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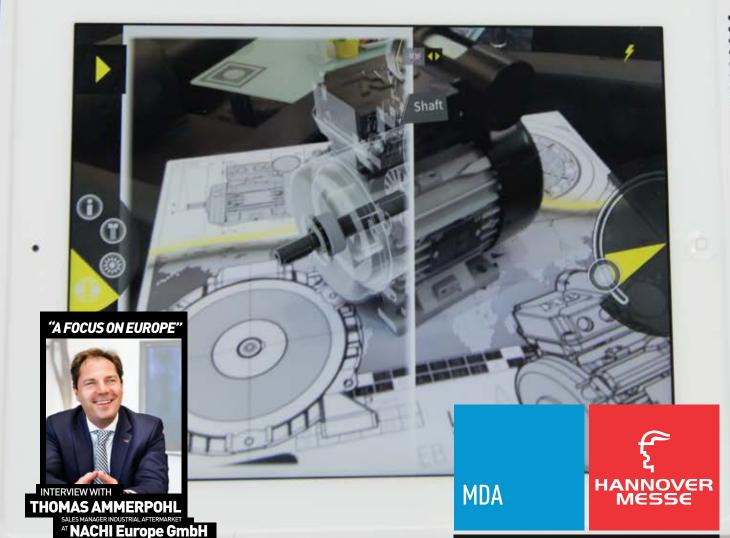
BEARING INDUSTRY MAGAZINE

HANNOVER 2017

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What Was Rolling at Hannover 2017?

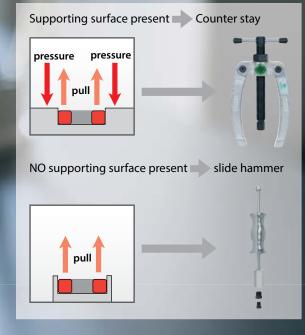


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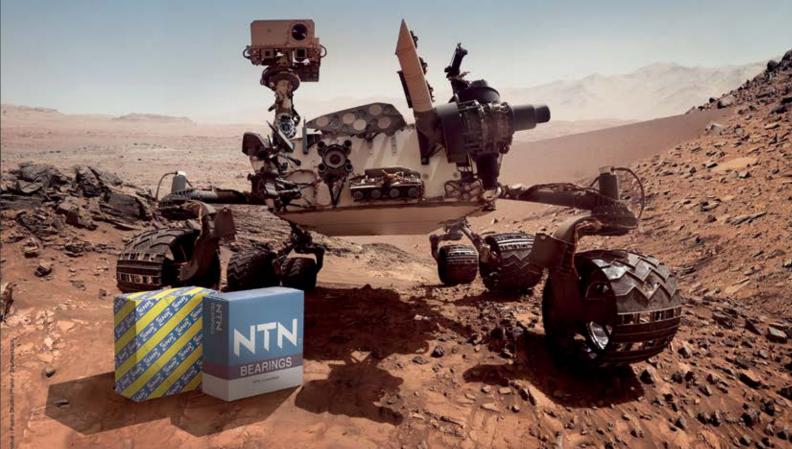
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With You



WHAT WAS ROLLING AT THE HANNOVER MES



SSE 2017?







A Review of **The Hannover Messe 2017**

Over 6,500 exhibitors from 70 countries and 225,000 professional visitors has attended the world's leading trade show for industrial technology and took major steps towards Industrie 4.0 and energy systems for the future. The MDA show at the HANNOVER MESSE 2017 had >1.190 exhibitors, 80.000 visitors, 2.142.000 business contacts and 96% trade visitors.

The lead theme "Integrated Industry – Creating Value" showed the way forward: The age of integrated industrial and energy systems has begun. Now it's time to press ahead with market-ready 4.0 technologies to create more value.

What were the highlights, and what did visitors gain from HANNOVER MESSE 2017? This article will review the show in general and illustrate how you can stay updated with information until the next HANNOVER MESSE.





A COMPLETE ULTRASOUND SOLUTION TO MANAGE YOUR ACOUSTIC LUBRICATION PROGRAM

Poor greasing practices are a leading cause of bearing failure.

Many lube departments re-grease on a wasteful calendar-based schedule. This leads to over and under greased bearings that fail to deliver their engineered value.

LUBExpert tells us when to grease... and when to stop.

Grease reduces friction in bearings. Less friction means longer life. LUBExpert alerts you when friction levels increase, guides you during re-lubrication, and prevents over and under lubrication.

Grease Bearings Right













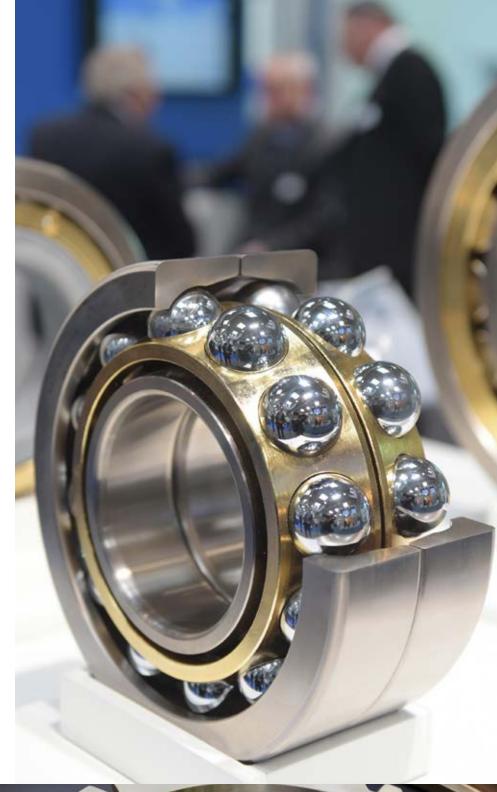


The Bearing Industry @ Hannover 2017

2047 different bearing industry related products and services where displayed by 504 companies in Halls 6, 22, 24, 25, 16 and 17. Hall 22 and 24 were again the main halls where the main bearing producers displayed their products and services; overwhelmed by the gigantic booth of Schaeffler in hall 22 and the EPTDA pavilion in hall 24. The high presence and attendance of Chinese and Indian bearing manufacturers were remarkable and confirmed by many attendees.

It was clearly to see that there is an increasing trend in partnerships and joint-ventures between European and Asian bearing companies and further delocalization of the production of standard bearings and components. This is confirming that in today's industrial environment "how it's produced" in more important than "where it's produced".

The companies could be divided, same as in Hannover 2015, into four groups. These four groups are the standard bearing producers, the special and customized bearing producers, producers who provide application related solutions and distributor companies. The sector is clearly in a period of major challenges and undergoes a dynamic change. The impacts of the current status of the globalization, the upcoming 'Industry 4.0' and the 'Internet of Things (IoT)' started clearly changing the landscape of the bearing industry.





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The gap between the standard bearing producers and customized solutions offering companies is becoming bigger at fast speed, while Chinese and Indian companies are increasing their share in the market more than ever before.



1.800 BearingNEWS magazines and Hannover Special issues are distributed on the first 4 days of the event.

"More attendees, more solutions, more international!"



Making the benefits of digitalization tangible – that was the declared objective of HANNOVER MESSE 2017. After five action-packed days at the world's leading trade fair for industrial technology, the organizers spoke of a thriving event. A large number of solution-seekers gathered in Hannover to immerse themselves in the potential of intelligent robots, adaptive machines and integrated energy systems, taking attendance to new heights.

"More attendees, more solutions, more international – that aptly sums up

HANNOVER MESSE 2017," commented Dr. Jochen Köckler, Member of the Managing Board at Deutsche Messe. "Over the past five days, Hannover has served as a global hub for all things related to Industrie 4.0. Every sector involved in the digitalization of industry was on hand to showcase its answers to the key question faced by industrial enterprises everywhere: How can I best get my company into shape for the digital future? HANNOVER MESSE has resoundingly underscored its value as a prime source of orientation for decision-makers from around the globe,"

he added. The show's chosen lead theme of "Integrated Industry – Creating Value" put a major spotlight on the benefits of Industrie 4.0 and the role of humans in tomorrow's integrated factories. As this year's featured Partner Country, Poland called added attention to the need for close cooperation throughout Europe, while impressing attending professionals with its credentials as an innovative partner to global industry.



In his summation of the event, Thilo Brodtmann, Managing Director of the German Engineering Federation (VDMA), said: "HANNOVER MESSE 2017 has served as an unsurpassed showcase for the mechanical engineering sector."

Industrie 4.0 is now well past the trial stage, and is already generating real benefits in application. The show clearly reflected the industry's buoyant mood – a mood powered by having exactly what it takes to get the job done for the benefit of people everywhere. And when it comes to international competition, we are definitely among the frontrunners. In short, HANNOVER MESSE 2017 has been nothing short of outstanding."

Dr. Klaus Mittelbach, CEO of the German Electrical and Electronic Manufacturers' Association (ZVEI), remarked: "Industrie 4.0 is booming, and Hannover Messe has been promoting the topic from the very start. Moreover, the fair has made it amply clear that digitalization calls for a European identity. The pressing task at hand is to build the digital union at top speed."

Of the show's 225,000 attendees (up from 217,000 in 2015 as the most recent comparable event), more than 75,000 came from abroad. "This is an unprecedented figure in the 70-year history of HANNOVER MESSE," commented Köckler, adding: "This impressively proves that decisionmakers from around the world rely on HANNOVER MESSE as their definitive source of Industrie 4.0 orientation and solutions." The largest number of foreign visitors came from China (9,000), followed by the Netherlands (6,200), India (5,300) and Poland, whose 5,000 visitors set a new Partner Country record. The long-term impact of Partner Country participation was underscored by an impressive 3,000 visitors from the U.S. as last year's Partner Country. "In close collaboration with our exhibitors, we succeeded in making this year's lead theme tangible in the truest sense of the word," remarked Köckler. "With an array of more than 500 application scenarios, the show gave real shape to the promise that digitalization holds for industry and the energy sector."



Triumph of the cobots

A new generation of robots was also in the limelight: the so-called "cobots", i.e. collaborative robots, which are about to fundamentally transform the way we work in factories. Their connectivity, artificial intelligence, innovative sensors and intuitive operation allow them to communicate directly with humans, as they learn autonomously and swap instructions with other cobots. As Köckler pointed out: "There was huge interest in the displays in the robotics halls. Not only are cobots an exciting prospect for large companies – many SMEs were also at HANNOVER MESSE to find out about these new helpers for their manufacturing.



From sensors to platforms

Previously sensors were viewed as the main technology item connecting up different machines, but this year's event put platform solutions to the fore. Concretely, this refers to cloud-based network connections for the entire production operations, including data collection and analysis. "The trend towards the 'digital twin' concept in the production environment is opening up entirely new vistas for industry," reported Köckler. If testing can be carried out in virtual reality - for example, to see whether a new production line is going to work out – this makes it possible to bring products onto the market faster, at lower cost.

Energy systems of the future

Exhibitors in the energy halls showed how the energy systems of the future might well operate. According to Köckler, "our Integrated Energy Plaza created a central hub for the energy industry. The exhibits showed how the revolution in power generation can segue into a true energy transition, including the heat and mobility markets." The main focus was on new energy storage technologies, which included serial production-ready electrolysis stacks, making hydrogen solutions a viable alternative even today. Some totally new approaches were also in evidence in the solar technology area, with

several companies displaying ultra-thin, flexible solar foils that generate electricity even in low-light conditions, opening up new options for the practical application of the technology.

SMEs gearing up for digitalization

With almost every passing week, another consultant study is published with dire warnings that SMEs are not ready for digitalization. "HANNOVER MESSE 2017 has told a different story," said Köckler, pointing to the numerous component supplier companies exhibiting at HANNOVER MESSE. "These companies are now digitalizing their processes and establishing connectivity with their partners, because they know that their customers - from the automotive industry, for example – expect the end-to-end digital tracking of each and every part every component." Another example consisted of Salzgitter AG, which presented a coordinated display at HANNOVER MESSE underscoring how Industrie 4.0 and digitalization have changed the way they see their business, and the solutions that are already in place.

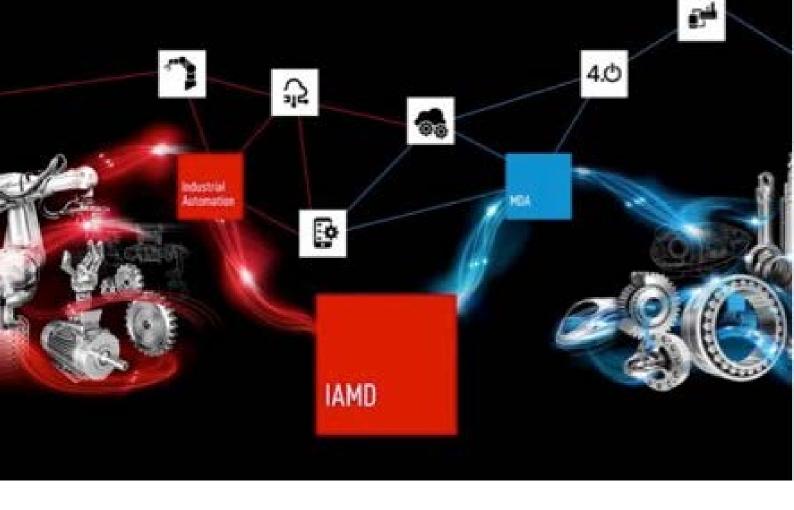
Growth in the startup segment

Following on the heels of last year's successful launch, the "Young Tech Enterprises" segment of the fair enabled young businesses to introduce themselves

to potential investors, customers and partners. More than 150 startups were on hand, exhibiting storage devices for renewable energy networks, operating systems for augmented reality and miniwind power plants for cars and trains: "The startup area of the fair is going from strength to strength. We are confident that many of them will decide to take the plunge next year with their own stand at HANNOVER MESSE," added Köckler.

Partner Country Poland

Featured as this year's Partner Country , Poland sent a total of 200 companies to Hannover, highlighting the country's strong credentials as a dynamic and innovative industrial location. Research and startups are a special priority for the Partner Country. This was the message conveyed by Polish Prime Minister Beata Szydlo in her address at the HANNOVER MESSE Opening Ceremony, and these themes were also at the forefront of the exhibits during the event. Poland also succeeded in underscoring its leading position in eMobility. The high degree of interest in HANNOVER MESSE among Polish political circles was confirmed by the presence of such high-ranking delegates as Jarosław Adam Gowin, Polish Minister of Science and Higher Education, and Mateusz Morawiecki, Minister of Economic Development and Finance.



HANNOVER MESSE 2018 features CeMAT and IAMD

Beginning in 2018, the annual Industrial Automation (IA) show will merge with the biennial Motion, Drive & Automation (MDA) – both representing leading fairs staged under the HANNOVER MESSE umbrella. IA and MDA will then take place jointly under the new name of "Integrated Automation, Motion & Drives" (IAMD) – reflecting the entire spectrum of industrial automation, power transmission and fluid power at HANNOVER MESSE.

Beginning in 2018, CeMAT, the world's leading intralogistics trade fair, will be staged every two years in parallel with HANNOVER MESSE. "Production and logistics processes are in the process of becoming intelligently integrated, enabling even more efficient, flexible production processes. At CeMAT we will be making this integration tangible and will demonstrate the resulting potential," said Köckler. Additional display sectors at CeMAT include logistics solutions for retailing and logistics services. "Efficient logistics processes are of critical importance to the business success of online retailers or bricks-and-mortar retailers. At CeMAT they'll find the right

logistics systems for omni or cross-channel solutions," reported Köckler.

CeMAT and HANNOVER MESSE will be a strong duo next year, providing a unique platform for international decision-makers from industry and logistics.

The next HANNOVER MESSE will run from 23 to 27 April 2018, with Mexico as its official Partner Country.

From Industrial Automation and MDA to IAMD – 2 are now 1

INTEGRATED AUTOMATION, MOTION & DRIVES

As from 2018 HANNOVER MESSE will be even stronger. The two leading trade fairs Industrial Automation and MDA will be amalgamated in order to create a new annual event: Integrated Automation, Motion & Drives (IAMD). IAMD will present the complete spectrum of industrial automation, IT, power transmission and fluid power technology. Thanks to its size and significance, IAMD will be the premier platform for investors and decision-makers.

Leading exhibitors and trade associations initiated, co-developed and promoted this fundamental step in response to technological and market-oriented developments. The new IAMD is a one-of-a-kind trade fair for industrial automation, IT, power transmission and fluid technology.

Industrie 4.0 is changing Industries, Markets ... and Trade Fairs

Along the entire value chain, industrial sectors and systems are becoming increasingly integrated. The trend towards connectivity and built-in intelligence has resulted in ever-shorter innovation cycles. At the same time there is a growing demand for total solutions geared to practical operating requirements. HANNOVER MESSE has made structural changes in response to these developments. The amalgamation of Industrial Automation and MDA will create a global hotspot for smart manufacturing solutions designed for the factory of the future.

You can find more information about the change **hannovermesse.de**











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Innovation everywhere ... for everyone

At the Hanover trade fair (Germany), NTN-SNR welcomed several hundred visitors to its booth between 24th and 28th April. The spotlight was on innovation, with a special focus on new mechatronics and monitoring solutions. But even more...





CMS: Monitoring System Monitor'It



As an expert in bearings and magnetic sensors, NTN-SNR has developed a range of "Condition Monitoring System" solutions for monitoring rotating industrial machines.

At the 9th edition of the European Mechatronics Meeting 2017 (in Lyon on 6 April 2017), a trophy was awarded to NTN-SNR in the "Big Enterprise" category for the Monitor'IT Expert. This is a Condition Monitoring System that pushes back the frontiers of fault detection on mechanical systems.

NTN-SNR has turned to good account its expertise acquired on magnetic sensors to create the Monitor'IT Expert. This solution combines magnetic and vibratory signals in a single acquisition box. The end result is total monitoring: bearings, gears, unbalances, misalignments, and structures.

Monitor'IT Expert delivers a whole series of indicators on the operational status of machines, available online and based on thresholds specific to each installation. The monitoring is supplemented by detailed analysis, along with recommendations, carried out at regular intervals by NTN-SNR experts.

The machines to be monitored are equipped with sensors, installed on the shafts, which measure the magnetic field emitted by the rotation. The signals are transmitted via an acquisition unit to a database hosted on a secure NTN-SNR server. Different algorithms are then used to develop the dashboards and produce the expert analyses.

NTN-SNR's magnetic acquisition technology has four advantages over methods based on vibration analysis: a sensor separate from the damaged shafting line, slow rotation speed (up to 5 rpm), low sensitivity to noisy environments, and a smaller number of sensors (60 % fewer in certain cases).

NTN-SNR has developed a range suited to all situations. The Monitor'IT Focus is based on magnetic signal technology. The Monitor'IT Custom, designed to be incorporated into the products sold by our customers, is also available.

Other technologies were presented during the fair, especially sensors solutions. Easy to integrate, easy tuning, NTN-SNR offers a large possibilities of combinations (standard & customised sensors)

The main features are the following:

- Sensing technologies: Hall, AMR, TMR
- Encoder patterns: single, dual tracks, Vernier
- Measurements: speed, pseudo absolute, absolute

All these sensors can be used in various applications: autonomous systems, hydraulic devices, remote controlled mechanism

An exceptional project, technological showcase of French expertise

NTN-SNR and Lazareth chose the Hanover fair to preview the E-Wazuma prototype that they jointly developed. This sports tricycle is equipped with two electric wheel motors located in the rear twin wheels. This project helps to demonstrate the technological expertise of several French companies and especially those of the Auvergne Rhône-Alpes region:



NTN-SNR, which has been developing the electric wheel motor for several years and has already received the Automechanika Innovation Award in 2012 for this;

Lazareth, a car and bike manufacturer specialised in creating unique vehicles and micro-series of exceptional vehicles, which created the Wazuma, the design of the sports tricycle with the rear twin-wheels;

TYVA ÉNERGIE, for the 500V battery which required special development to be adaptable on the chassis;

Viveris Technologies for the control electronics, crucial for the proper management of the motorisation and accelerations;

Freemens in charge of the battery management system.





Christophe Ulrici, BU Automotive Original Equipment Director at NTN-SNR, is very pleased about this collaboration: "This new application of electric wheel motors that we have developed demonstrates the enormous potential of this innovation and its technological maturity. We have already developed an urban vehicle equipped with 4 kW motors with Lazareth in 2013. It was a fantastic challenge to be able to work again with this manufacturer on their iconic vehicle with motors of greater power and achieve this level of performance."

Noteworthy Power and performance

An adapted wheel motor technology

The E-Wazuma tricycle is equipped with two 30 kW electric wheel motors developed by NTN-SNR, on each of the rear twin wheels, and runs on a 500 Volts and 10 KWh battery. It is developed directly from the Wazuma LR1 model created by Lazareth.

"For a long time I wanted to propose an electric model of Wazuma, thus fulfilling the requirement for an environment-friendly version of this sporty and recreational vehicle. Conventional technologies of central electric motors, too heavy and bulky, were not adapted to this type of chassis. NTN-SNR's wheel motor technology has enabled us to develop this prototype that offers all the sporting qualities that we were looking for," explains Ludovic Lazareth, president of Lazareth auto-moto.

The E-Wazuma today offers performance and road behaviour comparable to the internal combustion version with a slightly lower power. In addition, with an efficiency of more than 90%, the engine provides a torque of 490 N / m well above that of an internal combustion engine for a remarkable and smooth acceleration managed by an extremely accurate electronic control.

MTO ULTAGE

From No. 1 position in spindle bearing ranges for machine tools in Japan and its European logistics and sales network, NTN-SNR aims to accelerate its expansion in the European market. Its major plus points

are a very high level of sophistication and wide range of spindle bearing, ball screw support bearing and linear guidance applications. In this context, NTN-SNR is launching the NTN ULTAGE® range of high-precision spindle bearings.

Starting in 2017, NTN-SNR has opened a new production facility at its Mettmann plant (near Düsseldorf, Germany), dedicated to the production of "high-precision" ULTAGE spindle bearings for machine tools. With its new plant, NTN-SNR will be able to offer its OEM and Aftermarket customers in Europe optimum responsiveness.

The new facility will produce angular contact ball bearings for the "ULTAGE super precision" range. These bearings, designed by NTN and which bear the NTN brand name, are currently manufactured in Japan. "Japanese excellence, which has made NTN No.1 on the machine-tool bearing market in Japan, will be available to our European customers with very short leadtimes and optimum service", states Hervé Brelaud, Industry General Director, NTN-SNR.

The bearing ranges for NTN ULTAGE machine tools, designed and produced in Japan, are recognised by all major machine tool manufacturers worldwide. Their technological excellence is based on five pillars: optimised design, steel quality, heat treatment quality, reinforced monitoring of suppliers and a dedicated high-precision production facility. The investment in the

new German unit will comply with all these requirements.

Japanese excellence to conquer the European high potential machine tool market

With a potential turnover that is attractive both in original equipment and spare parts, the market for high-precision bearings for machine tools in Europe is strategic for NTN-SNR. This affirms its desire to become a major player in this market and eventually aims to come on par with the Japanese market where NTN is no. 1. Benefiting from the experience of NTN and the very high level of sophistication in all its products, NTN-SNR is offering a wide range that meets all requirements of the machine tool market, for both OEM use and spare parts.

With the launch of a premium range of a hundred models, NTN-SNR has decided to specifically target large distributors. These are the leading suppliers of spare parts and original equipment for machine tools in Europe. Some of them have also been associated in defining this range. The aim is to deliver all these models from NTN-SNR's European logistics centre in Lyon in record time, thus meeting most of their demands related to responsiveness and timely service.

All their technical features, combined with appropriate pricing, give NTN spindle bearings a highly competitive position in the European market.



Sophistication, performance and extent of the range

NTN-SNR offers a very wide range for varied machine tool applications. All products offer very high performance, both the standard designs as well as designs for high precision or high speed and the ULTAGE® series.

The angular contact spindle ball bearings

ULTAGE® high precision: NTN-SNR has launched a range bearings with ULTAGE® design and these meet the highest quality requirements demanded by high-precision machine tools. The initial 7000 and 7900 series that make up this range have bore diameters of between 10 mm and 130 mm and two contact angles of 15° or 25°, the most commonly used in Europe. These bearings enable all types of universal matching. They have a normal average preload and an accuracy class of P42. In addition, ULTAGE® spindle bearings for use in machine tools are equipped with a high-performance polyamide cage. This gives improved lubrication thanks to a

design that combines a tapered bore with grooves in the pockets.

HSEW range: NTN-SNR is displaying the HSEW range on its stand for very high speeds. These bearings are designed with an air/oil lubrication hole for direct inlet on the outer ring. This compact solution is designed to reduce consumption of lubricant by optimising its flow and movement. This range is under development and a dozen or so models are already available in Europe

The entire HSE range designed for finishing and superfinishing applications uses machined phenolic cages to reach rotation speeds of 2.4 million nDm.

Sealed range: NTN-SNR also has its sealed range of angular contact spindle ball bearings in a mounting for rotary tool spindle. The ULTAGE® design allows high rotation speeds and friction-free seals combined with a long life lubricant having high reliability and extended life spans. Finally, different colours on the seals make it easy to correctly orientate the bearing for mounting.

Hereafter two main innovations shown on our booth

Innovation: Air cooling spacer

NTN-SNR is presenting the Air cooling spacer for spindle bearing at Hannover. The design principle is to integrate an air inlet into the spacer on the inner ring to lower its temperature and thus balance temperature between the inner and outer rings. The air inlet angle on the nozzle was specially designed for optimal, smooth and uni-directional diffusion. This system helps in reducing internal geometric distortions, increasing maximum speed by 20% and increasing the applicable preload for greater rigidity (x3) and more accuracy. Furthermore, the design ensures low noise

Innovation: High speed moulded polyamid cage

The new moulded polyamide cage displayed by NTN-SNR showcases an improved stronger material and an original design with square pockets. This offers a single contact point instead of a curved contact surface, which generates less friction with less rise in temperature. This design also provides more space for lubricant to pass through thereby improving lubrication. The speed of rotation thus increases by 50% up

Up to speeds of 1.6 million N.Dm, this cage will become the NTN-SNR standard, ensuring the same performance level as the machined phenolic cage but with a higher level of competitiveness.





Spherical roller bearings with the highest load rating in the world.





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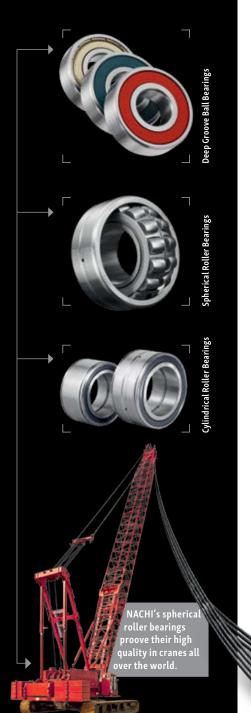


INTERVIEW WITH THOMAS AMMERPOHL

SALES MANAGER INDUSTRIAL AFTERMARKET



"NACHI has been developing rolling bearings since 1939.
These durable allrounders have solved many problems in a wide variety of applications all over the world."



A conversation with **Thomas Ammerpohl**, Sales Manager Industrial Aftermarket at NACHI Europe GmbH about the European market, innovations in bearing technology and NACHI's efforts to grow market shares.

Dear Thomas, how are you today and what are your goals for 2017?

Ammerpohl: Well, I'm quite fine. And I'm well prepared for our special efforts to capture larger market shares in Germany and in Europe.

NACHI has a broad range of bearings. But NACHI was not able to play a key role in the European market yet. What are the reasons?

Ammerpohl: NACHI is one of the leading pioneers in technical innovations. We have presented the first spherical roller bearing already in 1939. Today our spherical roller bearings have the highest load rates and are able to run permanently at temperatures up to +200 °C. We can guarantee a very high quality because we carry out and control the entire production process in our own plants, from melting alloy steel to the assembly of the roller bearings. Therefore our products are subject to an efficient quality management. NACHI's bearings meet all the technical requirements. Our present task is to proclaim these advantages to our customers.

How will you find the path to the customer?

Ammerpohl: NACHI always has been and still is a globally acting company. NACHI trades with regional partners. In the next months, we will encourage the regional traders in Europe by means of technical training and assistance. We will increase our investments in marketing and we will be showing significant market presence in the European area.

Our goal is to enable our trade partners to support customers in each and every situation. Our regional trade partners should be able to analyze the inquiries of their customers, to give comprehensive advice and to suggest the best solution for each individual demand. To achieve this NACHI will give trade partners the necessary training and detailed technical information. We are in the process of preparing catalogs, brochures and of course detailed web-based information.



Spherical roller bearings with the highest load rating in the world.

Are there any specific target markets on which you will be focusing?

Ammerpohl: Well, presently we offer our improved spherical roller bearings series EXQ-V. Their main advantage is the very high resistance against vibration and impact load. We will focus on the branches that can profit from these advantages. For example: construction machinery. Our goal is to get closer to our competitors very soon.

Moreover, we have some other products that are able to meet the specific requirements of special branches. For example, our precision machine tool bearings. NACHI offers a wide range of angular contact ball bearings, combined angular contact roller bearings and cylindrical roller bearings.

They are specially designed for use in machine tools, to support high precision pre-tensioned feed spindles and main spindles in machining centers and turning centers. In Asia, NACHI is already the market leader in some of these application areas. We are convinced that we can transfer that success to the European market.

Do you have a special strategy to meet customers in selected industries?

Ammerpohl: Well, as we want to get very close to the requirements of our customers and as we want to understand their technical demands we plan to have a few direct contacts. We want to serve some selected customers as OEM. This will give us the chance to directly look at the specific conditions under which our bearings have to run. This will enable us to develop bearing solutions which are specifically optimized to the customer's demands. Even our standard bearing solutions will profit because the knowledge gained with our OEM-partners will lead to improvements in the whole production range.





Thomas Ammerpohl, Sales Manager Industrial Aftermarket at NACHI Europe GmbH

So far, we have extensive experience in various applications because NACHI is an integrated manufacturer of hydraulic equipment and machine tools in Japan. That gives us the possibility to test our components, for example, our different types of bearings, in our own applications.

What is your approach to winning distribution customers in the saturated European market?

We already have long-term relationships with reputable distributors in Europe. What we will do is: improve our performance in availability and customer service even more. We do need our distribution partners and we consider them – different to many competitors as real partners. To have a mutual approach and individually altered strategy is our main concern.

What are the reasons that you start your marketing offensive just this year?

Ammerpohl: NACHI Europe GmbH celebrates its 50th anniversary in 2017. We are very proud of our technical innovations, of our continued development in the German market and of our good relations with our current customers. For us, this is a great motivation and challenge to perform better and to develop the local German market as well as the European market.

What is more, the German market is very demanding. If you get along with all the requirements concerning the technical performance and the quality in Germany, you will get along anywhere. In a few applications, NACHI's products cover these outstanding demands. It's our challenge to prove that we can comply with a broad range of other applications. Of course, we are striving for success!

Thomas, thank you for your information and I wish you every success in achieving your goals!





Why settle for less? The best available tools for Mounting and Dismounting

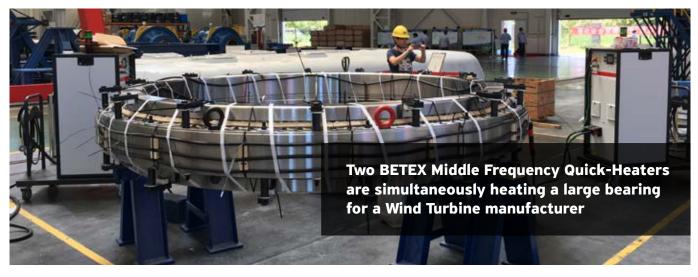
HALL 25 • GO4

Our name says it all: "Special Tools". Special Tools for Mounting and Dismounting bearings, gears and other drive components!

We are manufacturer of one of the best performing and largest range of induction heating devices, used in all kinds of industries all over the world. Our BETEX

brand stands for Quality and Service. Standard low frequency Induction heaters are used for heating cylindrical parts to shrink fit them on a shaft. BETEX induction heaters are smart, microprocessor controlled, meaning that the heating process is time and/or temperature controlled, avoiding damage to the part. Energy transfer is extremely efficient as



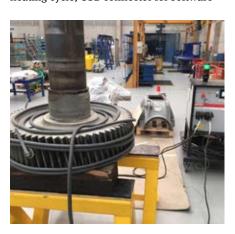


the heater only heats the part and not the atmosphere around it, pre-heating is not necessary. The fact that there is no naked flame allows for a wide variety of applications in volatile environments, like in the petrochemical industry. It is also a safe and environmentally friendly way of heating.

The same applies to our BETEX pullers. Our mechanical and hydraulic pullers - 4-150 t cap. - are made to our specifications. Unique features are pullers with selfcontained pumps and with self-centering arms for extra safety and efficiency. Our tools are all about Safety. Ask us, and we will explain why this aspect is so important

and how our tools differ from other tools. In our day and age Safety Awareness (safety first) is a top priority.

NEW At the Hannover Messe we will introduce a number of new products like small heaters, workshop presses. Main attraction will be our brand new Middle frequency induction heater for both Mounting & Dismounting. These superior heaters are fast and heat in a safe and controlled manner, and very important: prevent unnecessary damage to parts. Our Next Generation MF heaters 3.0, feature new technology like a large touchscreen, smart electronics, logging heating cycle, USB connector for software



updates and dual temperature sensing (ΔT).

One of the great advantages of these Middle Frequency induction heaters is that they are not limited to components with a cylindrical shape. The optional flexible inductors allow the user to wrap a coil around (or in) any shape or dimension. This is ideal for varying sizes which can occur in any given workshop or industry in OEM or MRO. The results are amazing, heating times can be cut back dramatically! Challenging mounting and dismounting jobs are suddenly as easy as pie, so to speak....

Company Name:

Bega Special Tools

Address:

Schorsweg 15 8171 ME Vaassen, The Netherlands

E-Mail (General):

sales@bega.nl

Website:

www.begaspecialtools.com





Precision Bearing Components

HALL 22 • B16

Recognized as a leading manufacturer of precision solutions, NN, Inc. produces precision bearing components of the highest quality to a global customer base across a wide variety of industrial markets.

Best-in class customer service combined with a culture of Zero Defect and technology advancements are fundamentals of our business.



Precision Balls

Our customers repeatedly tell us that they choose to work with NN for our ability to manufacture solutions which meet their most precise and demanding specifications. NN, Inc., a diversified industrial company, combines advanced engineering and production capabilities with in-depth materials science expertise to design and manufacture high-precision components and assemblies for a variety of markets on a global basis. Headquartered in Johnson City, Tennessee, NN has 38 manufacturing plants in North America, Europe, South America and China.



Precision Rollers

Company Name:

NN, Inc

Address:

207 Mockingbird Lane 37604 Johnson City, USA

E-Mail (General):

info@nninc.com

Website:

www.nninc.com



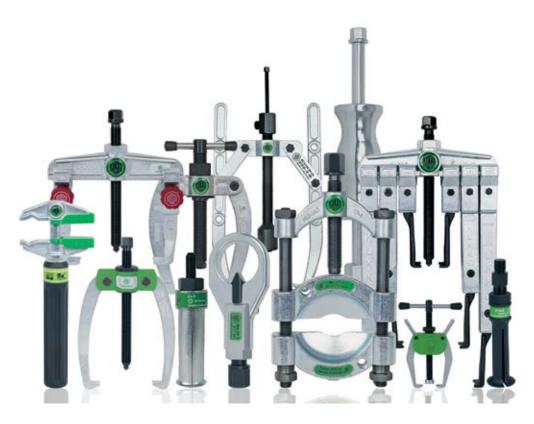
Precision Cages & Sheet Metal Parts







KUKKO - a world in motion since 1919!



KUKKO Tool factory - Manufacturer of extractor tools for users in trade and industry.

In 1919, Kleinbongartz & Kaiser oHG, the core company of today's KUKKO Group, was founded by Alfred Kleinbongartz and his brother-in-law Emil Kaiser in Remscheid, the centre of the German tool industry.

As of October 2013, the company location is in Hilden. KUKKO has been an independent, ownerrun family company

for four generations and is one of the world's leading producers of extractor tools of all kinds. From the very beginning, KUKKO specialized in the development and manufacturing of extractor tools for the non-destructive dismounting of gears, bearings, ball bearings and similar components in all areas of technology. To this day, the product lines, extractor

tools and dismounting tools are the core business of the KUKKO Group.

Numerous German and foreign patents, registered designs, and utility models bear witness to the intensive, continuous and successful development work.



Company Name:

KUKKO Werkzeugfabrik Kleinbongartz & Kaiser oHG

Address:

Heinrich-Hertz-Str.5 40721 Hilden, Germany

E-Mail (General):

info@kukko.com

Website:

www.KUKKO.com





Rings For Super Precision **Bearing Application**

HALL 22 • D33





PROSINO S.r.l. active in the manufacturing of rings for super precision and custom bearing industry has presented its complete product range at Hannover Fair 2017. The show it has been a great chance to meet exhisting customers and meet new prospects from all over the world.

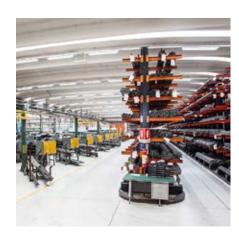
The company has been working for the last 25 years at the service of the super precision bearing industry supplying high quality rings and just in time deliveries. The manufacturing core competences of PROSINO S.r.l. are 4:

- 1) Sourcing and selecting of high purity bearing steel
- 2) Turning, milling and drilling operation

3) Heat treating, including subfreezing 4) Vibro-polishing

The 4 above points represents the advantages that the company offer to his customers in form of a complete and competence added value supply.

Prosino's manufacturing Ring program extends to Hydraulic motors, Aerospace, Industrial valves and many other specialised mechanical engineered Industries. The company has a strong foundation with the proud third generation Prosino family management, successfully updating new programs by adapting the original textile sector with a new range of products to meet this continuous evolving business.



Company Name: **PROSINO S.r.l.**

Address:

Via Garodino - Zona Industriale D4 28075 Grignasco, Italy

E-Mail (General):

pprosino@prosino.com

Website:

www.prosino.com









Ultrasound solutions for industrial predictive maintenance and quality control

SDT provides ultrasound solutions that give our customers a better understanding about the health of their factory. We help them predict failures, control energy costs, and improve product quality while contributing to the overall uptime of their assets. Ultrasound is a powerful technology with many useful applications for every industry. It is often equated with leak detection and bearing lubrication but in fact there are EIGHT pillars for ultrasound applications:

- Compressed air/vacuum leak detection
- Valve inspection
- Steam trap inspection
- Hydraulics
- Electrical inspection
- Bearing lubrication
- Condition monitoring
- Tightness testing

With such versatility, ultrasound forms the foundation of many world-class asset condition management strategies. As a





front-line defense against machine failure, ultrasound raises alarms at the earliest sign of symptoms. It's ease of use is adoptable by many departments. Yet sophistication exists for those who perform complex analysis and diagnosis.

SDT offers several solutions to meet every need.

The SDT270 is our flagship product. It remains true to our reputation for intelligent instrument design. SDT's "building blocks" concept combines options for hardware flexibility, software for data management, and sensors that promote ergonomics, safety, and ease of use. The SDT270 in combination with Ultranalysis Suite software, maintains

HALL 19 • A51

simplicity for those who need it while providing sophistication for those who want it.

Measure, Analyse, and Trend:

- Ultrasound
- Vibration
- Temperature
- Rotational Speed
- Static (4 Condition Indicators)
- Dynamic (Record live ultrasound data for anlysis)

The SDT200 is an economical solution for maintenance and reliability programs that don't require detailed trending and analysis. Use the SDT200 in operator driven reliability programs (ODR) for leak detection, bearing lubrication, electrical inspection, steam trap testing, and more.

Measure and Trend:

- Ultrasound
- Temperature
- Static (4 Condition Indicators)

The LUBExpert highlights SDT's leadership for asset lubrication. Aimed at solving problems related to machinery lubrication, it offers a unique solution to a most misunderstood maintenance tasks; bearing lubrication.

SDT wants you to Grease Bearings Right. LUBExpert monitors each stroke of grease and its effect on bearing friction and temperature. Lubrication results are reported with a "GOOD", "BAD", or "SUSPECT" status report.

SDT's LUBExpert

- Reminds you to use the RIGHT LUBRICANT
- Guides you to the RIGHT LOCATION

Company Name:

SDT International

Boulevard de l'Humanité 415 1190 Brussels, Belgium

E-Mail (General):

info@sdt.be

Website:

www.sdtultrasound.com



Manufacturer of Ball Bearings

HALL 22 • D15



Zen Ball Bearings are manufactured to the highest quality for standard and non-standard applications.

Apart from our extensive miniature ball bearing range of more than 1000 different types, ranging from 1-10 mm bore (Including inch dimensions), our range also includes Thin section, Three part thrust, Popular metric and any kind of non standard bearing.

We are able to design bearings according to your requirements using new materials like ceramic or special steels for applications in Industry, Medicine, Chemistry and Food Processing.

Our technical department can modify any non-standard bearings to your requirements, even for small quantities. ZEN Ball Bearings Shanghai has been awarded the German ISO TUV Rheinland certification for inspection of ZEN products. This certification is the highest standard a business in our industry can achieve. It is internationally recognised as a guarantee of quality, customer focus and continual improvement.







Your partner for Precision Bearings and Innovative Solutions

HALL 22 • C24





45 years of experience have contributed to JESA s industry reputation as a specialist in tailored solutions, incorporating any combination of ball bearings, screw-machine parts, stamped products and engineering polymers.

Headquartered in Villars-sur-Glâne, Switzerland, JESA has been part of the POLYGENA Group since 2001 and has both manufacturing facilities & engineering design capability in Switzerland and also in Wuxi, China.

We had a very productive week at the fair, with visitors to the stand from all over the world and with an amazing variety of very interesting and often challenging requests. Our team of commercial and technical experts were kept busy during the show and the leads that they brought back are now challenging the rest of the in house Jesa team. We look forward to the new business that will develop as a result of our attendance at Hanover, and also extend a warm thank you to all customers both new and old that did us the honour of paying us a visit..





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JESA SA

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Italy
Mexico NEW

Bosnia & Herzegovina Slovakia China





- Automotive
- Railway
- Heavy Industrial
- Fluid Power
- · Alternative Energy



(Z)LOCK SLEEVE



TAPER LOCKING REINVENTED

FYH has reinvented the adaptor sleeve.



This is the ball bearing version of our patented revolutionary locking system, Z LOCK. The new series is called ZK and utilizes a tapered bore UK insert with our original Z LOCK sleeve instead of a traditional adaptor sleeve. The units are pre-assembled at the factory and are ready to use straight out of the box unlike traditional units that have separate inserts and adaptor sleeves. The installation of ZK units is extraordinary. ZK uses one key to tighten just two set screws by hand. ZK requires no torque charts and does not affect the inner clearance of the bearing at all.



Tighten the set screws by hand. Tightening the set screws creates extreme holding power over traditional adaptor sleeves without any change to the bearing clearance.

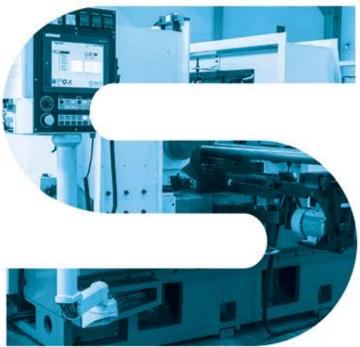


A traditional UK unit requires many tools to be assembled. You must tighten the lock nut using a torque wrench and following a torque tightening chart. Over tightening of the adaptor creates smaller clearance which can affect bearing life.

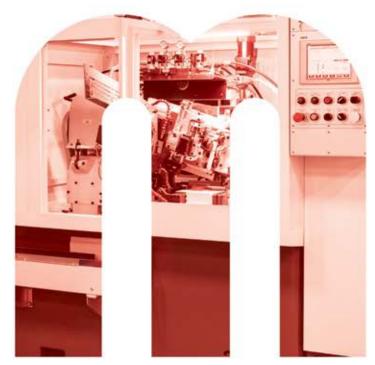














The Smart Choice for Bearing Manufacturers

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SSF120 SGC500 SGE400 SGI-120 SSF85A SGS1000



Making Waves

How early collaboration with GGB benefits your design

In much the same way that a small stone can create large ripples in a pond, bearings can have significant impacts on a wide range of factors in your final product — these include overall size, weight, efficiency and material usage. That's why when it comes to bearings, it is so critical to partner with GGB as early as possible in the design phase to maximize performance, reduce costs and maintain a competitive edge.

For example, a bearing that is larger or heavier than needed will increase the size, weight and material usage for the housing. From there, a larger, heavier housing could require more robust support systems, which might mean higher quality materials and an increase in manufacturing costs. In this type of scenario, these design compensations can lead to a final product being several orders of magnitude heavier, larger, more expensive and less energy efficient than necessary. And when you consider the differences between externally lubricated and self-lubricating bearings, the differences become even starker.

Although bearing selection is often an afterthought in the product development process, considering bearing needs as early as possible can yield significant cost efficiencies, performance enhancements and other improvements in the final product.



In addition to manufacturing some of the most reliable, highest performing bearings in the world, GGB partners with its customers early in the design phase to identify ways that bearing selection can influence their products for the better. GGB experienced application engineers, located around the globe, are able to recommend the right bearing as well as help point out ways that the right bearing can allow for design changes to achieve specific performance goals.

In one case, GGB's early involvement in design enabled a bicycle manufacturer to optimize the design of a bicycle suspension – thereby reducing weight and increasing service life – with GGB's metal polymer DP4 bearings. In another instance, GGB custom designed a solution using HPM and HPF fiber reinforced composite bearings to

reduce maintenance and increase system longevity for one of the world's largest hydropower plants.

So while bearings might seem like a small part of your big project, when GGB collaborates with companies early in the design process, we make big waves – lighter, stronger, more efficient and more cost-effective design solutions.





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Website

www.ggbearings.com/de





NTN_® NACHI

KG®

Bonfiglioli

HIWIN®

MOVING THE WORLD



YOUR ENGINEERING SOLUTION PARTNER

49 years ago, a dream led to what is today a Movement; a movement called KG International that is going strong based on the beliefs, principals and ethics of the founding Chairman Mr. Kedar Gupta who founded the business in India way back in 1968

The tiny acorn that germinated from an idea, a potential foreseen, is today a mighty oak in the shape of KG International of Jebel Ali Free Zone, Dubai. Sprawling over 55 countries in 5 continents, with a team size of over 100; KGI believes in forging relationships that last.

It has taken passion, determination, steely resolve and belief to create this reality, to make KGI a company favoured the world over for its quality, reliability, customer centricity and range on offer.

To further strengthen our Movement, aiming to become an engineering solution partner to the MRO / OEM segment and keeping customer needs in mind, KGI extends bearings business to include power transmission products:

- Gearboxes from Bonfiglioli of Italy (pre assembled and assembled to client specifications)
- Oil Seals from Taiwan
- Linear Motion Guides & Ball Screws from Hiwin of Taiwan
- Industrial Chains

We continue to follow our mantra — ever onwards, so come JOIN THE MOVEMENT....

KG International FZCO

P.O. Box 17122, Jebel Ali Free Zone, Dubai United Arab Emirates T: +971 4 8815547 | F: +971 4 8816423 / 8818509 www.kginternational.com | info@kginternational.com







THERE'S ONLY ONE WORLD LEADER IN BEARING INSPECTION & TESTING

Napoleon Engineering Services is the creator of Inspection & Testing programs supporting global bearing sourcing & bearing qualification. NES has been leading OEMs through the global bearing qualification process for 20 years providing technical information through bearing inspection, modeling, and testing programs to evaluate bearing design, manufacturing capability, overall quality of workmanship, and the relationship these attributes have on bearing life. No other source has the experience, capacity or capability to service your bearing qualification needs like **NES – the World Leader**.





McGill, Rollway and Sealmaster cost saving bearing solutions Hannover Messe 2017

HALL 24 • A42



The bearing applications have been the main attraction point for Regal on Hannover Messe. Visitors could see and learn which McGill, Rollway and Sealmaster success stories there are in various applications; like a potato sorter, a chocolate crusher, a wheel loader and brewery. The aquarium with the Sealmaster PN Gold bearings got the most attention. Some more info on this successful brewery application:

Solution Type

Maintenance Cost Savings

Description of problem

A large brewery was experiencing unplanned downtime and lost production due to unforeseen bearing failure; typical bearing life was less than six months. It was determined bearings were failing due to corrosion and excessive re-lubrication.

Sealmaster solution

Sealmaster Reduced Maintenance PN Gold Bearings with stainless steel housings, bolt on end caps and back side shields

were recommended to replace the current bearing design. Sealmaster reduced maintenance bearings with tapered lands for improved oil flow into the ball path have a phosphorous nickel coated raceway to help prevent corrosion and a high performance triple lip seal to prevent water from entering the bearing. These reduced maintenance bearings do not require any additional re-lubrication.

Key customer needs and benefits from **Sealmaster products**

The brewery needed to increase bearing life and prevent corrosion. By switching to the Sealmaster PN Gold Reduced Maintenance Bearings, bearing life was extended from six months to eighteen months without failure. The result was a €30,000 estimated annual cost savings on this

particular line.

PN Gold bearings feature a high phosphorus, electroless nickel coated steel insert and a patented, triple lip/ multidirectional high performance seal. Specially engineered for industries with corrosive wash-down environments such as food and beverage, pharmaceuticals and chemical processing. The PN Gold mounted ball bearings provide outstanding performance in demanding corrosive environments.



HANNOVER MESSE

Features and benefits

- High Phosphorus Electroless Nickel Plating: Provides exceptional corrosion resistance.
- High Performance Seal (HPS): Triple lip multi-directional sealing with excellent chemical resistance.
- Wide Outer Race: Provides extra grease capacity.
- Zone Hardened Inner Race: Provides longer life and quieter operation, improved

locking reliability.

- Unique Metal Land Riding Retainer: Corrosion resistant, improves lubrication circulation.
- Lock Pin and Dimple System: Provides direct lubrication path and +/- 2° static misalignment and prevents outer race rotation.

Reach out to

steve.quintijn@regalbeloit.com

for more bearing success stories.



Company Name:

Regal Beloit Belgium

Address:

Heiveldekens 16 B-2550 Kontich, Belgium E-Mail (General):

Steve.quintijn@regalbeloit.com

Website:

www.RegalPTS.com



'Made to fit' bearings for your application

HALL 22 • B26



A company with an international spirit and Italian roots.

We have four company headquarters in three different continents, enabling us to satisfy local demands. Meter S.p.A., founded in 1981 with it's headquarters in Robassomero (Torino) is part of a private international group which designs and produces both roller and ball bearings for numerous and diverse applications. The structure of the company is made up of three production facilities and two offices in 3 different continents. Bearings that tolerate both heat and extreme stress. This is, and has been for over thirty years, our biggest challenge and one we continue to overcome.

Our 'Made in Italy' is the guarantee of a product which from the design table to the production process is continuously under the microscope. It is the Italian way to

produce 'made to fit' and we, just like the tailors of years gone by, develop a product with specific and unique characteristics, using both specified materials and heat treatments for each individual project. We study innovative solutions, personalized

and sustainable. Our research is ongoing and we take extreme care in all phases of production, beginning with the raw materials. International, certified quality, personalization and flexibility:





These strengths distinguish our company. We have developed from a small company by investing in our most important resource: Our People.

Our company designs and produces both roller and ball bearings, drawing from the experience and creative talent of our team. We are strong believers in the uniqueness of tailored products, stepping away from limitations and restrictions of catalogues. We work closely with our clients ensuring the quality of each individual order, no matter how large or small, working as efficiently as possible realizing the importance of deadlines.

We work with the latest software which allows us to project and determine the geometric characteristics of each bearing and the steel we work with, the heat treatment required and which lubricant is best suited for each individual application. For the production of our bearings we have chosen the most technological advanced machinery available. But software and machines would be useless if it wasn't for the brains behind the production process. This is why we as a company place a heavy emphasis on research and design in all phases of production, guaranteeing extremely trustworthy bearings. The use

of monitored automated systems in the assembly phase allows us to produce both individualized and superior quality solutions.

Apart from using a traditional quality control platform, we have worked to develop a step by step control system which allows us to guarantee the integrity of our products during the different phases of the production process. The use of modern, innovative technology continues our emphasis on quality. Each and everyone of us at METER, actively participate in making our products better.

Company Name:

Meter Spa

Address:

Via Leonardo da Vinci 5, 13900 Torino, Italy E-Mail (General):

infometer@meterbearings.com

Website:

www.meterbearings.com



Ball & Roller Bearings, Industrial Gearboxes, Linear Motion Guides

HALL 22 • A28



In 1968 began a dream, a dream led to what is today a Movement; a movement called KG International that is going strong based on the beliefs.

Sprawling over 55 countries in 5 continents, KGI believes in forging relationships that last.

It has taken passion, determination, steely resolve and belief to create this reality, to make KGI a company favoured the world over for its quality, reliability, customer centricity and range on offer.

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- Gearboxes from Bonfiglioli of Italy
- Oil Seals from Taiwan
- Linear Motion Guides & Ball Screws
- Industrial Chains

We continue to follow our mantra – ever onwards, so come JOIN THE MOVEMENT....

Company Name:

KG INTERNATIONAL FZCO

Address

JEBEL ALI FREE ZONE, STREET N402, 17122 Dubai, United Arab Emirates

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info@kginternational.com

Website:

www.kginternational.com







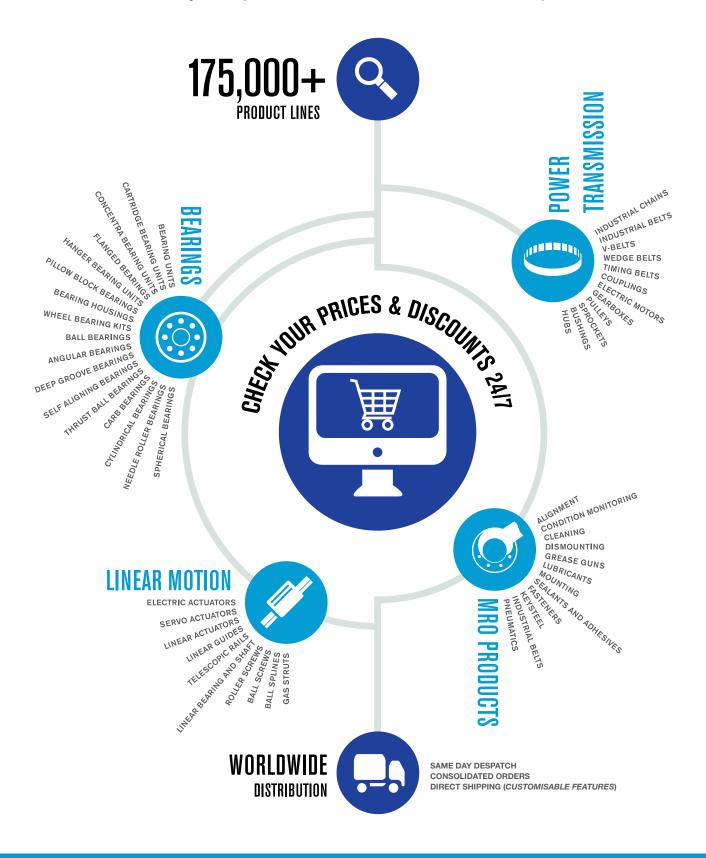
In our industry, the highest standard we can achieve for our Quality Management System is the ISO 9001 certification - awarded by TUV Rheinland. It is the global benchmark that guarantees a total focus on customer service and continual improvement.



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Exceeding Customer Requirements and Satisfaction





ISB - 100% QUALITY, RANGE, STOCK AND SERVICE

HALL 22 • A11



ISB is a leading manufacturer of Industruial components.

We offer a huge range of high-quality products, that are always in avilable in stock and a just in time delivery service. These are the most important factors combined into a single brand: a formula that has made ISB a market leader and fully responds to the technical and commercial needs of the best OEM and qualified distributors.

The production site covers an area of 18,000 m² and it is specialised in the design and manufacture of radial ball bearings for applications that require low vibration and low noise levels.

The plant is equipped with cutting-edge machinery and fully automated production lines that guarantee reliable, efficient production, as well as the greatest cost efficiency and precision with guaranteed and consistent quality.

ISB is organised according to precise procedures, and is managed by technical monitoring systems and specialised personnel.

ISB Technical Department has a staff force of 16 people, including expert engineers and qualified technicians. It is equipped with complete, cutting-edge hardware and software which, together with the expertise of the staff, makes it possible to offer our clients a primary application and engineering support in every field

Thanks to Quality Control our products are certified with precise assessment tools: pre-assignment questionnaires, plant visits, declaration of conformity, sampling, and analyses of the supporting product documents. ISB constantly updates



the statistics relative to its company procedures, both in relatio

Some numbers to give an idea of ISB's international presence:

- 10 branches in the world,
- Distribution in 90 countries,
- 30,000 pallets in stock,
- 70,000 items handled,
- 20,000 m2 of stock,
- 6,000 customers and
- 300 employees worldwide.

Company Name:

ISB Industries

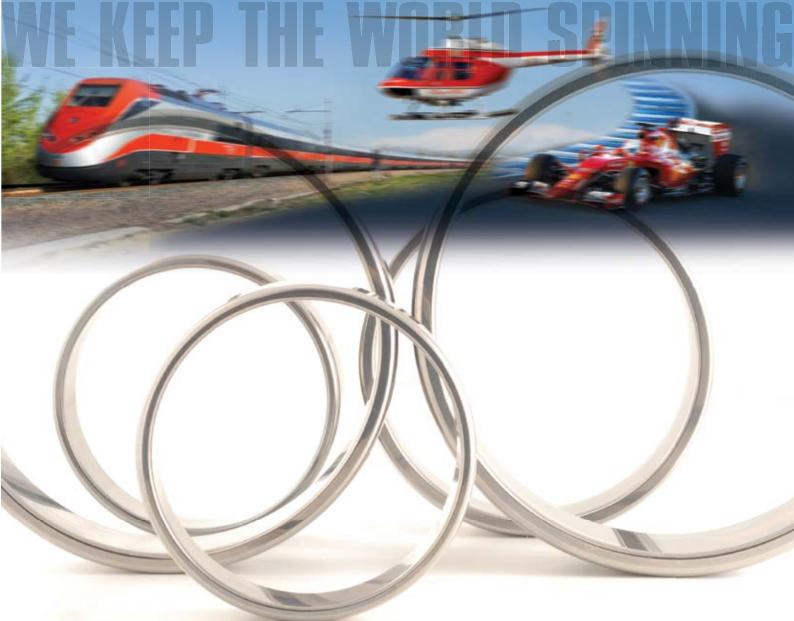
Via Caponnetto 15, 42048 Rubiera Reggio Emilia, Italy

E-Mail (General):

marketing@italcuscinetti.it

Website:

www.isb-bearing.com



Ring Specialist for Bearing Application

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Customized Materials Solutions from Schunk Carbon Technology

HALL 6 • A46



For axial and radial bearings, sliding surfaces or support rings, friction and abrasion are permanent challenges. We offer a wide range of different ceramics and graphite materials and solutions. The enormous diversity of materials and the corresponding spectrum of their respective properties make it imperative to enlist the service of specialists when it comes to the development, selection and design of the right solution. This is where Schunk Carbon Technology, with expertise accumulated through more than 100 years of experience and history, comes in.

Schunk Carbon Technology develops and manufactures components from an extremely broad portfolio of materials. These include

- Carbon,
- Graphite,
- Carbon fiber reinforced carbon and plastic (CFC and CFRP),
- Silicon carbide,
- Aluminum oxide and
- Quartz.

Worldwide the materials experts at Schunk have operations at 38 locations. Schunk Carbon Technology is a division of the Schunk Group, an international technology group with more than 8,100 employees in



29 countries and consolidated annual sales of over one billion euros.

Everywhere where two media come into contact with each other - whether its solid-solid, solid-liquid or even solid-gas - friction and/or abrasion automatically become an issue. It is for exactly this reason that Schunk Carbon Technology develops customer-specific solutions. Our competence is based on comprehensive knowledge of both graphite and silicon carbide. Thus, we cover the entire spectrum of standard carbon applications, up to and including high-end diamond coatings - i.e. from hard to soft.

Development partner for LCC Optimization

Whether its wear, pH values, temperature, thermal shock or sliding speed, for all specification parameter, Schunk stands ready to serve you as an experienced development partner. This makes it possible to take advantage of the entire technological bandwidth of carbon materials or silicon-carbide ceramics for development projects as well as to optimize the manufacturing and life-cycle costs of the components.

Without fail our solution provided added value in the form of

- longer product lives,
- wider operating temperature ranges,
- better resistance to aggressive media
- increased reliability.



It is not unusual that components which had previously had to be made of differing materials for different applications are successfully replaced by a product variation made of a single Schunk material which covers a much larger scope of application - while also providing an economicallysensible margin of safety. Furthermore, creating optimized components through joint-development work can expand technical limits and lead to new applications.

The best way to find the optimal technical and economic solution is to involve Schunk Carbon Technology as a development partner at an early stage, in which we can provide support with a material design tailored to your application. Schunk will be putting on an impressive display of

the opportunities such development collaboration presents at the Hanover Messe 2017 in Hall 6, Stand A 46.

Company Name:

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Address:

Rodheimer Strasse 59 35452 Heuchelheim, Germany

E-Mail (General) :

infobox@schunk-group.com

Website:

www.hmi.schunk-carbon.info

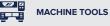
THE ONLINE EXHIBITION FOR THE BEARING & POWER TRANSMISSION INDUSTRY IS OPEN FOR REGISTRATIONS

www.bearing-expo.com

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COMPONENTS



MAINTENANCE



LUBRICATION

















Dunlop BTL Industry Supply Bearings, Transmissions & Linkages

Many of the world's most prestigious original equipment manufacturers in the automotive, agricultural, industrial and recreational sectors rely on quality Dunlop products.

A comprehensive network of MRO & replacement distributors throughout Europe and the rest of the World is also available, ensuring our products are readily available quickly and efficiently.

Our level of environmental commitment remains ahead of the industry trend. UKAS approved to ISO 14001:2004.

UK and European Manufacturing

DUNLOP BTL is proud to be a committed European manufacturer of Bearings, Transmissions and Linkages.

We believe in the future of European manufacturing and will continue to focus and further enhance the requirements and expectations of our customers globally. As a proud manufacturer we want to help Europe's industry flourish and to meet the world's evolving appetite for innovative designs and responsibly produced quality manufactured products.

New UK Production Facility

During 2016 UK production moved to a newly refurbished manufacturing facility this enable further expansion and additional production machinery as well as additional production staff. This state-of-the-art site is based in the

North East meant the Consett branch would become it's main European manufacturing and distribution centre, producing around 50% of its products, while other items are produced in factories from around the world.

In addition to our catalogue ranges of Bearings, Transmission and Linkages we produce non-standard items to suit individual customer requirements, 40% of our total production is for bespoke products to specific customer design.

Investment & Quality Assurance

Investment is constant, continually expanding and upgrading our portfolio of production facilities and machinery globally. The latest computer controlled inventory of over 50,000 part numbers covering 42 different product groups are held in stock and available for immediate dispatch.

Dunlop BTL Ltd is committed to offering all of our customers, not only the widest range of quality products but also a world class quality service.

We have a dedicated quality department that strives towards continuous improvements in all aspects of our organisation.

Our commitment is to quality to continuously improve in every aspect of the company activities, we are UKAS approved company to ISO 9001:2008 and ISO 14001:2004.



As a quality conscious European manufacturer we take our environmental responsibility very seriously. Quality Confidence – when purchasing any Dunlop product you can be reassured that not only have the materials of the highest quality been used with full production

traceability, but also that they have been produced in a responsible way, by a manufacturer who cares about the environment and its staff and has the expectations and demands of its customers foremost in mind.

Our company resolve is to adopt a policy of continuous improvement in everything that we do!

📂 E: sales@dunlopbtl.com

📞 T: +44 (0)1233 663 340

🕏 W: www.dunlopbtl.com

Kent European Distribution Centre:

MPT House, Brunswick Road, Cobbs Wood Industrial Estate, Ashford, Kent, TN23 1EL. *United Kingdom*

Durham UK Manufacturing Centre:

Unit 46, Werdoth Way, No. 1 Industrial Estate, Consett, County Durham, DH8 6SZ *United Kingdom*

Visit us at: www.dunlopbtl.com



BEARINGS · TRANSMISSIONS · LINKAGES

Bearings

Dunlop Premium bearings are manufactured in Europe and in the UK. With more than a sixty-year history it is a proven and reliable manufacturer and supplier of certified premium bearings for a vast range of applications which can include agricultural, automotive, construction, Industial and motor sport sectors.

Transmissions

Dunlop offer a unique range of mechanical power transmission products to meet today's stringent and ever increasing customer requirements. Transmission products are manufactured in Europe, the UK and Asia. All are constructed from high quality materials and are finished to tight dimensional tolerances.

Linkages

Dunlop linkages and linkage components are proudly manufactureed in the UK and are used to transfer mchanical motion. Whether that motion is shifting the cutting height in a lawnmower or controlling the exhaust valve on an articulated lorry, we specialise in the supply of custom made rod-based linkages.







We will be exhibiting at the **Hannover Messe** on 24th - 28th April 2017

Hall 24 Stand A42



Specialist bearings providing revolutionary ideas in motion

HALL 22 • C25

Carter Manufacturing has been providing revolutionary ideas in motion since 1999, starting with the European distribution agreement for Carter Manufacturing Inc products, from which the name was adopted. The company has now grown its product portfolio to a range that services many specialist worldwide customers with specialist bearings, custom bearing assemblies and linear products.

We have exclusive European Master
Distributor status for Carter Manufacturing
Inc, Silverthin Precision Thin Section
Bearings, Unasis Bearings & KMS
and also have agreements in place with
specialist premium manufactures IBC, THK
& Unitec. Therefore, we hold a large UK
stock of cam followers and yoke rollers,
precision thin section bearings, hybrid
and ceramic bearings and plastic and
316 stainless steel bearings. Lightweight
slewing rings in steel, stainless steel
or aluminium are also available as a
catalogued part or a custom development.

We are excited to announce our newest partnerships with Napoleon Engineering Services and Unique Technologies Associates both manufacturing based in the USA. Introductive displays will be presented at our both at C25 in Hall 22.

Napoleon Engineering Services is AS9100C certified to manufacture flight critical custom aerospace bearings in small volumes and competitive lead times. Their space heritage with globally recognized organizations such as NASA, SpaceX and Boeing establish confidence not only in their custom bearing manufacture but also in both their computational and physical bearing lifetime testing along with their bearing inspection capabilities.

Unique Technologies Associates is the manufacturer of Cobra Solid Lubricants (CSL) for bearings. CSL is a proprietary, dry, solid graphite formula engineered to seal and lubricate bearings. It exhibits extraordinary performance even in the most difficult applications. The characteristics of our products allow for great extremes in temperature without any change in starting torque or lubricity.



We are excited to announce our newest partnerships with **Napoleon Engineering Services and Unique Technologies Associates** both manufacturing in the USA.





Our Quality Management system is certified to ISO 9001:2008 incorporating the Aerospace requirements AS9120 Rev A ensuring your products carry full traceability.

From our location in Oxford the scientific high tech zone of the UK we are able to service a global community of customers. We work in Sterling, Euro and Dollar currencies, so no matter what your location we can provide solutions in a suitable currency for you.

Our company is focused on understanding our customer engineering problems and strive to find solutions that are tailored to each individual application. We have built up an in depth understanding of the way bearings interact with applications and are able to recognise and analyse bearing failures to determine how to progress and overcome problems effectively.

Over time Carter has proven industry ability to bring concepts from the drawing board through to realised products that work. Whether it is for prototype gearboxes, aircraft actuation components or advanced radar systems, Carter Manufacturing has provided and continues to provide solutions to ever more complex engineering requirements.

Company Name:

Carter Manufacturing Limited

Address

Unit 7 Isis Court, Wyndyke Furlong, Abingdon Business Park OX14 1DZ Abingdon, United Kingdom

E-Mail (General):

sales@carterbearings.co.uk

Website

www.carterbearings.co.uk



Latest Advanced Innovations of NBI Bearings are presented at Hannover Messe

HALL 22 • C18





NBI exhibited in Hannover Messe 2017, from 24 to 28 April, in Hall 22 Stand C18, and took this special opportunity to show and share with their clients the latest advances and innovations in their products, services and optimum solutions for different applications

The NBI product catalogue compiles a comprehensive list of bearing types to fulfill our customers' requirements. We produce cylindrical roller bearings, tapered roller bearings, spherical roller bearings and plain bearings.

Our own production units, as well as extensive expertise in design of bearings, large experienced engineering application department and co-operation with prestigious R&D Centers, have positioned NBI as the optimum solution for many leading machinery manufacturers.

With the 2 new production lines that will

start to operate in July 2017 in Oquendo (Spain), NBI will increase its own production capacity, being able to offer even higher flexibility.

NBI extended recently his E+, Enhanced line to taper roller bearings which now feature increased dynamic load ratings. NBI strengthens its application engineering capabilities to provide its customers with more advanced calculations using ROMAX software, ANSYS finite element calculation software and a proprietary software to calculate bearing life according to ISO/TS 16281.

Company Name:

NBI Bearings Europe S.A.

Address

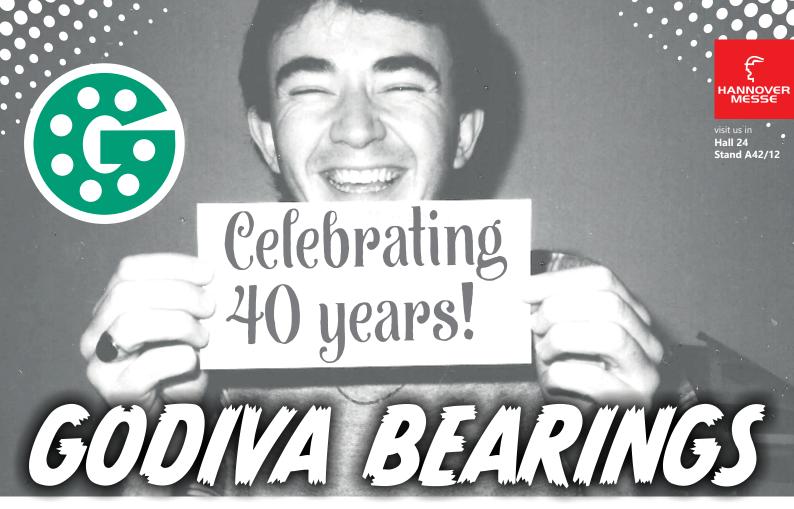
Polígono Industrial Basauri, Naves 6-10 01409 Oquendo, Spain

E-Mail (General) :

info@nbibearings.com

Website:

www.nbibearings.com



WHO ARE GODIVA BEARINGS? Godiva Bearings was trading in Coventry, owned by two guys called Andy and Pete. They decided they wanted a southern branch and through a friend of a friend got in touch with Ian Cuthill, Paul Cuthill's older brother. He managed to get together two partners, Alan and John, and they formed a new company, Godiva Bearings (Southern) Ltd.

A ROCKY START... Trading was slow, so much so that after six months lan had to go back to full time employment to pay for his new family. He asked Paul to join him over the summer. He was due to start College to study Engineering but once he grasped how to sell (at first, badly) and learning about the products, he soon became hooked and from that day bearings entered his blood.

"We knew a guy who worked for a company called Badalex who made light bulb making machines and sold them to Eastern Europe (as it was then). On these machines, were 100's of Rod-ends. They were always having problems sourcing these so we helped them one day and from then on, we earned the honour of supplying all their bearings for the next 12 years!"

Godiva Bearings were buying numerous Rod-ends and realised there was a huge gap in the market for these products. They started to let the local trade know they had Rod-ends and one company in particular, Olympic Bearings in Hayes, starting buying daily from Godiva. Word spread and soon Godiva Bearings were supplying Rod-ends to all corners of the country!

Because we kept investing in stock, we found we were making life easy for

people who had struggled for years to source Rod-ends from Rose, MPB and Alinabal (as they were all called then). We then found a company called IKO. They already had two distributors and didn't want any more but we convinced IKO to the benefits of working with Godiva and for them to only sell Rod-ends to us. This became so successful that they then decided to give us the full agency and dropped one of the current distributors."

NEWS TRAVELS FAST...Godiva Bearings found that Needle bearings were in high demand, a product that again, could be stocked and supplied with ease. Investing heavily in stock found that even more distributors wanted to buy from them. Reputation rapidly grew through their popularity in supplying Needles "making a real name for ourselves". This type of product expansion doesn't go unnoticed. Godiva caught the attention of INA Bearing Company then very soon we became agents for them too. All this was happening from our unit in Shepperton, Middlesex. Only a few miles away from our home towns. But we were fast outgrowing it and made the big decision in having another unit just behind. This helped immensely and allowed us further investment in products.

Logistics became a problem. INA wanted us to sell housed units (Self-Lube to everyone else) but quickly running out of room again and lacking the product expertise, they introduced Godiva to an ex-INA employee who was from the North East. The Newcastle branch was established in 1996. Immediately this was working for Godiva but highlighted the last logistical issue, it was apparent



The Midlands needed Godiva Bearings, especially being the Bearing 'capital' of the UK. In 1998 Godiva Bearings Dudley was opened. Some employees moved up there from Shepperton and the rest of the Godiva Team were recruited locally. After a few years, the realisation set in and that building wasn't going to be big enough (space issues occur with huge stock quantities) so next door, the bigger warehouse on the Peartree Lane Industrial Estate was Dudley Branch's new and existing home.

CUTTING EDGE... In 2003, becoming 'Trade Only' gave Godiva Bearings it's unique advantage. Paul and his brother Ian, both decided to sell out in a Management Buy Out, enabling Ian to take on more homely adventures while Paul stayed on as

Sales Director and Shareholder.

During the next 8 years, Godiva Bearings was one of many companies to see dramatic changes in the industry, recession and uncertainty. Nevertheless, opportunities comes in many forms. Tom Hamlett, who had battled the ranks, was now in a position to join the next MBO in 2012.

"Tom Hamlett, who I had employed when he was 18 years old for a summer job and also Trevor Brain, our current accountant both joined the MBO. Knowing Tom as long as I had

and having worked alongside him in the sales department for many years proved the right move for me and Godiva and the results have been there for all to see ever since." Tom Hamlett's summer job turned out to be the longest one in Godiva History, "The summer of '91 turned into the best temporary job of my life - 25 years later and I'm still here!"

THE INTERVIEW... Paul Cuthill and Tom Hamlett were asked a few questions about Godiva Bearings turning 40! 'What opportunities or game changers have there been for Godiva Bearings? Tom explained "The two most exciting events for us would have to be firstly in 1982 when Godiva were appointed IKO agents and secondly in 2003 when Godiva became official FAG agents. It was then that we also made the decision to become 'Trade Only'. This was a unique feature within the trade and still is today. We now have our training room themed like IKO and our main meeting room themed as Schaeffler. Both manufacturers are very proud of our long standing affiliation."

GODIVA BEARINGS DELIVER 80,000 PLUS ORDERS WE RECEIVE EACH YEAR.

'What advances have helped Godiva Bearings grow both in the past and present? "The use of technology has forced us to react much quicker to enquiries and also it's made us improve our service levels. BearingNet, Google and the internet in general have turned everyone into a buyer. Technology has changed all of our lives and also BearingNet have helped transform the bearing industry" – Paul.

"There have been a number of big takeovers in the last 18 months which have really shaken up our industry. Things are continuously changing and we always have to be ready to adapt. We have created loyalty with our



Dudley: **+44 (0) 845 345 5955** Newcastle: **+44 (0) 845 345 5920** Email: **sales@godiva-bearings.co.uk**

customers by not selling to their customers. We pride ourselves on the excellent relationships we have, not only with our customers but our staff, suppliers, delivery drivers - in fact everyone! The doors at Godiva are always open and everyone is always welcome."

TOM AND PAUL ARE VERY PROUD OF THIS AND TALK VERY FONDLY OF THEIR EMPLOYEES.

'Paul explained about the staff at Godiva and explained that they are the foundation of the company, like Richard Branson says, "The way you treat your employees, is the way they will treat your customers". All Godiva



reception areas have an honorary employee 'Wall of fame'. Every employee that has been with Godiva Bearings for 5 or more years has a certificate on the wall as Well as Training Certificates and formal Qualifications. "You can see from the vast amount of certificates and the years of experience that proves we have a very low turnover of staff and offer a happy work environment."

NOW... Godiva Bearings have celebrated their 40th Anniversary Friday 6th January 2017. All customers and suppliers were invited to drop-in, grab a Hog roast cob, enjoy a hot chocolate and have a guided Tour of the Dudley Branch Warehouse and Office – to see where the Bearing magic happens!

Needless to say, the Godiva Bearings Team works extensive hours, offering 24 hour 365 days call-out service and provides super-efficient handling with fast response times. "Developing trust with our customers, enables us to become part of their Team.

Whenever a customer needs us to send orders direct to their customer, we're the first one they call" The vast product range now represents all the major brands in the market.

BUT THERE'S ALWAYS ROOM TO GROW...







Roller Bearings from India

HALL 22 • A21/1

BMI is a manufacturer and exporters of bearings from India, working with customers in more than 36 countries. With a strong focus on R&D for new developments, BMI has many special / non-standard bearings like current insulated bearings for electric motor, corrosion resistant bearing for humid applications, flexible roller bearing for steel casters.

Apart from it BMI has 700 sizes of standard bearings in stock covering, spherical, cylindrical, full complement cylindrical roller bearings and taper roller bearing as well.

For Steel Industry:

Standard spherical roller bearings, 2 and 4 row cylindrical roller bearings and few other special bearings listed below.

- 1) Flexible roller bearings For continuous caster applications.
- 2) Back up roller bearings For leveler and straightener machines

For USA/Mining/Aggregate Market

- 1) (Type E) Taper roller bearings upto 4 inch shaft sizes.
- 2) Mounted spherical roller bearings upto 4 inch shaft sizes.



BEARING MANUFACTURING INDIA

A-206, Flying Colours, 2nd Floor, Above Croma, P.D.U.Marg, Dumping Road, 400 080 Mulund (west), Mumbai India

E-Mail (General):

sales@bmibearings.com

Website:

www.bmibearings.com





The Czech Specialist For Bearing Manufacturing

HALL 22 • A26

ZKL is the biggest manufacturer of largescale spherical-roller, special and split bearings in Central Europe. The bearing production of ZKL has 70 years long tradition and is following the recent trends.

The ZKL Group serves various industries including mining industry, power engineering, metallurgy, heavy industry, rubber and cement industry and agriculture.

The company will present mainly bearings for the Railway and other heavy industries.

Bearings for railway industry:

- PLC 410-13, 410-14
- PLC 810-13
- PLC 410-33.2, 34.2
- PLC 410-53.2, PLC 410-54.2
- 23048EW33MH
- 23234CW33MC3

Bearing for other industries which will be presented during Hannover Messe:

29412EJ

230/800EW33MH TPF 11517-15 CZECH KL B2-2216-2RSN TM NF B2-2218-2RSN TM NF 3210A2RSC3TNG EMHD2 22312EW33MH NF 29417M 51322M **2215EMAP NF**

Company Name:

ZKL Bearings CZ, a.s.

Líšeňská 2828/45, 62800 Brno, Czech Republic

E-Mail (General):

info@zkl.cz

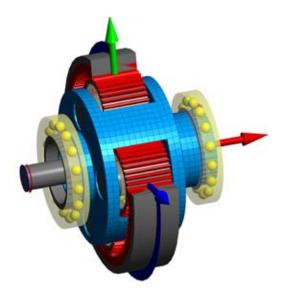
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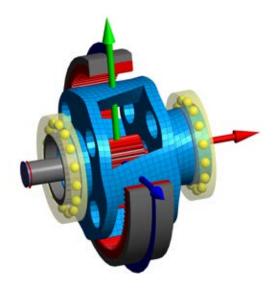
www.zkl.eu



Calculation software for mechanical engineering

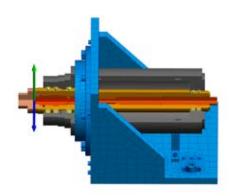
HALL 25 • A23

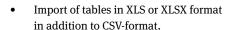


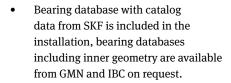


The main new features for the new release of the Mesys calculation software for mechanical engineering are:

- Integration of the ball screw calculation software into the shaft calculation
- 3D-elastic housings can be considered for calculation of natural frequencies using modal reduction.
- 3D-elastic housings can be imported as Nastran mesh in addition to the previous STEP-Import.
- 3D-elastic planet carriers as parametric definition or STEP-Import.
- Import of existing shaft systems into a system
- Several new nonlinear boundary conditions.
- User input of notch factors for strength calculation according to DIN 743,
- Updated interface to eAssistant gear calculations
- Tool for calculation of multi-layer interference fits with consideration of temperature and centrifugal forces.
- Export of animations as video using a third-party program.



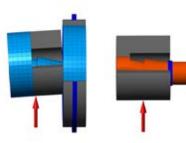




- Axial and radial elastic expansion/ compression can be considered for ball screws.
- Axial and radial thermal expansion is considered for ball screws.
- Lead error can be considered for ball screws.

A demo version of version 04/2017 is available at https://www.mesys.ag/?page_ id=1229





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MESYS AG

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Website:

www.mesys.ag

SCHAEFFLER

SMART ECOSYSTEM 4.0: DIGITAL INFRASTRUCTURE MAKES THE IOT AVAILABLE IN PRACTICE

Components equipped with sensors and rolling bearing domain expertise for increased process efficiency

"Entering the world of Industry 4.0 is now fast and easy thanks to a standardized and flexible digital infrastructure from Schaeffler. With components equipped with sensors, application-specific solutions, and cloud-based services, manufacturers and operators of machines and equipment can use and apply the Internet of Things in practice. At the 2017 Hannover Messe, Schaeffler presented ways of integrating new components equipped with sensors into overall systems and specific business models."



"Schaeffler's Smart Ecosystem 4.0 offers a comprehensive, cloudbased hardware and software infrastructure that includes every stage of digital added value – from components equipped with sensors through to digital services." Schaeffler's Smart Ecosystem 4.0 offers a comprehensive, cloud-based hardware and software infrastructure that includes every stage of digital added value – from components equipped with sensors through to digital services. The flexible architecture of this system gives manufacturers and operators of machines and equipment a simple and application-oriented point of entry into Schaeffler's range of digital services that can be expanded at any time. The rolling bearing, its mechatronic derivatives, and the corresponding domain expertise provide the central source of information in this field.

Components equipped with sensors are central to the drive systems used in machines and equipment – they record data and are the fundamental "enablers"

for these digital services. Schaeffler's aim is to continuously transform conventional mechanical products and integrate them into the digital world. Bearings and guidance systems equipped with sensors have already been on the market for several years. At the 2017 Hannover Messe, Schaeffler presented a rolling bearing system that is based on standard products and can be configured in a modular fashion with various different sensors, which allows virtually every desired bearing position to be equipped with sensors: The FAG VarioSense. This represents an important step towards a future in which not only complex systems but also simple assemblies and machines will have easy access to digitalization and the Internet of Things.



The latest version of the FAG SmartCheck allows a direct link to the Schaeffler Cloud or communication with other cloud technologies. The connection between the SmartCheck and the Schaeffler cloud is remarkably easy to make via smartphone, e.g. by scanning the relevant product's QR code or using the free app.



In the Schaeffler cloud, Schaeffler's rolling bearing domain expertise is made usable in the form of digital services. For example, automated rolling bearing diagnosis and remaining useful life calculation can be used to provide precise information on the condition of the bearing and thus of the machine being monitored, which in turn allows specific actions to be recommended.

The recorded data are transferred via a flexible Schaeffler gateway to the Schaeffler cloud, where Schaeffler's rolling bearing domain expertise is made usable in the form of digital services. For example, automated rolling bearing diagnosis and remaining useful life calculation can be used to provide precise information on the condition of the bearing and thus of the machine being monitored, which in turn allows specific actions to be recommended. It will even be possible to use real load data to make adjustments to operational machine processes in real time. Schaeffler's cloud-capable FAG SmartCheck, which for the first time allows a simple and flexible point of entry into the digitalization of machines and equipment based on vibration monitoring, was also on display at the 2017 Hannover Messe. This latest version of the FAG SmartCheck uses an MQTT interface to provide a direct link to the Schaeffler cloud or to any other platform based on IBM technology. It is also possible to communicate with other cloud technologies via a Schaeffler gateway or alternative gateway solutions using an OPC/UA interface. The connection between the SmartCheck and the Schaeffler cloud is remarkably easy to make via smartphone, e.g. by scanning the relevant product's QR code or using the free app.

This gives the customer direct access to services such as Schaeffler's automated rolling bearing diagnosis, which is based on the vibration data that the FAG SmartCheck has gathered from rolling bearings as well as shafts and other rotating components. Depending on his or her contract, the customer receives access to the condition data, partially-automated recommended actions or, in the case of more complex machines, a connection to the Schaeffler Service Center, which provides specific and individual recommended actions.

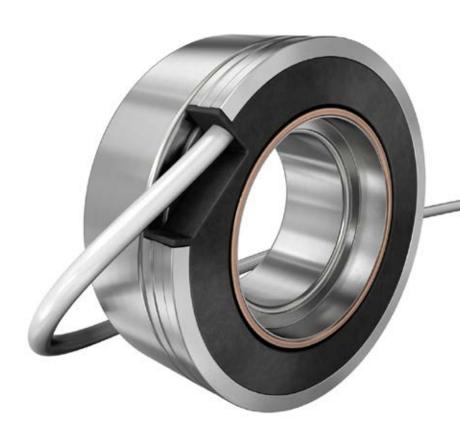
In the next stage, it will also be possible to use the SmartCheck to record speed and torque and to classify these load data. In the cloud, the Bearinx rolling bearing calculation tool is then used to compare

the real load data with the fundamental load data used during the design phase, and the rolling bearing's remaining useful life is then calculated on this basis. These applications will be available for all products based on the SmartCheck technology, including railway technology applications like those presented by Schaeffler at the 2016 InnoTrans.

The rolling bearing is ideally suited for gathering information, since it is located at the heart of the application's flow of force

and thus exposed to all of the loads that occur. Combining them with the domain expertise about rolling bearings in specific applications that is made available via the cloud allows this information to be used to control the process in a targeted manner in order to achieve the maximum degree of capacity utilization and optimize product quality. The prerequisite for this is a holistic and standardized infrastructure from the sensor through to the cloud, which Schaeffler now provides with its Smart Ecosystem 4.0.

The FAG VarioSense is a rolling bearing system that is based on standard products and can be configured in a modular fashion using a range of different sensors, which allows virtually every desired bearing position to be equipped with sensors. Schaeffler is thus paving the way towards a future in which even simple assemblies and machines will have access to digitalization and the Internet of Things.





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DORTMUND, 10 - 12 OCTOBER 2017

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www.bearingreliabilityconference.com

and keep up-to-date



2nd Edition of BRCE

will be held from 10 to 12 October 2017

The Bearing and Reliability Conference & Expo

Due to the great success of the BRCE event that ran on 22 – 23 March 2016 and the request of many participants to run it again, the agenda is set for 2017.

The first edition of the Bearing Reliability Conference & Expo is held with over 120 participants from 11 different countries, where the industry players found the chance to come together during a two days' knowledge & networking event.

All the attendees experienced for two days long 28 powerful speakers from both the bearing \otimes reliability competences, listened to selected experts presenting their strategies to make the bearing and their assets more reliable. There were in total 8 workshops designed to help implementing the best strategies and the chance to visit the key industrial players at the Exhibition center.

After the mega successful first edition of BRCE2016, the decision is made quickly to continue with this great concept and to run BRCE2017 in the Westfalenhallen Dortmund in Autumn 2017.

The BRCE 2017 event will be a memorable event- consisting of:

- 4 Key Note Presentations (1 hour Duration) The Global Experts
- 16 Global Bearing and Reliability Presentations (30 Minutes each) The Industrial Experts
- 32 Bearing and Reliability Application Presentations (30 Minutes each) The Best Practices in Maintenance (2 corners in the expo area)
- · A memorable dinner for fun, sharing experiences and networking



Key Applications and the Maintenance

DAY 2	Key Topics	Other Topics
	Vibration Monitoring	Sensors
	Bearing Monitoring	Remote Monitoring
	Ultra Sound	Diagnostics
08:00 17:15	Oil Analysis	Skill Development
	Bearing Failure Analysis	Certification
	Tools and Equipment	Service and Consultancy

Industrial Maintenance and Reliability

made in a real real real real real real real re		
Key Topics	Other Topics	
Maintenance Strategy	RCM and RCA	
Asset Reliability	Safety	
Planning and Scheduling	KPI's	
Inventory Management	Human Resources	
Root Cause Equipment	Consultancy	
Tools and Equipment	Lean Manufacturing	
IOT - Internet of Things	5S and TPM	
Industry 4.0	6 Sigma	
	Key Topics Maintenance Strategy Asset Reliability Planning and Scheduling Inventory Management Root Cause Equipment Tools and Equipment IOT - Internet of Things	

Lubrication and Training

DAY 3	Key Topics	Other Topics
	Lubrication Reliabilty	On Line Trainings
	Storage and Handling	Classroom Training
	Grease Lubrication	Webinair Communications
	Oil Lubrication	Skills Certifictaion
08:00 12:00	Maintenance Training	

The Bearing Reliability Conference & Expo

THE SCENE IS SET FOR A GREAT CONFERENCE

The 4 keynote BRCE speakers "The Global Experts" will share with us 4 hours of enlightening information and state of the art technologies, in the Bearing and Reliability world. These presenters will set the scene for the 2017 Bearing Reliability Conference and Exhibition and pave the way for 16 of the best global professionals to follow.

The 4 conference themes are:

- → Bearing Applications and their Maintenance
- → Lubrication

- → Industrial Maintenance and Reliability
- → Prediction and Planning in Maintenance



O2 DAY STARTING

Prediction and Planning in Maintenance

Presentation

The Global Predictive Maintenance Sphere

Todd Snellgrove

Global Vice President of Value SKF

Chris Hansford

Managing Direct and Owner of Hansford Sensors

The opening conference presentation will be delivered by Todd C. Snelgrove. Todd is what is referred to as a Global Value Merchant, always advocating the power of Increasing You and Your Customer's Bottom Line by demonstrating, documenting, procuring, pricing and selling based on best Total Profit Added $^{\text{TM}}$

Global Vice President of Value with over 15 years' experience in being the team leader on understanding, presenting, calculating pricing, and purchasing on Total Cost of Ownership (TCO) or Total Profit Added $^{\text{TM}}$ (TPA $^{\text{TM}}$), Todd is acknowledged to be a leading subject matter expert in the field of value.

Why talk about Value in the Industrial Maintenance and Reliability World?

Simply put - the bearing is the heart of our rotating equipment and if the bearing fails in any form then the reliability of our equipment starts to suffer and so does our financial performance, from the slightest of lost or wasted revenue to the possibility of a catastrophic effect on the balance sheet.

It makes little difference if we are users of bearings, manufacturers of bearings, suppliers of bearings or suppliers of bearing related performance and reliability technologies, our tasks are all VALUE related. The value chain is only as strong as its weakest link and Todd will explore with us how our own contributions will ultimately improve bearing and equipment reliability.

Bearing and equipment reliability can be improved and bottom line profits can be maximized, however the opposite is also true, bearing and equipment reliability can be decreased and bottom line profits damaged. The key to improved reliability is what one does to the equipment and the bearing or how we treat them during their operational lifetime. It is all about care, the care we apply to the machine or product and in particular, knowing when to apply the care or actions needed to safeguard or protect equipment life.

Predictive Maintenance or Pdm as it is often called, is an important ingredient of any maintenance and reliability strategy, because without it one will never know that the machine has problems until it's too late. Pdm employs technologies like vibration and bearing monitoring, oil analysis, thermography, ultrasonics,.. to name a few.

The key to any successful Pdm strategy is knowing what technologies to employ and how to go about employing them and we are fortunate at this year's BRCE event to have a truly global guru to address us in this sphere, Chris Hansford.

Chris Hansford is the Managing Director of Hansford Sensors Ltd., a qualified Electro-Mechanical Engineer and has over 35 years experience in vibration and condition monitoring. Chris Hansford is a speaker about predictive maintenance that we all should hear, he has a wealth of knowledge about the developments and trends in the global condition monitoring sphere. He will also set the scene for the 5 Pdm experts who will present directly after him.



Bearing Applications and their Maintenance

Presentation

The Global Bearing and Maintenance Trends

Wim Vancauwberge

Director BEMAS (Belgium Maintenance Association)

The importance of the bearing in any rotating machine, is like power in our home, the on/off switch to all our appliances and food for our bodies. Simply put, if the bearing doesn't operate correctly, neither does the machine.

Bearings come in all shapes, sizes and configurations – designed to meet the most arduous or toughest operational environments or simply to provide a trouble free machine for the entirety of its life. However, reliable bearing functionality is also dependent on how we treat the equipment, how we operate it, how we maintain it and how we lubricate it. This is maintenance.

Maintenance technologies and strategies vary greatly; they are more often than not dependent on the application, the required machine reliability and the operational environments and we have seen over the years an evolution and in some cases a revolution, in available or employed maintenance strategies. Ranging from fix it when its broke to all forms of diagnostics and control driven strategies, for example like the current evolution of Industry 4.0.

For the Maintenance Manager, Reliability Engineer, Maintenance Forman / Supervisor or just the Mechanic, knowing what strategy to employ for one's own equipment is a complex time consuming issue and if we get it wrong it can be a very expensive lesson. To lead the session on Bearing applications and their environment, we are extremely fortunate to have a Maintenance knowledge expert that can put logic into our understandings and strategy selection processes. Wim Vancauwenberghe will lead and guide us through this section of the conference.

Wim Vancauwenberghe is the Director of BEMAS, the Belgian Maintenance Association and has held this position since 2000. He holds a master degree in industrial engineering and is Certified Maintenance & Reliability Professional by SMRP.

Lubrication

AFTERNOON

Presentation

The Lubrication Role in Machine Reliability

lan Knight

Managing Director and Key Owner Enluse BV

Wear is defined as being caused by the relative motion between two surfaces that are in close contact, causing deformation or removal of the material; this known as mechanical wear. Wear can also be caused by other sources such as harsh or reactive chemicals, or cavitation.

This definition of mechanical wear is well known within our industry and we also understand that friction and wear can be reduced through the application of a lubricant; however what is not so commonly understood is how lubrication and it's application, effects the level of equipment wear. Today with bearings in many applications, life can be infinite, in other words bearings just don't wear out.

Mechanical wear can be predominantly defined as Abrasive Wear and Adhesive Wear. Abrasive wear is related to the cleanliness of the lubricant and Adhesive Wear is related to the metal to metal contact of the moving components due to a loss of the lubricants viscosity.

This section of the conference addresses the causes of mechanical wear and offers lubrication solutions / strategies to eliminate them. We are fortunate to have a very experienced bearing person present this conference sector and set the scene for the speakers that will follow. Ian Knight from Enluse BV.

Ian Knight is the principal owner and director of Enluse BV in the Netherlands. Enluse is an organization that began in 2003 and one that specializes in the supply of products and knowledge to help companies improve their plant lubrication practices. Prior to starting Enluse Ian worked for the SKF organization for more than 30 years always in the fields of service, sales and equipment reliability. Ian is an accomplished presenter and very competent in the fields of bearing lubrication and equipment reliability. He is a must to listen to.

Your Contacts



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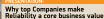








This workshop considers the softer (but harder) issues that need to be addressed to ensure we get good life from our bearings and equipment in general, because we don't normally achieve the life that our equipment is capable of.





Bearing and Equipment Lubrication Strategies Getting it Right



Root Cause Analysis Exploring the Apollo Root Cause Analysis Program and Methodology



Equipment Reliability and The Bearing



KPI's and Performance Parameters Best Practices in Predictive Maintenance Training



Planning and Scheduling



A Well Run Predictive Maintenance Program Exploring the key ingredients and control parameters of an effective PDM program

Bearing Life Condition and Prediction



Vibration Sensors and Monitoring Equipment Developments



Jorge Alarcon

Improving the diagnostic capabilities with Big Data Analytics and Prognostics





Filtration for prolonged oil service Life



Bearing Root Cause
Failure Analysis
How to define the causes of
bearing wear and damage
through raceway and
component investigation Best Practices in Bearing Maintenance



Oil Analysis
Using Oil Analysis methodologies
to control levels of Oil
Contamination and how to
reduce wear and failure. The Role of Oil Analysis in Predictive Maintenance



The Importance of Raw Material purity and cleanliness requirements, for precision bearing rings



Manage, Coach and Lead Exploring the practical skills and tools for a new frontline leadersh

From Control Drive Management to Self Driven Leadership



Oil Mist Technologies





The use of Ultra Sound within Bearing Maintenance and Prediction Strategies

The Monitoring of low frequency bearings



The Bearing Industry Responsibilities



ISO 55001:2014 Asset Management
Applying ISO 55001:2014
standard to your reliability and
asset management strategies



Shim Rings: Cost reduction in Assemblies and design Tips



The UE System approach to controlling your greasing strategies



Maintenance, Getting The Formula Right





Effective Sealing Preventing Bearing Oil Contamination



Equipment Alignment for Prolonged Life



Low-speed bearing monitoring Challenges and Solutions





TIMKEN

TAPERED ROLLER BEARINGS A HIGHLIGHT AT THE HANOVER FAIR

World-leading position - additional European production facility

As the world's most extensive supplier of tapered roller bearings, The Timken Company has put special focus on this product line at **Hanover Fair 2017 (Hall 25, Booth E11).**

As the world's most extensive supplier of tapered roller bearings, The Timken Company has put special focus on this product line at Hanover Fair 2017 (Hall 25, Booth E11).

This is particularly relevant with the opening of another European production plant in Romania shortly after the fair. "Customer demand for tapered roller bearings is increasing," says Hasso Haibach, General Manager Timken Germany. "We are responding by building additional capacity to serve the European market reliably and comprehensively." The existing Timken Romania SA plant in Ploiesti manufactures large-bore roller bearings. The new plant will be located nearby and will complement the existing manufacturing sites for tapered roller bearings in Colmar (FR), Brescia (IT), and Sosnowiec (PL).

"This means we are geographically well-positioned to be more responsive to customer needs at peak times," Haibach explained. "120 new colleagues will be employed at the new plant on a space of 15,000 square meters."







As the world's most extensive supplier of tapered roller bearings, Timken has put special focus on this product line at Hanover Fair. The market leader is responding to increasing demand by opening a new European production site in Romania.

A true success story - continuous innovation

The patent on tapered roller bearings was filed by the company's founder in 1898 and it forms the basis of a unique product and company history. The conical rollers found in these bearings offer the most powerful and efficient way to handle a combination of radial and axial loads.

Over time, the variety of products has grown to include one-, two- and four-row configurations, as well as packaged and axial versions. Sizes range from an 8 mm bore to more than 3 m outer diameter. Bearing geometries and surface finishes can be adapted for sophisticated and custom applications.

At Hanover Fair, Timken discussed how optimized materials, surfaces, geometries, and designs can benefit manufacturers and end-users by helping reduce noise, support higher loads and prolong service life.









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Other bearing types - own priorities

Timken was also presenting a newly extended range of spherical roller bearings. Available in both steel and brass cage configurations, sizes range up to 1250 mm bore. Innovations designed to lower operating temperatures and increase load-carrying capabilities have led to large improvements in capacity and design life versus previous versions.

Another highlight was one of the industry's widest product ranges of housed units. Configurations with spherical, tapered or split cylindrical rollers complement standard and specialised ball bearing housed units that are easy to maintain and perform under the most difficult conditions.

One example is the Timken® Revolvo Quick-Fit series with split cylindrical roller bearings. It simplifies the installation of split housing units for applications with restricted access. The 45° split design reduces installation times by up to 90 percent by eliminating the time-consuming task of lifting a shaft.

Timken was also exhibiting a wide range of long-lasting and low-maintenance couplings. The Timken Quick-Flex® System was designed for exceptional performance parameters under demanding environmental conditions. They are easy to install and require no lubrication. The polyurethane insert can be replaced quickly and safely without dismounting other parts.

A brief profile of Timken

The Timken Company (NYSE:TKR; www. timken.com) engineers, manufactures and markets bearings, gear drives, belts, chain, couplings, and related products, and offers a spectrum of powertrain rebuild and repair services. The leading authority on tapered roller bearings, Timken today applies its

deep knowledge of metallurgy, tribology and mechanical power transmission across a variety of bearings and related systems to improve reliability and efficiency of machinery and equipment all around the world. The company's growing product and services portfolio features many strong industrial brands including Timken®, Fafnir®, Philadelphia Gear®, Carlisle®, Drives®, and Interlube™. Known for its quality products and collaborative technical sales model, Timken posted \$2.7 billion in sales in 2016. With more than 14,000 employees operating from 28 countries, Timken makes the world more productive and keeps industry in motion.







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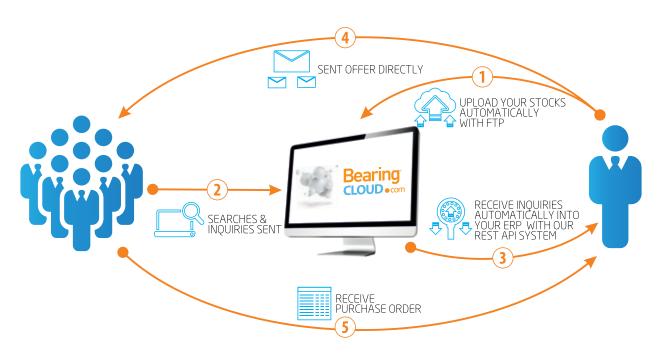
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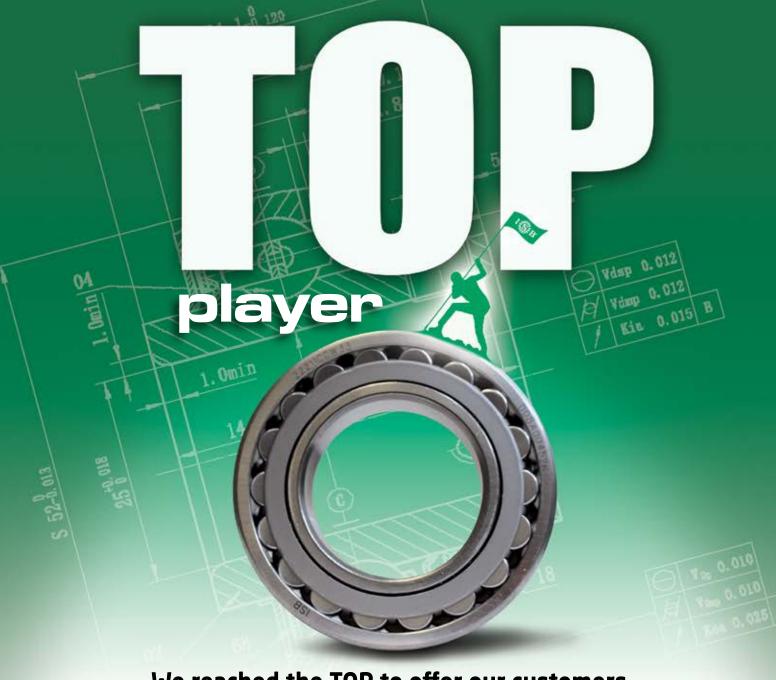
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