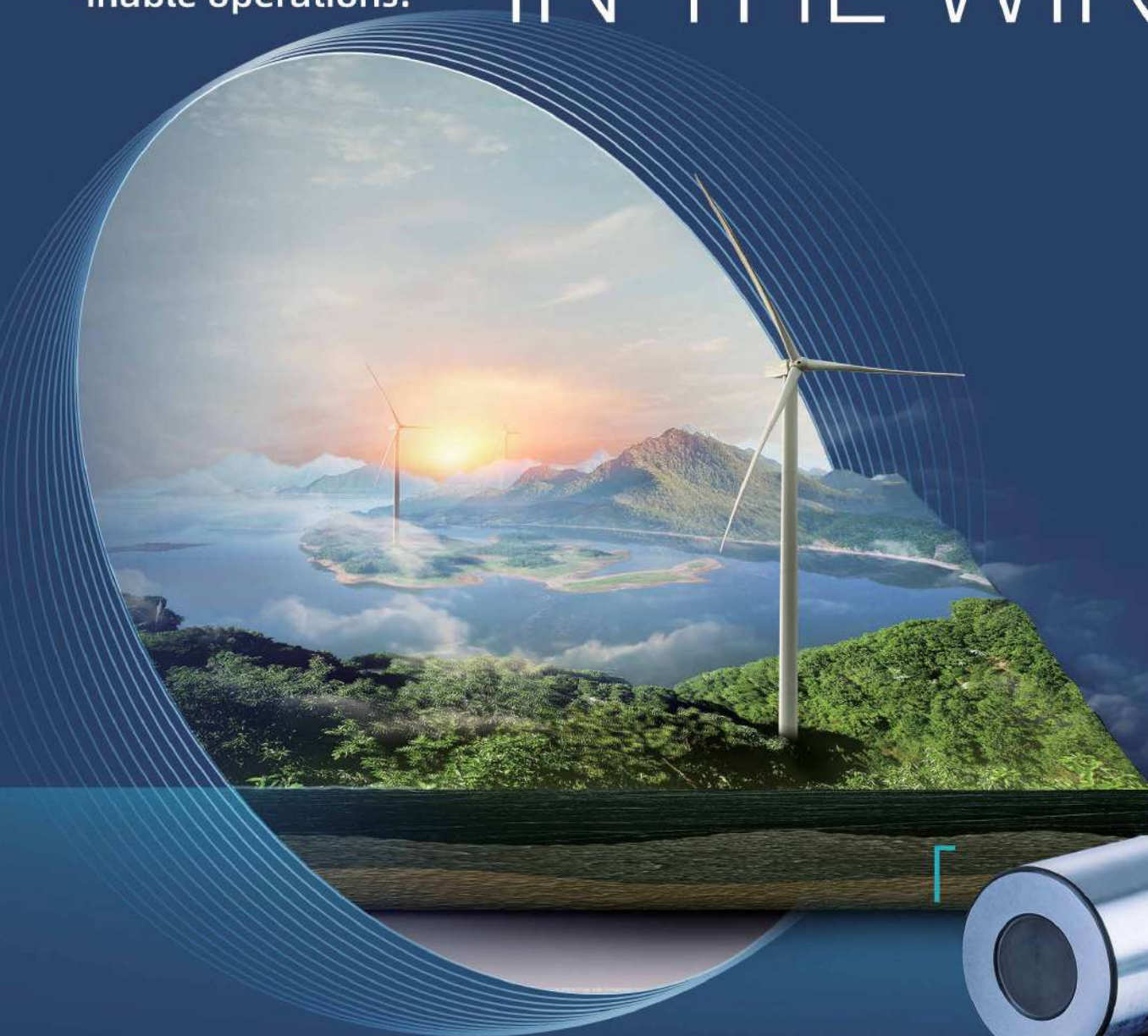
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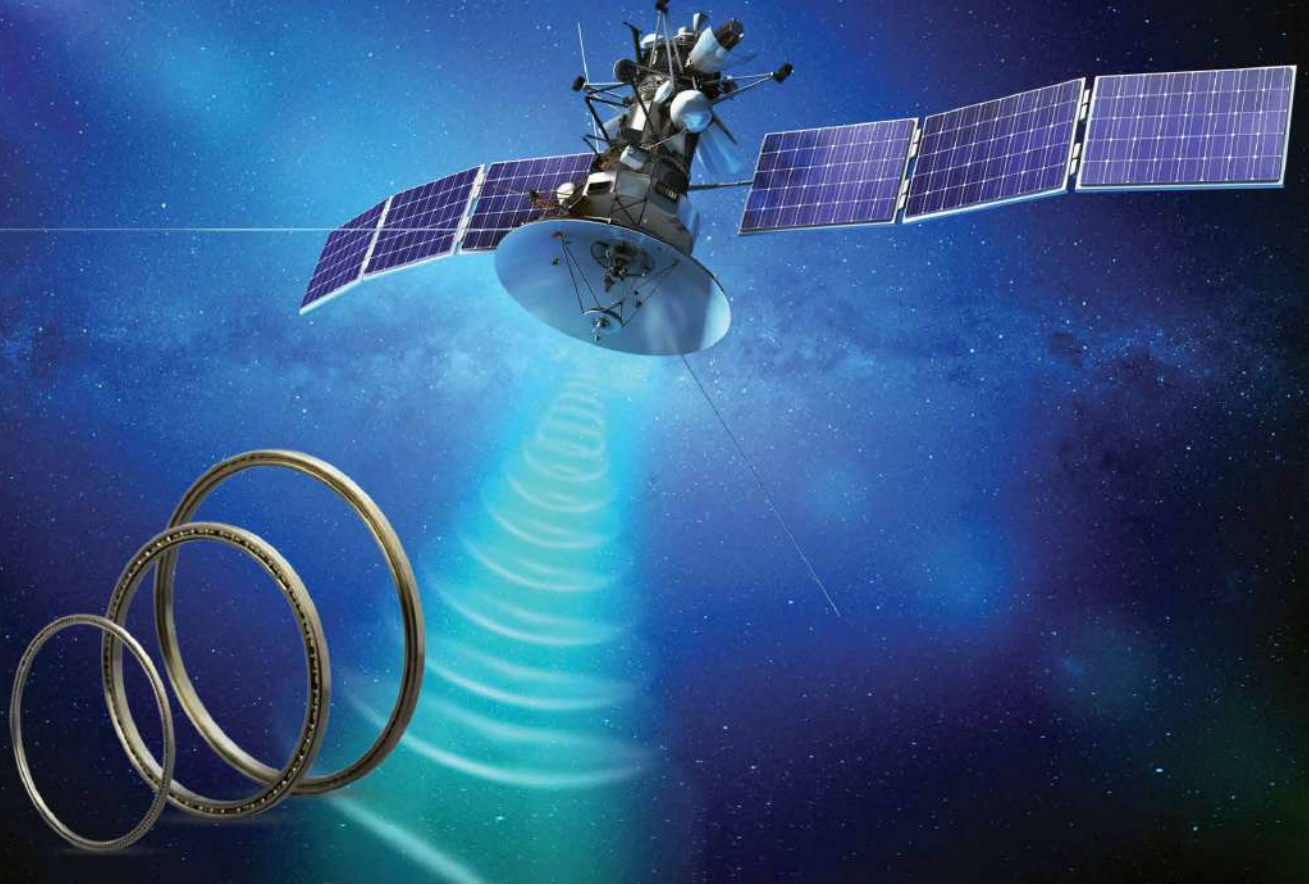
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# ***Precision Thin Section Bearings offer Critical Design and Manufacturing Advantages***

Gimbals...possibly not the most understood or appreciated of the vast array of engineering devices used in today's numerous high-technology control applications but none the less, an essential component for successful space projects in both commercial and defence applications. Gimbals as we know them today have been around since the 15th century where they were used to prevent the unwanted movement of the early compasses on ships, also for photographic applications, such as keeping cameras still while filming. Fast forward to the present and gimbals have a multitude of applications especially in critical control applications, such as in space flight by enabling precise control

and stabilisation of NASA spacecraft, rockets and satellite systems.

Currently there is a growing demand for high precision, high reliability bearings and gimbals to support space flight applications and Oxfordshire based **CARTER MANUFACTURING** is ideally placed to meet this demand. Established as a global supplier of **precision bearings**, and **aerospace bearing tooling equipment**, Carter will be exhibiting these products at the upcoming **DSEI Global Defence Showcase** in London, 12th-15th September 2023.

**What do gimbals consist of and what exactly are they used for?**

Typically, gimbals consist of two rings fixed together axially at 90° to each other and are designed to dampen any movement such as roll, pitch and yaw on a component that is susceptible to this type of movement. In space flight they enable precise control and stabilisation of objects such as an engine, sensor, or instrument, helping to maintain its orientation or change it, while keeping another part of the system stable.

## **Why are they so important for Space Flight?**

In space there is no atmosphere to provide aerodynamic stability, so spacecraft and rockets rely on thrusters, engines and reaction control systems for propulsion



and manoeuvrability. Gimbals allow these engines to be swivelled and pointed in different directions, enabling precise control over the spacecraft's orientation and trajectory so are essential for achieving accurate course corrections, orbital adjustments and rendezvous manoeuvres.

#### **Stabilisation and Pointing**

Many space missions require precise pointing and stabilisation of on-board instruments and sensors and gimbals allow these components to be mounted on rotating platforms that are designed to counteract any unwanted motion or vibrations. This ensures optimum precision, enabling instruments to focus on their intended targets, without being affected by the spacecraft's movement.

#### **Energy Efficiency**

Gimbals are also used to steer rocket engines during thrusting, allowing for precise control of the spacecraft's trajectory. By using gimbals to adjust the engines direction means spacecraft can make more efficient use of propellant, minimising fuel consumption and extending a missions duration.

#### **Communication and Observation**

Spacecraft often need to maintain consistent orientation for communication with ground control stations, or for observing celestial objects. Gimbals help to keep antennas and other optical instruments pointed in the right direction, which optimises signal strength helping

to ensure consistent data transmission. They also enable telescopes and cameras to capture clear images of specific targets.

#### **Attitude Control**

The orientation or attitude of a spacecraft is critical for achieving specific mission objectives, such as maintaining the proper orientation for solar panel exposure or managing heat dissipation. Gimbals provide the means to adjust and maintain the spacecraft's attitude, allowing it to respond to changes in external conditions and maintain optimal operational conditions.

Established for over 20 years, Carter is acknowledged as a global supplier of precision bearings and established brands which are used in the most demanding and critical space flight applications. This is possible thanks to the support of our partners whose products we supply. These include Silverthin, recognised as a global leader in the design and manufacture of high-precision thin section bearings and NES (Napoleon Engineering Services) who produce engineered bearing solutions for the most critical environments - space research and exploration.

NES offers the key benefit of 'Space Heritage' a status that is crucial to being considered a supplier to the space industry sector. This is underlined by the fact that NES has supported both NASA missions in the USA and also projects initiated by the European ESA by supplying components for life-critical space applications. In addition to these key suppliers is Carter's

sister company UNISIS, our specialist manufacturing division catering supplying a wide range of custom and 'niche' products such as; aerospace bearings, lightweight, corrosion-resistant and high-temperature bearings.

The bearings supplied for space applications are able to withstand extreme vacuum environments, extreme temperatures and vibration levels meeting ABEC 1F, 3F, 5F or 7F precision levels. Carter's expertise includes working closely with customers; defining, obtaining and sharing quantitative data regarding bearing and gimbal performance in the actual space environment. For example, applications which have extreme high vacuum, zero gravity and those with penetrating radiation, all of which present extremely challenging engineering situations.

To meet the current demands and to exploit the latest technological advances, now and in the future, Carter has significantly expanded its operational facilities over the past 5 years. For example, setting up distribution centres in Minnesota, US and Valencia in Spain and most recently - significant investment in the UNISIS manufacturing facilities in the UK.

#### **For enquiries**

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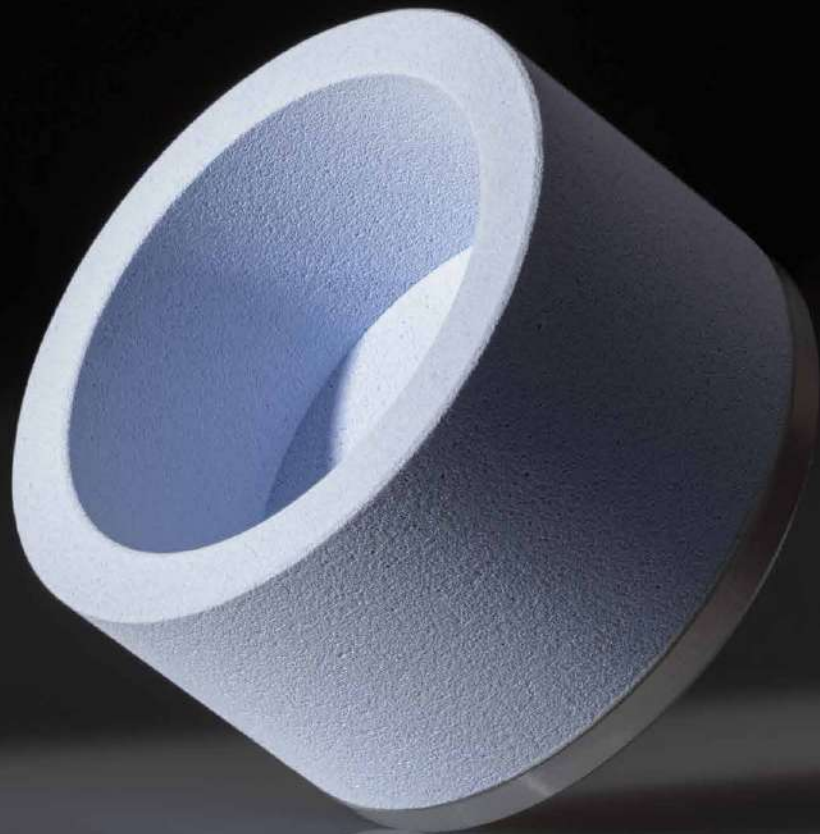
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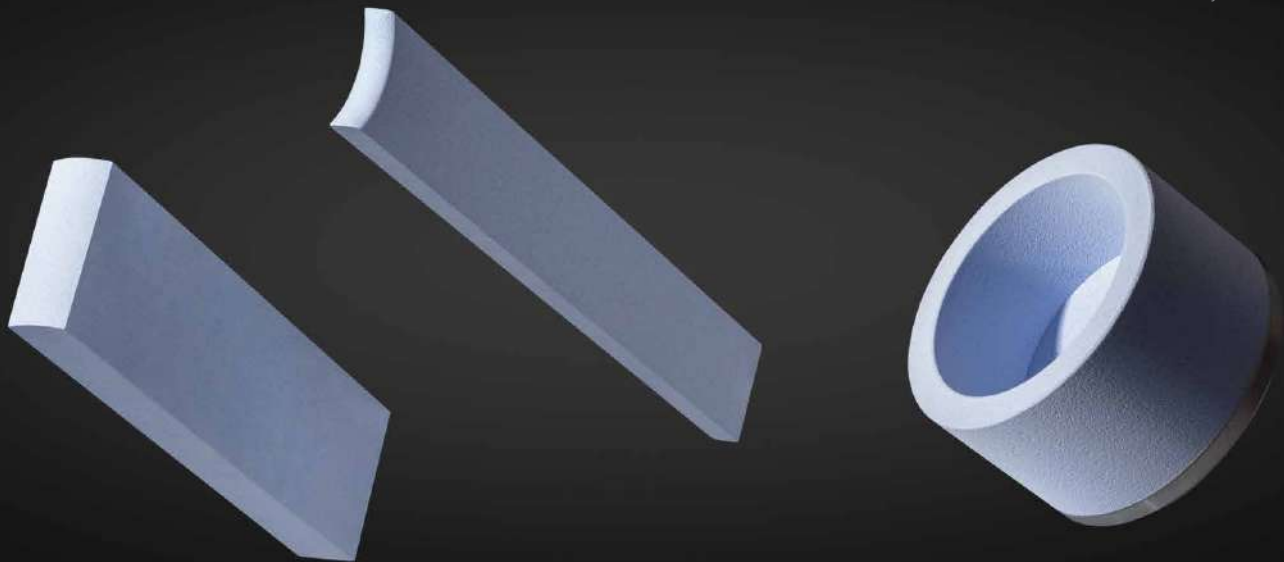
SWISS MADE



# **A sulfur-free revolution:** *Alfons Schmeier's 410A Sulfur Free*

Revolutions are the forces that reshape societies, rupture norms, and propel progress. From the industrial development to the digital age, revolutions are what make our world move. And when it comes to technological revolutions in the grinding industry, German superfinishing leader Alfons Schmeier is starting its own revolution...a sulfur-free revolution.





In the machining industry, sulfur is often used as a lubricating film and a mean to reduce heat and improve cooling. By reacting with the metal of the workpiece, sulfur creates sulfides which prevent micro-welding of the tool and workpiece. However, the disadvantages associated with the use of sulfur outweigh its advantages. The chemical bonds of sulfur have adverse effects on the environment, people's health, and machines. Besides deforestation and destruction of aquatic life, allergies, skin irritations, and breathing difficulties that are some of the most wide-spread effects of sulfur, the latter also harms the machine equipment by creating acidic sulfates that can damage cable insulations, cause machine corrosion, clog filters, and lead to earlier aging of coolants.

#### **A sulfur-free era**

Tightening law regulations prompt the reduction of sulfur usage to the minimum in an attempt to reduce its negative impact. Having recognized the importance of developing sulfur-free products, the engineers at Alfons Schmeier have not only created a groundbreaking solution that is harmless to the environment, people, and machines, but also one that has improved performance and tool life. The brand's latest innovation for honing cups and stones – the 410A Sulfur Free is a cutting-edge technological milestone. From the careful selection and proportion of the ingredients and their exact mixture to the meticulous

execution, 410A Sulfur Free embodies the precision and quality inherent to Alfons Schmeier's universe. The denomination 410A encapsulates the secrecy of the formulation and the benefits of the products.

#### **410A Sulfur Free at a glance**

Instead of being sulfurized, Alfons Schmeier's 410A Sulfur Free honing stones and cups are carefully waxed, making them entirely sulfur-free, thus, eliminating possible harms for the machine equipment, the operating staff, and the environment. Genuinely combining sintered and white corundum, 410A Sulfur Free solutions exhibit an up to three times better tool life and a significantly improved performance, leading to a better cost per part. Manufacturers can now cut on the maintenance costs for the machines and the expensive handling of health-related issues, as well as eliminate the complex and costly process of disposing of sulfur.

#### **A wide range of application**

All 410A Sulfur Free solutions are available in the brand's proprietary SuperFine I (SF I) and SuperFine II (SF II) bonds. Thanks to the properties of the bonds, lowest pressure, minimal removal rates, and mirror-like surfaces are achieved. Being sulfur-free, all 410A solutions are suitable for a wide range of machines as it is no longer a requirement to have the machines specifically prepared for sulfur.

Additionally, certain accompanying costs, such as those related to oil cleaning or filter exchange, are significantly reduced. Alfons Schmeier's sulfur-free honing stones and cups are used in a wide range of industries, such as automobile and e-mobility, bearing, medical and even the food industry. 410A Sulfur Free are applicable to processes like feed honing, race finishing, face finishing, and sphero finishing.

Alfons Schmeier takes pride in the creation of a cutting-edge solution that preserves the environment, humans' health, and the machines; a solution with indisputable qualities and evident benefits; a solution like no other – the 410A Sulfur Free: supreme performance, super finish, sulfur-free. Created with sincere care for the environment, the people, and our customers.

#### **About SCHLEIFSCHEIBENFABRIK ALFONS SCHMEIER GMBH & CO. KG**

*Founded in 1946 in Helmbrechts, Germany, Alfons Schmeier – a leader in grinding technology, is innovating in process optimization through its extensive expertise in developing and manufacturing customized high-precision tools for internal grinding and superfinishing. The Alfons Schmeier name evokes the brand's values of highest precision, utmost quality, and personalized customer solutions.*

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# 3 Things to Consider Before Deploying Automatic Lubricators

Lubrication-related activities can influence an estimated 40 percent of total maintenance costs, making it crucial to get right. This means lubricating equipment with the correct lubricant at the right time, with the right amount. Automatic lubrication alone certainly is not the solution to all your lubrication issues. It must be properly understood to boost its potential benefits. Let's discuss what must be considered before installing an automated lubricator on a piece of equipment.



## 1. Amount of Grease Needed

Verify the amount of grease that should be supplied to the unit on an ongoing basis. This can be estimated by calculating grease volume and frequency required per lubrication event (based on element dimensions). In high-temperature applications, such as those commonly found in steel mills, some bearings may need to be lubricated every day or even every few hours. While this is an extreme example, it's easy to see that it would require a veritable army of technicians to perform manual relubrication on hundreds of bearings every day, thus making automatic application the preferred method.

## 2. Placement of Supply and Pressure-Relief Piping

Ensure the supply and pressure relief fitting isn't obstructed. Check that the system does not shake appreciably, and if it does, then arrange for remote (indirect) installation. Make sure the feed lines are short enough with a large enough ID so that the lubricator can overcome whatever line loss may exist. Verify that the selected lubricant



can accommodate ambient temperatures in the surrounding area.

### 3. Importance of Inspections

Instead of removing the manual relubrication work assignment, modify the assignment to require an inspection and verification of effective unit operation, and include a cursory component inspection in the work order.

Regular inspection will help ensure the best results from an automated system. Inspection also will help to identify installation issues (damaged fittings, leaking or blocked pipes, lubricators not dispensing at the right pace, etc.) and spot when it's time to change or refill lubricants (unless your system sends alerts through a cloud-based system).

### Other Considerations

When it comes to manual application, the trick is to apply the maximum amount of grease without over greasing, thereby

maximizing the relubrication interval. While this works for some less critical grease-lubricated components, most applications benefit from more frequent

application or could be harmed by large application volumes. While you could choose to simply lubricate these components frequently, the associated labour cost would likely position you to favour automatic lubricators.

To accurately determine which lubricated components would be good candidates for automatic applicators, you must understand the factors that cause a need for frequent relubrication, such as excessive temperature, high speeds and contamination.

### Bottom Line

Deploying an automatic lubrication system is a carefully chosen investment. To ensure an abundant return on that investment, you must choose a solution based on the requirements and criticality of the application. Typical solutions range from inexpensive single-point automatic lubricators to complex systems that use bearing friction to dispense the correct amount of grease automatically. That's the case of, for example, the OnTrak from UE Systems: a complete bearing remote monitoring system, which monitors friction in real-time and sends an alert when bearings require attention, allowing for remote bearings' lubrication, automatically applying the right amount of grease at just the right time.





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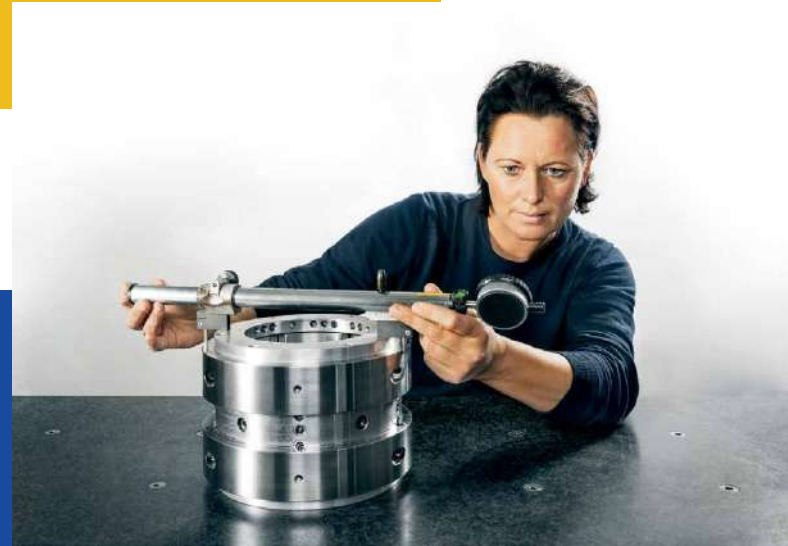


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# Miba Industrial Bearings celebrates its 5th anniversary!

- 5 years since Miba acquired four John Crane Bearing plants
- Followed by a joint venture with Zollern plain bearings
- Since 2018 Miba Industrial Bearings (MIB) doubled its size and is one of the leading bearing manufacturers

Miba Industrial Bearings celebrates its 5th anniversary, marking a great journey. Each achievement, milestone, and breakthrough are proof of the collective efforts of the teams and the invaluable support of the customers. MIB is grateful for all created partnerships and the role these partnerships played in this shared success story.

Clemens Honeder, Managing Director of Miba Industrial Bearings points out: “Personally, these 5 years have allowed us to gain a deeper understanding of our customers and their needs while fostering a culture where every individual's contribution is valued. The culture that inspires and fulfills us is the result of the combined contributions and dedication of all individuals involved.”

Miba Industrial Bearings celebrates its 5th anniversary, marking a great journey. Each achievement, milestone, and breakthrough are proof of the collective efforts of the teams and the invaluable support of the customers. MIB is grateful for all created partnerships and the role these partnerships played in this shared success story.

“With the integration of Miba Industrial Bearings, we managed to form a strong Bearing Division for the future. With this we are perfectly equipped to reach our growth targets for our “Miba 100” strategy until 2027 both in our core markets as well as for new applications”, says Christoph Ederer, Miba Group Board Member and General Manager of Miba Bearing Division. While Clemens Honeder, Managing Director of Miba Industrial Bearings additionally points out: “Personally, these 5 years have allowed us to gain a deeper understanding of our customers and their needs while promoting a culture where every individual's contribution is valued. “

Miba's entry into the industrial bearings sector began with the acquisition of four John Crane Bearing (Sartorius Bearings, Orion, TCE) plants in 2018, followed by a joint venture with Zollern Plain Bearings



Clemens Honeder, Managing Director of Miba Industrial Bearings

the following year. In the core business for generators or turbomachinery such as gas turbines and compressors, it is important to be a reliable partner, to score with experience, and to offer through close cooperation the customers excellent bearings solutions, even for challenging applications. With a global team and a broad product portfolio, Miba Industrial Bearings (MIB) has the right prerequisites to offer innovative solutions for engineering problems. In addition, MIB can build on immense know-how from the engine bearings business. This ensures high reliability for customers and creates a good reputation in the market. Since June 2018, sales of the newly formed division MIB have doubled. MIB's financial stability is a result of being part of the Miba Group, a large and financially strong organization.





**Christoph Erder.,**  
*Miba Group Board Member and  
General Manager of Miba Bearing Division*

## Vision

MIB is a global company focused on innovation and R&D with a vision to become the world's top industrial bearings provider by 2026/27. With a global team and two advanced test benches, MIB strives to stay ahead of industry trends. Customer success is a top priority for MIB, driving their ongoing efforts to develop and enhance their corporate culture. They are committed to building strong partnerships

and meeting customer needs with the highest level of quality and commitment to excellence.

## On the way to becoming number 1

MIB aims to be a reliable partner for the industry, addressing the challenges posed by the energy transition, such as the adoption of hydrogen and clean fuels, which require advanced turbomachinery and generators.



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# Understanding of the Complex Dynamics of the *Cage Instability Phenomenon* with the 'Stability Map'

APO-GEE announces an exclusive engineering offering based on groundbreaking 'Stability Map' concept

APO-GEE, the deep-tech start-up based in Belgium, specialized in ball bearing engineering, announces a new exclusive engineering offer, which consists in a comprehensive dynamics study of ball bearing cages using groundbreaking **Stability Map** concept.

A ball bearing cage can exhibit three types of behavior: stable, jostled/agitated, or unstable. It is crucial to understand that an unstable ball bearing cage can have severe consequences on the overall performance of the bearing and the mechanical system.

Based on a deep understanding of the complex dynamics of the cage instability phenomenon, and using advanced computational methods and simulation tools, APO-GEE is implementing an innovative technique based on the construction of original Stability Maps designed for addressing ball bearing cage instabilities.

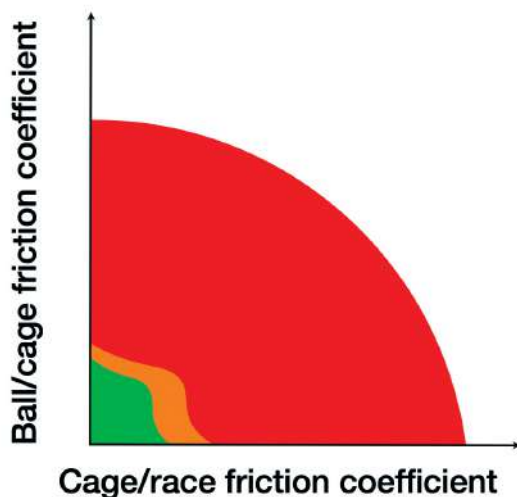
Stability Maps aim to optimize the performance and reliability of ball bearing cages, and consequently the bearings themselves, enabling engineers to design reliable mechanisms and assemblies.

More info on the stability maps:  
<https://www.apo-gee.tech/stability-maps>.

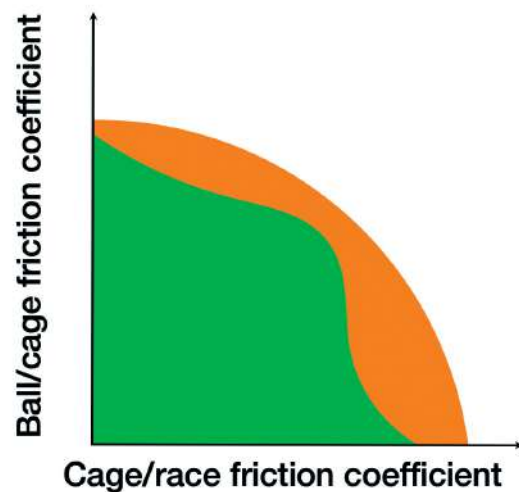
APO-GEE is an R&D and intense IP minded Belgian start-up. The company provides tailor-made ball bearings solutions notably for aerospace and defense applications, and thus ensures success of related projects and missions.

APO-GEE has solved the cage instability problem, to which no fully satisfactory response has been possible for more than 50 years.

**Classic cage design**



**Butterfly cage design**



Stable ● Jostled ● Unstable ●



## Software Version 07/2023 is available

A new version of the MESYS shaft and rolling bearing analysis software including new functionality is available. The bearing analysis software allows the calculation of the load distribution within the bearing and bearing life according to ISO/TS 16281 and it is integrated in a shaft system calculation with additional possibilities like modal analysis, strength calculation for shafts and interfaces to gear calculations. Currently the software is used by customers in 31 countries on 4 continents.

### General Extensions

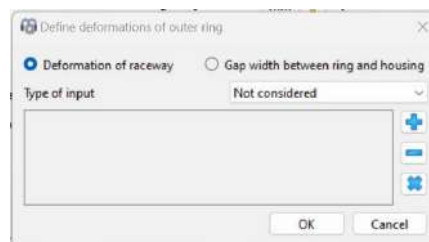
The bearing databases from Barden/HQW and SKF are updated and a new database from NSK is added. The encrypted Barden/HQW database contains the internal geometry while the SKF and NSK databases only contain catalog data.

Custom diagrams can now be defined based on the input in the parameter variation. They can be added to the graphics menu or the main report. Application related diagrams can be defined easily and saved with the calculation file.

The software was available in both a 32bit and a 64bit version for now 12 years. Now the 32bit version is not supported any more and only a 64bit version is available.

### Extensions in the Bearing Calculation

The X/Y-factors for the life calculation according to ISO 281 can optionally be calculated from the free contact angle instead of the nominal contact angle. This allows to consider bearing clearance especially for deep groove ball bearings in life according to ISO 281.



For the calculation with elastic surroundings now the gap width to the housing can be specified in addition

to ring deformations. This allows to differentiate between a cylindrical bearing ring in a non-cylindrical housing and a non-cylindrical bearing ring in a cylindrical housing. Of course, both parts can have roundness deviations in one calculation too. Deformations of bearing rings can now be shown as animation.

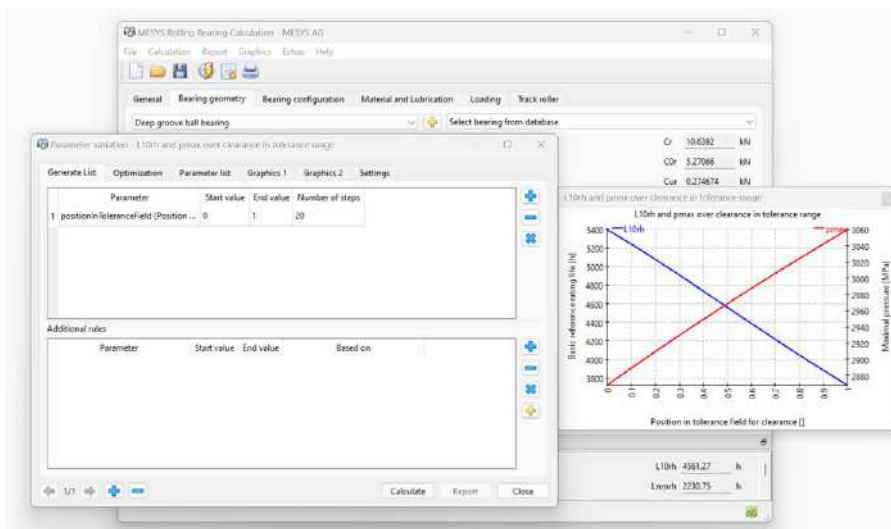
### Extensions in the Shaft Calculation

In the shaft calculation 3D-deformation views are available as animation now. Several options are available to configure 3D-views like enabling or disabling some components like coordinate system or housings.

The extended bearing model now allows to consider spacers between two bearings directly now, without adding a part for the spacer. These spacers then have the same temperature and material as the right bearing. For standard cases the definition of spacers will be faster now.

The possibilities for CAD-exports have been extended and a preview was added. First a 3D-graphic is shown from which the STEP export can be done. For cylindrical gears and bearings also a detailed geometry is available showing teeth and rolling elements.

For 3D-elastic parts orthotropic material data is supported. Now this material information for orthotropic materials can be added into the database. The import of 3D-geometry now also supports closed sheet bodies in addition to solids.

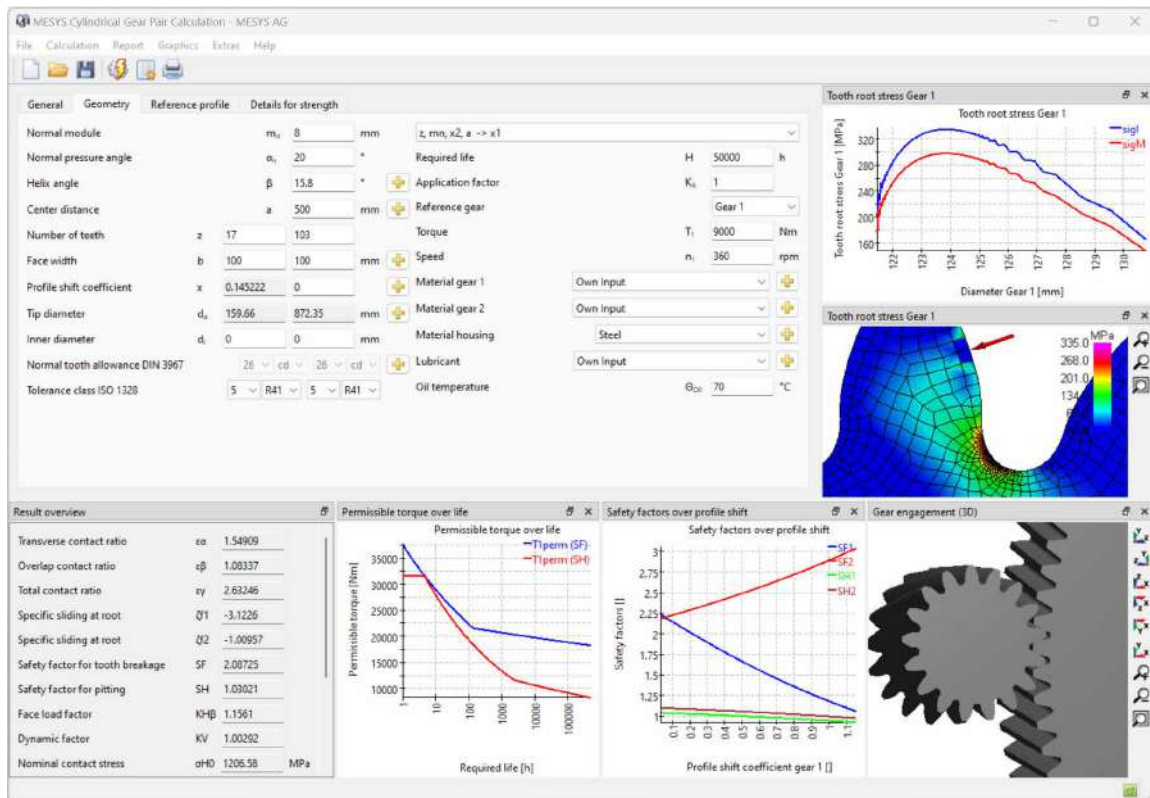




## Extensions in the calculation of Axial-Radial-Roller-Bearings

The calculation module for axial-radial-roller-bearings now also includes a parameter variation like the other calculation modules. This allows to vary geometry data and for example the stiffness can be shown over bearing clearance.

Stiffness values can now be calculated directly for one or more reference points without using several load steps in the series calculation.



## New calculation module for cylindrical gear pairs

As new module a calculation for cylindrical gear pairs is added. It can be used as standalone program or integrated into the shaft calculation.

The cylindrical gear pair calculation supports following features:

- Gear geometry calculation according to ISO 21771-1. For internal gears all input and output diameters are used as positive values in the software as they are used for manufacturing and documentation. Only the number of teeth for internal

- gears is set to a negative value.
- Gear strength calculation according to ISO 6336 parts 1, 2, 3, 5, 6. Different options are available for the tooth thickness and contact ratio to be used.
- Support for load spectra. In addition to speed and torque also mesh deviations, face load coefficients or mean stress influence factors can be defined in the load spectrum.
- Parameter variation to vary geometry or loading with output in tables and diagrams
- Tooth form graphics for single teeth, full gear, manufacturing or engagement
- Graphics for specific sliding, safeties over life, permissible torque over life

- FEA based tooth form stress using 2D-FEA. For helical gears either the virtual spur gear can be used or the normal section.
- 3D-Gear geometry available as STEP export. The transverse section is generated with a accuracy better than  $10^{-4} \cdot m_n \cdot \cos(\beta)$  and then extruded along a helix. Accuracy along the helix depends on the CAD system. Currently no profile or flank modifications are included.

The eight calculation examples from ISO/TR 6336-30 are included in the installation.

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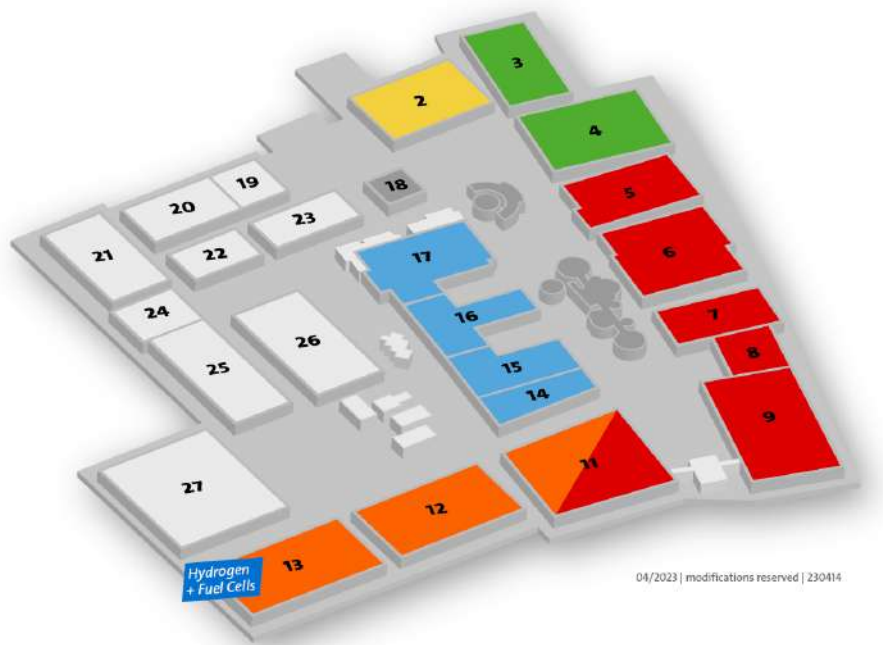
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The stresses on rolling bearings in particular are very high, and will continue to increase in the future. As will expectations of reliability. Therefore, appropriate bearing selection and dimensioning as well as the optimal design of the bearing environment are indispensable. This requires constant growth in expertise based on practical experience and scientific knowledge.

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## PRIMARY TOPICS

**BEARING WORLD focuses on all facets of bearings and all involved components, with special emphasis on rolling bearings – in combination with or comparison to plain or magnetic bearings.**

- » Drive technology applications and challenges to bearings
- » Calculation and bearing dimensioning
- » Life and durability
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- » NVH (noise, vibration, harshness)
- » Bearing damage
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- » Lab testing vs. field performance
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More than thirty renowned scientists from 11 countries from all over the world are gathered here. They review and evaluate the conference presentations before they are published in the Bearing World Journal. In addition, some of them will be available at the conference as moderators, speakers and discussion partners.

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## SUBMISSION CONDITIONS

**Please submit your abstract by  
30 October, 2023**

- » Please use the online portal at [bearingworld.org](https://bearingworld.org) to submit your abstract.
- » The conference proceedings will be in English.
- » Presentation slides must be in English.
- » Each presenter will be allocated 20 minutes for presentation plus 5 minutes for discussion.
- » Participants will receive download links for authorised presentations after the conference.

### Key Deadlines

Deadline for abstracts: **30 October, 2023**  
Submission of conference report: **30 April, 2024**

### Process

All abstracts will be submitted to the Program Committee for selection.

### Peer-Reviewed Bearing World Journal

You can also publish your contribution as an extended paper in the "Bearing World Journal," which will be published after the conference. Please select the checkbox in the submission form if you are interested.

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# EPTDA ANNUAL BUSINESS CONVENTION

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— The new mechatronic rear-wheel steering system by Schaeffler has celebrated its series-production premiere, bringing enhanced agility on bends and superior inner-city maneuverability to the new electric SUV of a leading international car manufacturer.

## World premiere: SCHAEFFLER rear-wheel steering system goes into series production

- First customer chooses Schaeffler's innovative steering system for its electric SUV; other makes of vehicle featuring the system to go into production soon
- Mechatronic rear-wheel steering system by Schaeffler enhances ride comfort, agility and safety
- World's first rear-wheel steering system with planetary roller gear based on Schaeffler precision mechanical engineering

The new mechatronic rear-wheel steering system from Schaeffler has celebrated its series-production premiere, bringing enhanced agility on bends and superior inner-city maneuverability to the new electric SUV of a renowned vehicle

manufacturer. By adding steering functionality to the rear axle, Schaeffler's new technology improves handling in city traffic, enhances lane-change stability, and makes the vehicle easier to park.

"Schaeffler has developed from a supplier of components for chassis systems to a provider of complete steering systems," said Matthias Zink, CEO Automotive Technologies at Schaeffler AG. "We have built up extensive capabilities around steering systems in



— Planetary roller gear: the technology innovation that sets the Schaeffler rear-wheel steering system apart from the rest. Photos: Schaeffler (Daniel Karmann)

recent years because we see this as a strategic growth area for our business.”

The key to Schaeffler’s new rear-wheel steering system is the planetary roller gear – a world first based on precision mechanical engineering from the company’s in-house industrial technology operations. The result is a highly compact system that is lightweight, quiet in operation, and optimised for easy vehicle integration. This innovative steering system has been well received by the market, with the first customer onboard and various other auto makers likewise committed to using it in their vehicles. In fact, further vehicle models featuring the steering system from Schaeffler are due to go into production before the end of 2023, as well as in 2024.

#### **Ahead of the pack with an innovative planetary roller gear**

Schaeffler’s rear-wheel steering system consists of two sub-assemblies. The first – and the key to it all – is a precision mechanical system featuring a planetary roller gear from the company’s Industrial division that has been specifically adapted for automotive applications. The second is the powerpack, comprising the electronics, electric motor and software. Schaeffler develops the overall system and takes care of

“ Schaeffler first started out in the chassis systems market with precision mechanical components. Today, we are developing and manufacturing complete mechatronic chassis solutions of all kinds, ranging all the way to fully integrated rolling chassis concepts.

*Clément Feltz, Head of Chassis business division at Schaeffler.*

”

its integration into the customer’s vehicles.

The planetary roller gear sets the Schaeffler system apart from rear-wheel steering systems made by other manufacturers, which traditionally use trapezoidal screw drives. Consequently, the Schaeffler product not only meets the stringent safety standards of Automotive Safety Integrity Level D (ASIL D), but it also yields significantly increased efficiency, reduced friction, and shorter system reaction times. This allows Schaeffler to generate precise, as well as safe, vehicle motion. This is especially advantageous for drivers of electric vehicles because it compensates for the downsides of the longer wheelbase necessitated by the underfloor battery position common in such vehicles. A longer wheelbase means a larger turning radius and hence reduced maneuverability. The Schaeffler rear-wheel steering system

overcomes this problem in a number of ways. First, when the vehicle is changing lanes at higher speeds, the system turns the rear wheels in the same steering direction as the front wheels, enhancing stability, handling and safety. Second, on tight bends, the system improves vehicle agility by turning the rear wheels in the opposite steering direction to the front wheels. This creates a virtual reduction in wheelbase, enabling the driver to steer through the bend with ease. In the same way, the system also reduces the vehicle’s turning radius, making it much easier to maneuver, park, and make U-turns in tight inner-city spaces. And finally, the technology improves the active intervention capabilities of automated lane change assist systems.

#### **Lighter, smaller, quieter**

Other benefits of the new Schaeffler system



include an improved steering feel as well as increased safety and ride comfort. “Thanks to its optimised inner design, our rear-wheel steering system is more compact and requires less installation space in the vehicle,” said Clément Feltz, Head of Chassis business division at Schaeffler. “As a result, automakers can save up to 15 per cent in weight compared to alternative systems.” In addition, the whole design of the system has been acoustically optimised, making today’s ultra-quiet electric cars even quieter. The system – and its customers – also benefit from Schaeffler’s longstanding excellence in precision mechanical engineering.

### Schaeffler’s journey as a provider of highly sophisticated chassis systems

Schaeffler can look back on many years as a supplier of individual chassis components – wheel bearings, strut bearings, spring cup bearings, universal joint bearings and the like – to the automotive industry. But in 2009, Schaeffler took a new direction when it started series production of its ball screw drive, a product that draws on the precision mechanical engineering know-how of the company’s tool manufacturing department. Today, the ball screw drive is an integral part of many chassis systems, including electromechanical steering systems and brakes. This product was followed in 2015 by the series launch of the Schaeffler active roll control system. This was the company’s first mechatronic ride comfort system, comprising precision mechanical components, an electric motor,



— Schaeffler comes of age as a provider of mechatronic steering systems with its first rear-wheel steering solution.

and electronics. It was also the world’s first chassis actuator to go into series production with variants for both 12V and 48V systems. Unlike passive anti-roll systems, the Schaeffler system reduces the roll angle, which markedly improves vehicle stability and ride comfort. And now, with the rear-wheel steering technology, there is another Schaeffler mechatronic chassis system on the road.

There is yet another Schaeffler chassis solution due to hit the market this year. The solution, the first **electrohydraulic power steering system** specially designed for front wheel steering in commercial vehicles, will be used in series production for a Chinese vehicle manufacturer. This system will initially support Level 2 automation and subsequently higher-level autonomous driving functions.

“ Thanks to its optimised inner design, our rear-wheel steering system is more compact and requires less installation space in the vehicle. As a result, automakers can save up to 15 per cent in weight compared to alternative systems

Clément Feltz, Head of Chassis business division at Schaeffler.



— Planetary roller gear: the technology innovation that sets the Schaeffler rear-wheel steering system apart from the rest. Photos: Schaeffler (SevenM)

“Schaeffler first started out in the chassis systems market with precision mechanical components. Today, we are developing and manufacturing complete mechatronic chassis solutions of all kinds, ranging all the way to fully integrated rolling chassis concepts,” said Clément Feltz. He heads a division of the company’s automotive technologies business that will continue to be systematically developed into an integrator of chassis systems for large-scale automotive production and new forms of mobility. The company’s first key components for steer-by-wire systems will go into large-scale automotive production midway through the current decade, with plans that complete, fully integrated steer-by-wire systems will follow.

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# The simatherm IH 045

## World's first controllable induction heater with an app

simatherm heaters efficiently heat bearings and other ring-shaped metal parts. They allow quick and clean assembly and replace conventional heating methods such as hot plates, hot oil baths, open flames and ovens. During the heating process, only the workpiece heats up, but the heater remains cold.



### For which rolling bearing dimensions is the induction heater suitable?

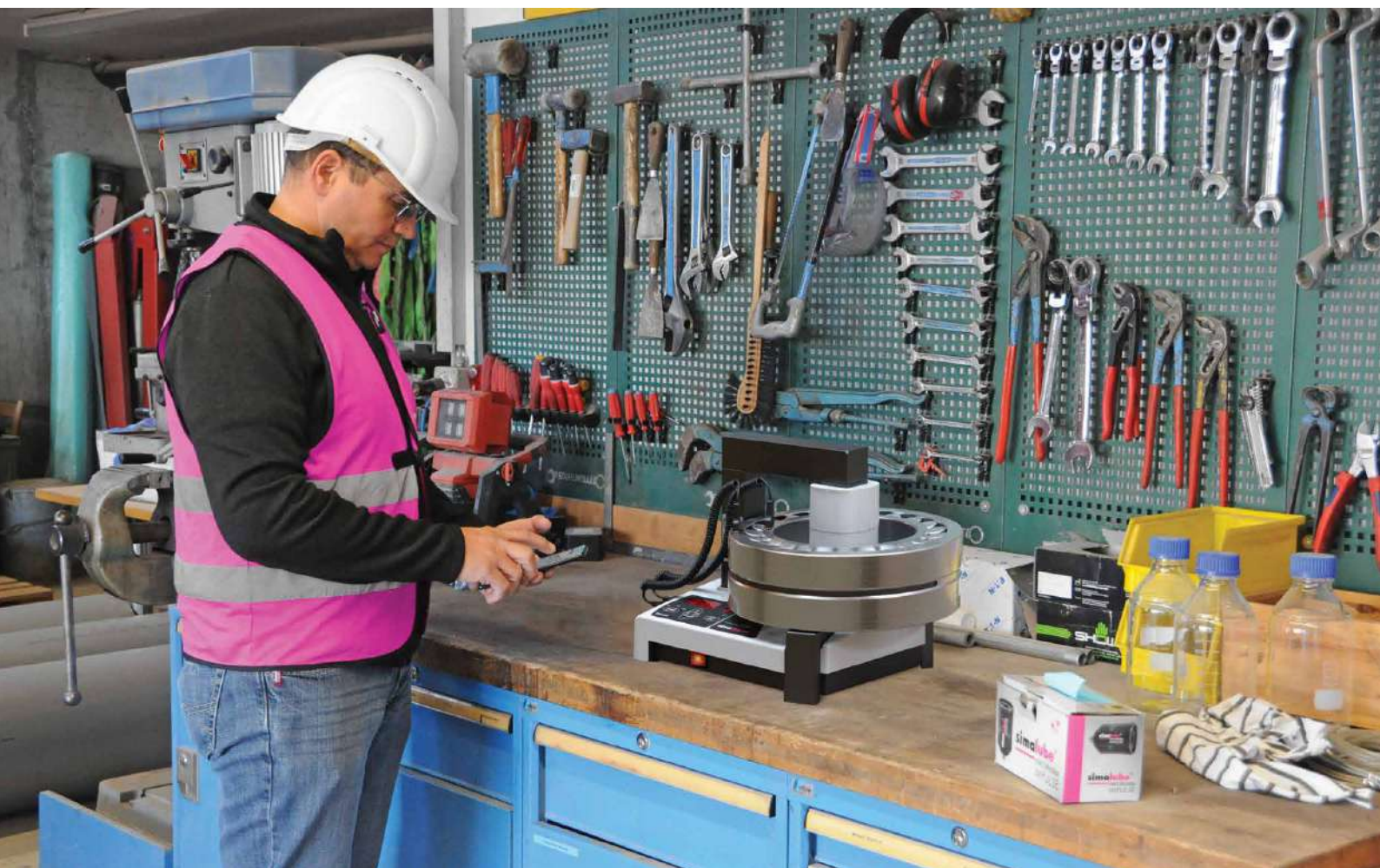
Bearings weighing up to 45 kg can be heated with the newest heating device, the IH 045. Rolling bearings with a maximum outside diameter of up to 420 mm can be placed correctly on the device thanks to the extendable workpiece support.

### Two-sensor technology

Two-probe technology enables stress-free heating of high-precision, pre-greased and sealed bearings. The temperature difference between the inner and outer ring can be selected. The following applies: The smaller the temperature difference, the lower the mechanical stress that occurs in the bearing, which in turn significantly increases the service life of the rolling bearing.

### More power thanks to external induction coil

The IH 045 has the smallest external induction coil in its performance class and enables extremely fast heating, saving time, energy and maintenance costs. Rolling bearings with a bore diameter of 90 mm can be heated up to 1.5 times faster over the coil than over the support yoke. At only 17 kg, including the three standard yokes, the IH 045 is lighter than the competition.



### Connectivity with the «simatec World of Maintenance» app

The simatherm IH 045 is the world's first induction heater to connect to a mobile phone via Bluetooth. This guarantees the user fast, intuitive operation with direct communication via the app for support, updates or advantages of digital operator guidance. The APP can also be used to record and visualise heating data for quality assurance purposes. The simatec World of Maintenance APP is available for Android and Apple users. It is up to the user whether the unit is operated via the integrated control panel or the mobile phone as remote control.

For handling heavy workpieces, simatec has developed the Bearing Handling Tools, the ideal complement to the simatherm induction heating devices.







### Use of the Bearing Handling Tools (BHT) with an induction heater

The Bearing Handling Tools are ideal for professional and safe lifting of large and heavy bearings. With the BHT you avoid the risk of accidents and bearing damage. The workpieces are mechanically clamped on the outer ring by a steel band. Two opposing handles and two carrying straps allow easy handling with a crane. The bearings can be placed on a shaft both horizontally and vertically with the Bearing Handling Tool.

The bore remains free so that the bearing can be easily pushed onto a shaft. In addition, fixing the bearing enables more precise positioning. This ensures simple, fast and safe mounting of bearings on shafts.

### The simatool Bearing Handling Tool is available in three versions:

- BHT 200-400 for outside diameters of 200-400 mm; max. lifting force 150 kg
- BHT 300-500 for outside diameters of 300-500 mm; max. lifting force 500 kg
- BHT 500-700 for outside diameters of 500-700 mm; max. lifting force 500 kg

All three variants have been tested and certified by TÜV SÜD.

With the Bearing Handling Tool, workpieces can be lifted safely and easily onto or off the simatherm induction heaters. The Bearing Handling Tool can be used for bearing temperatures of up to 160°C. Before lifting the bearing from the heating device, the final tightening torque must be checked.

### The use of simatec maintenance products results in the following advantages for users:

- Easy handling
- Increased work safety
- Increased service life of components
- Cost reduction due to fast and professional fitting of rolling bearings

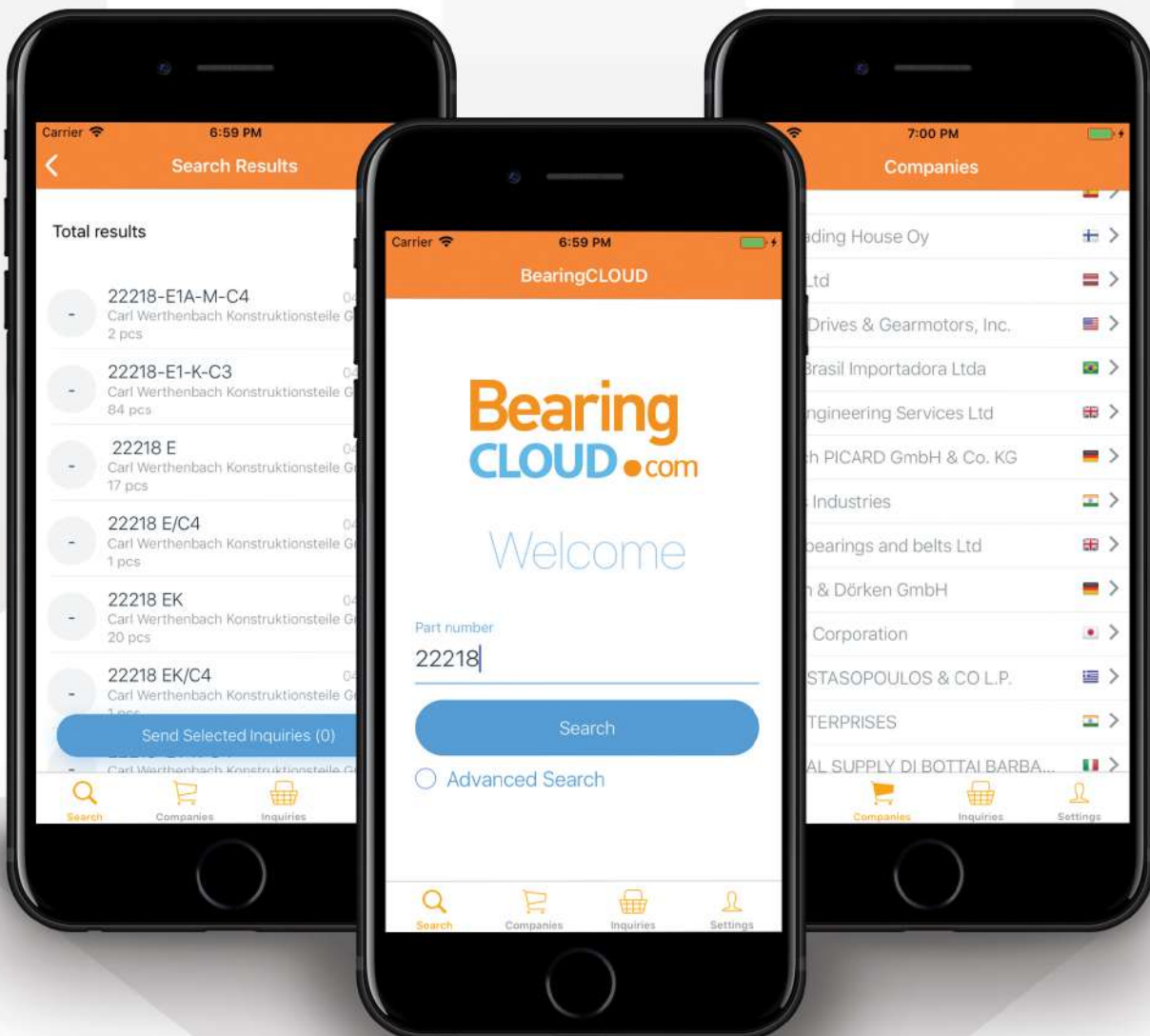
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