Highest speeds are one of the main requirements machine users have of machine tool spindles and especially of motorized spindles. High-speed angular ball bearings designed for this purpose are usually located on the working side of the spindle to meet these requirements.

These bearings can also be used on the floating bearing side, but secure implementation of the slide function requires a complex environment construction with sliding bushings or the use of integrated bearing units with double-wide outer rings. If the slide function was to be implemented within the bearing, the only options in the past were cylindrical roller bearings suitable for moderate speeds or FD bearings with low load carrying capacities. The demand for floating bearings suitable for high speeds, high loads, and high rigidity necessitated the use of hybrid cylindrical roller bearings with ceramic rollers. These ensure safe floating bearing functionality, however, they are quite expensive due to the high costs of ceramic rollers.

FAG N..-HS high-speed cylindrical roller bearings are the first floating bearings with steel rollers to enter the speed ranges previously mastered only by high-precision hybrid cylindrical roller bearings. With grease lubrication, the N-HS bearings exceed the speed of conventional cylinder roller bearings with steel rollers by 60 %.

This development was possible by improving the interior construction with regards to the roller contact friction as well as changes to cage design and material. The cage is made of the high-performance plastic PEEX and is outer-land-riding. As compared to a conventional N1011.. bearing, which reaches a speed of 12,000 RPM using grease lubrication, the respective high-speed version N1011-HS.. reaches an impressive 20,000 RPM. When using oil lubrication, the advantage is even more significant with values of 14,000 vs. 26,000 (N1011-HS-) RPM.

Thus this speed range matches that of the respective ceramic bearing model HCN1011 with speeds of 22,000 RPM (grease) or 26,000 RPM (oil), which is very advantageous for the spindle manufacturer. Please contact the Schaeffler KG Spindle Bearings Applications Technology hotline at +49 (0)9721-911 911 for more information. The FAG spindle bearings catalog AC41130/7 DA already includes this innovation.

Applications in which the highest load is not the first priority, the N1011-HS bearing with option H193 can be used to increase speeds to 22,000 RPM (greased) or 26,000 RPM (oil) by reducing the number of rollers.

A 60 % increase in performance and significantly lower system costs is a great value and makes great sense in any economic climate.

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**Current News**

**KBA**
When the really huge are working together

**INA thread guide wheel**
Success with ease

**Cronidur ZKLN**
Increase in performance by a factor 4+

**Barden Bearings in Mars Probe**
Successfully reaching for the stars
**Efficient solutions for successful systems added competence for machine tools**

Dear reader,

Even though no one can look into the future, it seems certain, that 2009 will be a turbulent year. Many are already feeling the effect of long-term changes in the market. Business expectations and capacities have to be adjusted. Severe cutbacks are on the way or are already in the making. However, every crisis bears opportunities and change always stands for new options. However, it is now up to us to find these possibilities and actively pursue them. For production machinery and machine tools, the picture is not all that grim, as the relief from the ongoing pressure to deliver makes way for the unexpected freedom for new development and moving ahead constructively. This includes among other things the replacement of the spindle ball bearing management with Mr. Rainer Eidloth, who takes over this position from Dr. Oliver Schellberg on the 1st of April. Dr. Schellberg will strengthen our company elsewhere in a competent way.

Successful systems require efficient solutions. The recent trend toward increased energy efficiency is only one of many factors. Emphasis placed on various parameters and intelligent solutions, that when combined, promote profitability, increased performance, flexibility, maintenance reduction, increased durability and cost reduction. This comprises the true capital of any good development and every successful system, with or without the economic crisis. In this issue we would like to present several new developments in this area, which we have initiated together with you based on our slogan: added competence for machine tools. We will certainly master the year to come better this way and actively contribute to a better future for the industry.

We hope you enjoy reading this issue!

Sincerely yours,

ppa. Helmut Bode
President / Production Machinery

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**Defined print pressing from the control center realized for the first time**

Basic innovation in printing machines reduces costs and improves printing quality

A bearing unit that was developed and registered for patent by the leading printing machine manufacturer Koenig & Bauer (KBA) together with the Schaeffler Group Industry has been the talk of the industry since the IfraExpo in 2005.

For the first time in the almost 100-year history of offset printing, the bearings in a closed compact housing permit remote controlling of the exact pressure required between the plates and rubber pad cylinders from the control center. This solution, which KBA has named “NipTronic”, is made possible by a hydraulic element integrated in the bearing system for sensitive printing pressure application. A fully automated system is realized in combination with a pneumatically adjustable wedge stop for precise definition of the cylinder position. As in conventional multiple ring eccentric bearings, the printing cylinder rotates in highly precise cylinder roller bearings without play. However, for the first time, the print on/off function is not realized using an eccentric ring, but using linear guides that are installed directly in the bearing unit itself. A stiff needle roller and flat cage assembly with zero clearance enables low-friction adjustment and ensures the required sensitive setting of the print pressing.

The high-precision cylinder roller bearings as well as the integrated linear bearings are greased and protected against penetration of contaminants with a combination of low-friction contact seals and an additional dust cover. Another characteristic of the new bearing systems is that they are directly flanged on the machine’s side frame. Therefore the bearings are no longer directly positioned in a frame bored hole. The distance from the plates and rubber pad cylinders to the side wall could therefore be reduced to a minimum. This provides significant advantages when it comes to vibration and also helps improving printing quality.

But this is not all: Even at very high speeds of up to 45,000 cylinder rotations per hour and cylinder widths up to 2,400 mm, use of so-called bearer rings are not needed for vibration damping, and this does not have a negative impact on printing quality. In addition to this, the new NipTronic bearings make the time-consuming process of manually setting the cylinder spacing unnecessary. This significantly reduces the maintenance effort required and thus saves considerable costs.

Defined print pressing from the control center increases flexibility

For roller offset printers, this bearing system is truly a fascinating innovation, which significantly simplifies work and clearly improves the printing quality attainable especially for extremely different types of papers. Particularly when it comes to frequently changing print jobs and the trend towards increasingly smaller circulations, this system noticeably reduces costs. Time-consuming manual adjustment work is no longer necessary. The KBA NipTronic bearing unit provides a level of flexibility that is unique on the market.

A strong surge in innovation for printing machines

The advantages of this new bearing system are impressive both individually and as a whole:

- Improved print quality
- Significant simplification of work and cost reduction potential by doing away with adjustment work, foil switching and maintenance
- Reduced number of parts / downsizing (no bearer rings)
- Increased durability for printing plates and printing mats due to optimized print pressing
- Reduced risk of damage when using paper rollers

The market demand for modern rotation printing machines is significantly increasing. With the innovative printing machine linear bearing system DMLL, KBA is successfully rising to the challenge, and the Schaeffler Group is emerging as the industry’s trend setting development partner.

KBA Cortina

This groundbreaking bearing was integrated for the first time in the ultra-modern waterless printing offset rotation KBA Cortina five years ago and, for a good two years now, in the conventional wet offset machine KBA Commander CT. 384 of the innovative NipTronic bearings were installed in the first large Cortina system equipped with the new bearing unit, which has been producing for a good year now at the Belgian newspaper company de Persgoep near Brussels. In the meantime, they have been tried and tested thousands of times in other Cortina systems in German, Dutch and Danish printing presses. More large rotation systems of the Cortina and Commander CT series for the newspaper publisher Le Figaro in Paris, the New York Daily News and the Gulf News in Dubai will soon carry the new bearing technology around the world.

---

Fuzzy KBA NipTronic, directly flanged

KBA Cortina
Success with ease

New INA thread guide wheel for suppliers in texturing machines accelerates even faster

How can a texturing machine thread guide wheel's moment of inertia (see explanation left/right) be reduced so effectively that detectable increases in acceleration can be achieved without losses in wheel durability or filament quality?

Cronidur ZKLN quadruples service life

Impressive increase in performance by a factor of 4+

The loads on screw drive bearings in machine tools are heavily dependent on the usage of each machine. One important factor is the required machine dynamics. The following applies here: The feed speed determines the bearing speed, high acceleration results in a high load on bearings when mass inertia forces are high. The level of strain is also determined by the machines power-on-time. This is very long for the parts production in the automotive industry due to the common three-shift operation. Corrosion caused by cooling lubricants can present yet another challenge for the bearings.

The worst case scenario consists of a combination of these influences, which can result in very short operation times of as low as just a few months for the feed spindle bearings. Expensive servicing cost result for the machine manufacturers within the warranty period (especially if the machines are located abroad).

One way to significantly extend the operation time of the bearings in these applications without changing the bearing dimensions can consist of using screw drive bearing rings made of the high-performance material Cronidur. The dynamic load-bearing capacity can be increased considerably when using ceramic rollers at the same time, thus increasing durability. In addition to this, the material combination of Cronidur and ceramic rollers ensures resistance to corrosion.

Impressive increase in performance by a factor of 4+

Experiences with this design have proven to be exceptionally. In a highly specific customer application with a conventional double row angular ball bearings for ball screw drives made of standard rolling bearing steel, it was only possible to achieve an operation time of 6 months. With the new combination of materials, the screw drive bearings made of Cronidur have been in operation for approximately 2 years without returns!

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The Schaeffler Group‘s Surface Technology Center

Coating competence for every application

Since April 25, 2007 Schaeffler KG has a new Surface Technology Center in Herzogenaurach. It primarily consists of two coating facilities that are using the PVD (Physical Vapor Deposition), PACVD (Plasma Assisted Chemical Vapor Deposition) or electroplating method.

The PVD method uses coating material in the solid phase, whereas the PACVD method uses coating material in the gaseous phase. Electroplating technology uses liquid phases. The new Surface Technology Center, which has been providing valuable services to the entire group for 2 years now, serves as a bridge between the central research unit and production. It is specializing in verifying basic knowledge and testing coatings to integrate them into products for series production, and setting new standards. Within the Schaeffler Group, surface coatings provide components like roller bearings or bucket type tappets with higher resistance to corrosion, less wear and reduced friction. For example, Porsche has been using the PVD and PACVD methods with nanoparticle technology called Triondur from Schaeffler since 2001 to achieve continual improvement of engine performance and motor oil resistance with its valve drive components for the Variocam Plus system.

The Phoenix has Landed
Barden Bearings lend Flexibility to Mars Probe Arm

Danbury (ct). After a nine-month and 677-million kilometer journey, the “Phoenix” Mars probe reached its destination on May 26th 2008 and landed safely on our neighboring planet’s north pole.

Absolutely incredible, lightweight, low friction – Barden Bearings for the Mars probe “Phoenix”

Following a communication glitch, NASA researchers succeeded in restoring radio contact and started to activate the robotic arm on May 28th; Now it was our Barden colleagues’ turn to cheer. After all, they had supplied the precision bearings for this important mission component.

During the next three months – in the spring and summer of the touchdown area on the Red Planet – the 2.4 meter robotic arm is to dig into the frozen polar ground and take soil samples. These samples will be analyzed aboard the probe for traces of water and possible signs of life on Mars.

“When we received the order to design and manufacture the bearings for the Phoenix robotic arm, we were well aware of the huge responsibility resting on our shoulders," commented Al Conti, Application Engineer, and Aerospace Specialist at Barden for 27 years. Under his technical leadership, all members of the space team did their best to produce bearings that would meet “fail-safe” mission demands. Compactness of design, lowest possible mass, low torque, high precision, and absolute reliability were key parameters addressed. Clearly, the team has done an excellent job: The stainless-steel super precision angular contact ball bearings have survived the long journey through space undamaged. Al Conti is confident that they will also ensure the necessary flexibility and facilitate the robotic arm to work reliably for a long time despite adverse conditions characterized by storms and dust, heat and cold. This confidence is entirely justified: The robotic arms of the two previous probes “Spirit” (touchdown on January 4, 2004) and “Opportunity” (touchdown on January 25th, 2004) are also equipped with specialty bearings from Barden. Designed for a service life of 90 days, the probes, arms and bearings exceeded the original expectations over four years now. Supplied with energy from solar cells, they are roaming the Martian landscape at turtle speed and are still transmitting information.

Mars robot at work
Sprinting ahead of the competition
FAG Cronitect® hybrid rolling bearings in high-end Tour de France racing bicycles

A new FAG high-tech Cronitect® hybrid rolling bearing for bicycles is causing quite a stir in the market for premium racing bikes. The combination of the material arrangement of high-performance steel Cronitect® for the bearing rings and ceramic for the rollers, along with the improved ball cage geometry and the innovative friction reducing sealing design provide decisive advantages.

Smooth operation and dependability increase tremendously. In addition, salt spray tests show that the resistance to corrosion is several times better than that of traditional stainless bearings. The same applies to the bearing durability as compared to conventional rolling bearings. They even weigh less than previously used bearings.

Campagnolo, the Italian cult brand of racing bike components is currently showing both enthusiasts and the competition, that bearing improvements make the difference that can get you “ahead of the rest”. The innovative FAG Cronitect® hybrid rolling bearings in the new premium racing bike collection Super RecordTM under the brand name CULT™ (Ceramic Ultimate Level Technology). The bottom bracket and shaft hub-joint of the premium carbon bikes are equipped with the new FAG Cronitect® hybrid rolling bearings already contributed considerably to the stage wins and wins achieved in time trials at the Giro d’Italia and the Tour de France 2008 on carbon bicycles from Campagnolo.

The material and its areas of application Cronitect® is the product of consistently improving development and research of high-performance corrosion-resistant steels of the Schaeffler Group Industry (INA/FAG).

Rolling bearings based on this new material can be used under extreme conditions, including exposure to corrosive elements (water, acids and cleansers) and even without lubricants. Campagnolo only recommends thin oil instead of grease for Cronitect® hybrid rolling bearings in premium racing bikes. Innovative sealing and cage solutions allow for additional protection and maintenance free operation. Top-notch technology developed for the aerospace industry or high-precision industrial applications is often used subsequently in consumer products. This may well be an example of taking a new direction, namely from the premium bicycle application to production machinery, to get ahead of the competition...

On-site assembly training for FAG high-precision bearings can be scheduled any time with machine tool and spindle manufacturers, repair centers and roller bearing salespersons. These courses are also offered on a regular basis at the Schaeffler KG plant in Schweinfurt.

The next dates for spindle bearing assembly training in Schweinfurt:

- May 28, 2009
- Oct. 29, 2009

Contact:
FAG Industrial Services GmbH (FIS),
Tel.: +49 (0) 2407 9149-0
e-mail: Training@fis-services.de

Tip
Visitaton of the FAG spindle bearing production unit is a real highlight!
KUKA RS 1000 with FAG bearings

The highest-performance flywheel friction welding machine in the world still running strong after two years for turbine manufacturing at MTU

The development of new types of airplanes like the A380 not only entails “growth” of their components, but also of the machines used for their construction. Playing a decisive role in this development with application and production knowledge means technological leadership. The world of material fusion provides a perfect example of this.

The new engine projects for constructing the large capacity airplane Airbus A380 require increased bearing pressures and thus higher flywheel masses. This is due to increasing temperatures in the impellers, which require the use of titanium and even more temperature-resistant materials like nickel-based alloys.

In a three-year planning and development phase, KUKA AG in Augsburg worked together with MTU Aero Engines GmbH, the Munich Technical University and others to design and build an extraordinary friction-welding machine. The result is the KUKA RS1000.

The system applies 1000 tons of axial force for manufacturing and preparing impeller rotors. This equals the weight of about twelve locomotives. Since November 2006 the KUKA RS1000 has been used to produce rotating engine parts such as blisks and spools (see text field) on a tenth of a millimeter of radial offset of the welded parts. This precision, as well as the continuously variable fully automated delivery of flywheel masses of up to 45 tons makes the KUKA RS1000 an outstanding example of technological innovation around the world.

For the first time, two spindles were installed in the new system in Munich. The flywheels were mounted on these spindles. Compared to conventional friction welding machines with only one spindle, which require the flywheel masses to be mounted manually using a crane with changeover times of up to one and a half shifts, the flywheel masses in this system can be delivered fully automatic. Depending on entry of the required centrifugal moment in the control unit, flywheel masses from 500 to 45,000 kilograms per square meter can engage with the spindles. This shortened changeover time allows systems to be functional in multi-shift operation – a first for friction welding systems in this form.

The application knowledge of Schaeffler KG played an important role in the development of this high-end machine. The calculations and the design of the bearings for these two working spindles were carried out by the “Applications Group for Machine Tools” at the Schaeffler Group Industry location in Schweinfurt, Germany. Both spindles are equipped exclusively with FAG bearings, Double-row FAG high precision cylinder roller bearings, used for radial guidance of the spindles, and angular adjustable FAG axial spherical roller bearing and FAG angular ball bearing are used for axial guidance with zero play.

The three phases of friction welding

The friction welding process is divided into three phases:

- In the first phase, two workpieces are clamped and one rotates at a defined speed (n). In the second phase, the two workpieces are pressed against one another with a defined force (F1). The combination of rotation and clamping force generates heat. In the third phase, the rotating work piece is stopped upon reaching the specified forging temperature, the heated work piece surfaces are pressed together using an additional high axial force (F2) and the material is “welding”. The actual welding procedure only takes a few seconds and results in a solid, extremely homogeneous bond.

Friction welding is applied to create many material bonds that cannot be produced using conventional welding because the material bonding surfaces can not reach the molten phase temperatures required for the bond. Friction weld joints are found in many applications, like in pinion shafts and eccentric shafts etc. and in various industries. For example in the aerospace industry advantages of friction welding as opposed to screw connections, include the reduction of weight and space. The new KUKA RS 1000 impressively accommodates sophisticated requirements and sets standards of its own. KUKA has been relying on FAG bearings since 1983.
Future technology for machine tools

Schaeffler Iberia at the 17th Machine Tools and Manufacturing Technology Conference

Schaeffler Iberia, s.l. participated in the 17th Machine Tools and Manufacturing Technology Conference, which took place from October 15th to 17th in San Sebastian, Spain.

This conference, held every two years for the past 30 years, is one of the more significant events in the Spanish machine tools industry. The most important manufacturers, design engineers, and scientists meet there to share processes and technologies relevant to machine tools. This year the conference primarily dealt with precision, processes, multi-functionality and business alternatives as well as opportunities for the machine tools industry. Schaeffler Iberia placed special emphasis on active regulation of preliminary tension and attenuation in main spindles. Ager Serna, engineer at Schaeffler Iberia, s.l., presented the result of a study performed by the Schaeffler Group. Based on experiments, using BEARINX® electrical spindles, the study analyzed the influence and key factors of final machining quality in parts, and the use of available power of the spindle motors, which in turn can lead to improvements in the final machining quality.

His presentation also dealt with the construction parameters for controlling a spindle’s static and dynamic rigidity. Conference participants were very enthusiastic about the presentation.

Roller bearing lexicon:

Criteria for selecting grease for main spindle bearings:

<table>
<thead>
<tr>
<th>Grease function:</th>
<th>FAG Arcanol grease</th>
<th>L75</th>
<th>L210</th>
<th>L055</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separating lubricating film</td>
<td>KEHC3K-50</td>
<td>KHC3P-40</td>
<td>KPHC2N-40</td>
<td></td>
</tr>
<tr>
<td>As little friction as possible</td>
<td>Polyurea</td>
<td>Polyurea</td>
<td>Lithium</td>
<td></td>
</tr>
<tr>
<td>Grease usage depending on:</td>
<td>Base oil viscosity mm/s</td>
<td>22</td>
<td>68</td>
<td>82</td>
</tr>
<tr>
<td>Maximum temperature, duration</td>
<td>at 40 °C</td>
<td>5</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Maximum speed</td>
<td>at 100 °C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load</td>
<td>Consistency class</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Grease service life:</td>
<td>Service temperature °C</td>
<td>-50 to +120</td>
<td>-40 to +160</td>
<td>-35 to +140</td>
</tr>
<tr>
<td>Calculation based on average speed</td>
<td>Permanent limit temperature °C</td>
<td>up to 80</td>
<td>up to 105</td>
<td>up to 80</td>
</tr>
<tr>
<td>Service life 100 % to permanent limit temperature</td>
<td>Maximum speed characteristic mm/min</td>
<td>2 x 10^6</td>
<td>1.3 x 10^6</td>
<td>0.8 x 10^6</td>
</tr>
<tr>
<td>Service life reduction by 50 % upon exceeding the permanent limit temperature by 15 °C in each case</td>
<td>Characteristic</td>
<td>High-speed grease, lowest friction</td>
<td>High-speed grease, high-temperature grease, low friction</td>
<td>High pressure grease with EP additives, low-noise, low friction</td>
</tr>
<tr>
<td>Machine tool main spindles, requirements:</td>
<td>Use for</td>
<td>highest speeds</td>
<td>high temperatures</td>
<td>high loads with predominantly low speeds</td>
</tr>
<tr>
<td>- Minimum friction</td>
<td>Standard greasing in</td>
<td>HSS, HCS, XCS, B, HCB, XCB, FD...2RSD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Speed suitability</td>
<td>Specific weight (approx.) g/ccm</td>
<td>0.92</td>
<td>0.85</td>
<td>0.9</td>
</tr>
<tr>
<td>- Durability</td>
<td>Grease selection according to conditions of use:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Moderate temperature</td>
<td>a) High to highest speeds:</td>
<td>FAG ARCANOL L075 is a grease for the highest speeds with the lowest amount of friction, suitable up to a permanent temperature of 80 °C measured on the outer ring.</td>
<td>FAG ARCANOL L210 is a grease designed especially for use in with higher permanent limit temperatures up to 105 °C. The higher viscosity ensures sufficient lubricating film thickness. If there is a bit more friction, the highest speeds are not reached. Other greases are available for even higher temperatures.</td>
<td></td>
</tr>
<tr>
<td>- Minimum friction</td>
<td>b) High temperatures:</td>
<td>FAG ARCANOL L055 is for use with high loads (P/C &gt; 0.15) at low speeds. The higher viscosity improves the lubricating film thickness and the presence of high-pressure additives (EP) ensures sufficient wear protection even at low speeds without separating lubricating film (chemical lubrication).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Low viscosity</td>
<td>- Higher service temperature</td>
<td>- Higher viscosity</td>
<td>- Higher friction</td>
<td>- High speed suitability</td>
</tr>
<tr>
<td>- Moderate temperature</td>
<td>- Higher viscosity</td>
<td>- Higher friction</td>
<td>- High speed suitability</td>
<td>- Durability</td>
</tr>
<tr>
<td>- Durability</td>
<td>- Higher viscosity</td>
<td>- Higher friction</td>
<td>- High speed suitability</td>
<td>- Durability</td>
</tr>
<tr>
<td>Standard L75 grease covers all “normal” operating conditions here.</td>
<td>- Higher viscosity</td>
<td>- Higher friction</td>
<td>- High speed suitability</td>
<td>- Durability</td>
</tr>
<tr>
<td>Specific weight (approx.) g/ccm</td>
<td>Low to medium speed, greases for low friction, greases with higher viscosity, with high loads, greases with EP additives</td>
<td>High speed, greases for low friction</td>
<td>Highest speed, greases for lowest friction</td>
<td></td>
</tr>
</tbody>
</table>

Speed characteristic [min⁻¹ x mm]:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>2 x 10⁶</th>
<th>5 x 10⁶</th>
<th>1 x 10⁷</th>
<th>2 x 10⁷</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low to medium speed, greases for low friction, greases with higher viscosity, with high loads, greases with EP additives</td>
<td>High speed, greases for low friction</td>
<td>Highest speed, greases for lowest friction</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Win an iPod touch!

Our question:
How is the name of the new high speed cylinder roller bearings with steel rollers spelled? Please enter the three missing letters: FAG _-_- _-_

Please enter the correct answer on the adjacent coupon. Complete the form and return it to:

Schaeffler KG
Production Machines division
IEBSWE-LSM
Georg-Schäfer-Straße 30
D-97421 Schweinfurt
Fax: +49 (0) 97 21/91 14 35
Closing date is Oct. 30, 2009

There is no legal recourse. Employees of Schaeffler KG and trading partners are not permitted to take part.

The winner of the 1/2008 Issue competition

Mr. Jürgen Dressler (right) from the company HERMLE AG in Gochsheim, Germany, is the proud winner of an Apple iPod. Mr. Robert Schullan, Chairman of the board of Schaeffler Group Industry, presented him with his prize.

Yes, I would like to win an iPod touch!

SOLUTION: __________________________

Last name, first name: __________________________

Company: __________________________

Street/No.: __________________________

City/postal code: __________________________

Tel.: __________________________

Fax: __________________________

E-Mail: __________________________

We would appreciate it if you would answer the following questions: Did we get your address right? Please let us know of any changes we need to make. (Please print letters)

Who else in your company should receive “added competence”?

What improvements would you like to see in the Production Machinery division?

YRTSpeed_M – new high-speed rotary table bearings series with angular position measurement system in the bearing installations space

Rotary machining at up to 1,160 min⁻¹ combined with precise and highly dynamic multiple axis simultaneous machining required? – Just the right job for our new high speed rotary table bearings series with an integrated angular position measurement system. The bearing and measurement systems have been developed to meet the requirements of direct-drive precision rotational axes in machine tools. The magnetic measuring principle allows for a high level of measuring precision of ±/3 seconds of arc and the required signal quality. However, the most impressive characteristic of this patented measurement system is its sturdy link to the connection construction. In addition to this, the measurement system measures exactly where needed. According to inspections performed by the Laboratory for Machine Tools and Production Engineering in Aachen, this provides drive control properties comparable to those found in machine tool applications with installed high resolution optical measurement systems. Another significant advantage of this system is its integration in the bearing installation space. Therefore, the space in the center of the rotational axis remains available for other functional elements such as multiport swivels to allow for exceptionally compact designs.

“Efficient bearings for successful systems” demonstrated current developments and future requirements of bearings in machine tools with great benefits as echoed unanimously by experts.

HOTLINE

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Schaeffler Group USA Inc. Tel: 803-548-8500 Fax: 803-548-8599

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E-Mail: pmoses@schaeffler.com

www.schaeffler.com

LAST BUT NOT LEAST

The Production Machinery division of Schaeffler Group Industry is currently carrying out the seventh series of its “Technical Symposia”. All of the other events in this exclusive rolling bearing forum were immediately booked up. The topics presented here under the slogan: "Efficient bearings for successful systems" demonstrated current developments and future requirements of bearings in machine tools with great benefits as echoed unanimously by experts.

## Masthead

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