



## CELEBRATES 100 YEARS OF THE SPHERICAL ROLLER BEARING

Originally developed in 1919 by an SKF engineer, Arvid Palmgren, the spherical roller bearing (SRB) has since made its mark worldwide.

Created to complement the self-aligning ball bearing, due to its ability to accommodate misalignment under heavy loads, the initial SKF design has now become part of the largest family of products in the industry.



On the fabled Las Vegas Strip in the United States, the High Roller ferris wheel contains two of the largest SRBs ever produced by SKF, each weighing in at 8.8 metric tons. SKF spherical roller bearings can be found in many applications, including some where you might not expect them. A good example is the Bahrain World Trade Center, where three tower wind turbines, each 29 meters in diameter, are architecturally installed between the two 240-meter-high (50-story) towers and generate 1,300 MWh per year. The main shafts of the turbines were equipped with SKF spherical

roller bearings. The turbines went online in March 2008 and are operational 50 percent of the time, depending on wind conditions. Another alluring application fitted with SRBs is the rebirth of the Zeppelin after 60 years of absence following the Hindenburg disaster. SKF was brought in by ZF, the gearbox manufacturer for the Zeppelin NT, to help the new and improved airships to propel forward.

SKF's extensive SRB range delivers a range of benefits for specific operating conditions. For example, operators in contaminated environments in heavy industrial applications have increased their bearing rating life by up to four times with sealed SKF spherical roller bearings. Those working in the harshest of environments have benefitted from SKF's Three-Barrier Solution that delivers cost-effective, optimized rating life, minimal maintenance spherical roller bearings. New dimension gearbox design has even become possible thanks to SKF Explorer SRB's long service life and high performance.

Petra Oberg Gustafsson, product line manager self-aligning bearings at SKF comments: "From the very start, SKF has taken the lead in the development of self-aligning bearings. We introduced spherical roller bearings in 1919 and have been consistently improving them ever since. Building on Arvid Palmgren's original design, we now offer engineers the widest range of both open and sealed spherical roller bearings in the industry. With the continued push for high performance in ever more challenging environments, it will be interesting to see what the next 100 years of development generates!"

**For more information:**

SKF USA Inc.  
Phone: (800) 440-4753  
[www.skfusa.com](http://www.skfusa.com)

## Bison Gear and Engineering

## LAUNCHES NEXT GENERATION PERMANENT MAGNET AC MOTOR

Bison Gear and Engineering recently launched VFsync, a next generation permanent magnet AC motor. Designed for today's demanding machine drive applications, the new synchronous motors run at high efficiency with advanced variable frequency drives. The IP66/IP54 platform of three phase motors range in power from .25 to 1.5 hp, and are supplied with swivel connectors and shielded cables to make installation trouble free. Popular frame sizes include IEC B14, sizes 71, 80 and 90 along with NEMA 56C mounting. The product line includes the new motors, quick connect cables and a market leading, programmable and networked VFD available in an IP 20 panel style or enclosed IP66 models.

The new motors were optimized with FEA software and then tooled with highly efficient internal permanent magnet style rotors. VFsync provides a compact footprint that is 56% smaller and 63% lighter than common 3-phase induction motors. VFsync motors were designed to work seamlessly with



Bison Gear and Engineering's line of integral horsepower gear reducers to power even the most demanding applications with precise speed control. Each frame size is available in either 230 or 460 V construction, and either TENV, TENV w/encoder or TEFC styles.

**For more information:**

Bison Gear & Engineering Corp.  
Phone: (800) 282-4766  
[www.bisongear.com](http://www.bisongear.com)



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## Omron

### OFFERS AI CONTROLLER TO EXTEND EQUIPMENT LIFE

A new solution for human-machine collaboration is now available from automation solutions provider Omron Automation Americas. The Sysmac AI Controller handles several key steps in the data-driven decision process for predictive maintenance, thereby freeing up industrial professionals from tedious calculations, analyses and infrastructure upgrades.

This powerful solution can help manufacturers reduce the risk of bad parts or equipment damage by detecting issues early on and prompting immediate action to resolve them. Customers will be able to take advantage of Omron's advanced technology and its team of data scientists to facilitate predictive maintenance rather than figuring everything out on their own.

The AI functionality—also known as “machine learning”—is able to identify abnormal machine behavior without being explicitly programmed to do so. Since there could be many different factors and measurements that indicate an issue when observed together,

automating the feature extraction process saves a significant amount of time and resources. Leveraging the machine learning results during production is key to ensuring end user cost savings.

The process of collecting raw data from machines is completely automated by the new AI controller which operates on the “Edge” within the machine, ensuring higher data fidelity and consistency. In addition, the controller automatically creates data models from correlation analysis and monitor machine status based on that model. Without this automation, machine designers and operators would otherwise need to develop their own analytics and optimization capabilities in order to avoid cloud solution costs.

Rather than being a cloud solution, Omron's unique approach to artificial intelligence-based control involves hardware, offline software and in-person service. No internet connectivity



or IT infrastructure/service is required. The hardware is based on the Sysmac NY5 IPC and the NX7 CPU and includes Omron's AI Application Components, a library of AI predictive maintenance function blocks. Several additional AI specific utilities are also included.

Because the data collection and analysis is performed within the same hardware as the controls program, the solution provides the utmost data processing speed, accuracy and security. For the service component, Omron experts will assist in startup and provide periodic support.

#### For more information:

Omron Electronics LLC  
Phone: (847) 843-7900  
[automation.omron.com/en/us/](http://automation.omron.com/en/us/)

## Miki Pulley

### ELECTROMAGNETIC BRAKES PROVIDE MORE STOPPING POWER TO SERVO MOTORS

Miki Pulley spring-applied electromagnetic brakes safely hold a static position, without the need for external power. The BXR-LE Miki Pulley brake series is a power-off, engaged brake design. When the stator is energized, the brake is disengaged allowing free rotation. When no current is applied, compression springs halt the brake

rotor thereby stopping the input shaft rotation. This is an ideal feature to prevent rotation during power failure events.

Now there are 6 total size configurations in the BXR-LE series to choose from, all of which are designed for smaller machine and robotic applications, where cantilevered loads can



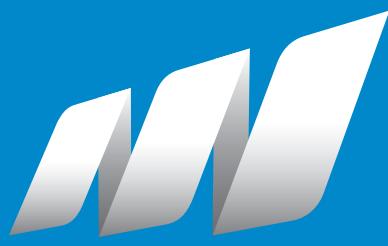
negatively impact operation.

These brakes have a slim design and high holding torque in a very compact package. They provide quiet operation with long service life. The brake's unique compact and lightweight design optimizes machine design efficiency. With accompanying voltage controller, power consumption is stepped down to 7 VDC after a split second of 24 VDC for brake actuation.

Typical servo motor applications include: Robotic arm joints to stop movement during a catastrophic power failure, Z-axis ball screw brakes on 3D printers, Pan/tilt brakes for security cameras, brakes for locking sensor alignment and many more.

#### For more information:

Miki Pulley US  
Phone: (800) 533-1731  
[www.mikipulley-us.com](http://www.mikipulley-us.com)



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## Heidenhain

### OFFERS SINGLE-SECTION LINEAR ENCODER FOR ABSOLUTE APPLICATIONS

Long machine tool axes are increasingly being equipped with linear drives, and Heidenhain's new LC 201 absolute linear scale was introduced to specifically meet those drive position feedback needs. This new scale is a single-section METALLUR tape encoder which is ideal for use in linear motor applications that may be required to reach high acceleration levels within the linear drive systems.

Heidenhain's LC 201 scale is especially useful in the machine tool and aerospace machining sectors, but will also work in applications for electronics, automation, medical technology and metrology industries.

The encoder has an absolute 2-track

graduation and a large single-field scanning window - using a reflective light method of scanning. This produces high signal quality, resistance to contamination - all with no homing routine required at start-up. This new single-section encoder is available in measuring lengths from 440 mm to 4240 mm, and the multi-section version goes up to 28 meters or more with the TNC Control. This new encoder uses the same reader head and cables as its multi-section older brother.

Developed as an addition to the LC 200 linear encoder family, the LC 201 has its same form, fit and functionality. Also, the entire LC 2xx series encoders are bolt-hole compatible with

Heidenhain's LB 382 series encoders, thereby providing a simple upgrade path for existing machines from incremental to absolute feedback.

Special features of the LC 2xx series encoders are:

- Absolute feedback in a one-piece scale body.
- Selectable thermal properties.
- Improved end blocks with integrated sealing air throttle.
- Multiple scanning units can be installed on one scale.

#### For more information:

Heidenhain Corporation

Phone: (847) 519-4856

[www.heidenhain.us](http://www.heidenhain.us)



## H2W Technologies

### EXAMINES COIL REDUNDANCY

In the case where an actuator is installed in a location where access is limited or where downtimes may be costly, there is a need for redundancy in a voice coil. A redundant voice coil comes with multiple coils and is designed to operate with equal performance in each of coil/magnet pairs. Each coil operates independently of the other and will have little to no effect on the other coil while in operation.

Other systems require simplified circuitry which would not allow the change of current polarity in order to change the direction, in these cases each coil can be used to drive the coil in a single direction. The challenge in manufacturing a redundant coil is ensuring the same performance no matter the coil, which requires precise manipulation of the magnetic

circuit design, and the precise coil layout to ensure the identical operation and constants for each coil. This will allow the controls to seamlessly switch between the two coils.

There are two ways of accomplishing this coil redundancy. The most common way would be to generate multiple coils operating on individual magnetic circuits. This requires a longer coil and multiple magnetic circuits; however this is the most robust design and the least vulnerable to damage or interference from the redundant coil. The NCC08-18-025-2R2C is an example of the multiple coil design. An alternate method, which allows for the most compact solution, would be a multi-filar wind. This method only requires one magnetic circuit, which is why the length is shorter. In this case multiple

coils are wound in the same winding space.

#### For more information:

H2W Technologies, Inc.

Phone: (888) 702-0540

[www.h2wtech.com](http://www.h2wtech.com)

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# Haydon Kerk Pittman

ANNOUNCES HKP MOBILE APP

Haydon Kerk Pittman, a business unit of Ametek Advanced Motion Solutions division, recently announced the release of the HKP Mobile App.

The HKP Mobile App offers streamlined user experience that optimizes accessibility and a wide variety of resources: applications suggestions, product data sheets, brochures, catalogs, guides, technical documents, case studies, white papers and more. Each resource can be easily shared among colleagues and teams with the “Send Asset” feature.

Additionally, customers can view our videos without Wi-Fi, locate a sales representative nearest to their location, and contact us for technical support or a quote. The HKP Mobile App also allows customers to shop the Haydon Kerk Pittman online store for hundreds of products that ship for free and in 24 hours.

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### For more information:

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[www.haydonkerkpittman.com](http://www.haydonkerkpittman.com)

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# Zero-Max

## OVERHUNG LOAD ADAPTORS SIMPLIFY SET-UP AND INSTALLATION

Overhung Load Adaptors from Zero-Max are now available in Double-Male Shaft Models. They simplify set-up and installation, provide protection from external contamination, and provide support for overhung loads both radially and axially.

The Double-Male Shaft OHLA version is a compact, self-contained design that provides a common mounting surface incorporating an input and output shaft. Alignment of both shafts is assured by design. It is a far superior, one-piece solution replacing multiple components often used to make the twin shaft connection.

Additional features include: sealed housing prevents internal contamination from outside operating environment, saves time and cost of installation, rugged cast iron housing design attractively coated, 130,000 psi stress-proof steel shafts, ball, tapered roller or spherical bearings available.

Applications include: (1) Jackshaft designs where the driveline is supported by the OHLA with a small sprocket at one end and a large sprocket

at the other end. (2) Pump and blower setups where an electric motor is coupled to one end of OHLA and an impeller or blower fan is mounted and supported at the other end. (3) Power take-off (PTO) where one OHLA shaft end connects to a female spline input on an engine, gearbox or transmission while the other end provides a male output shaft. (4) Female through-bore setups where the OHLA shaft extends through the unit acting as a supporting pillow block bearing and the sealed OHLA housing prevents contamination from the operating environment.

In addition to Double-Male Shaft OHLAs, Zero-Max provides a wide range of customized OHLAs required for special application requirements. A new 48-page OHLA catalog features a dedicated section describing the full-range of available special features.

### For more information:

Zero-Max Inc.

Phone: (800) 533-1731

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# SMT

# Siemens

## EXPANDS SIMOGEAR MOTOR RANGE

Siemens introduces the Sinamics G110M, a motor-integrated drive for Simogear gear motors, offering flexible control, integrated safety, simple installation and a space-saving design. With a high degree of protection—up to IP66—this new gear motor drive provides the perfect solution to most material handling-related challenges, including conveyors, warehousing, logistics, baggage and cargo handling, post and parcel shipping, plus numerous industrial applications in the automotive, appliance and test stand industries.

Simogear gear motors offer high torque density, low noise and high efficiency—and now with Sinamics G110M, it becomes easier for designers and system builders to integrate gear motors into a variety of control architectures. Plug connections for onboard I/O ensure fast installation, while optional power connectors deliver even more time savings. The system is delivered pre-configured and the drive offers simple yet comprehensive onboard diagnostic features. Options such as internal braking resistors and motor brakes—operational simultaneously—and integrated features such as “Quick Stop” and the limit switch function make this system ideal for conveyor applications. For uses requiring safety technology, the Sinamics G110M offers integrated safety functions



such as “Safe Torque Off” (STO), which can be activated via a fail-safe input or via Profisafe, without needing additional safety monitoring components.

Sinamics G110M features integral USS/Modbus RTU, Profibus and Profinet / EtherNet/IP communication profiles.

### For more information:

Siemens Industry, Inc.  
Phone: (800) 879-8079  
[www.youtube.com/watch?v=GgDxptBqpHg](https://www.youtube.com/watch?v=GgDxptBqpHg)

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# Wittenstein Smart Gearboxes

SHAPING THE FUTURE OF MANUFACTURING  
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Digital transformation is a catalyst for profound changes in all branches of industry. Products, production, sales and work culture are all going digital in the Industrial Internet of Things (IIoT), creating huge opportunities in the process. Wittenstein SE recognized this trend early on and has already been pursuing a digitalization strategy for several years now—with considerable success.

Patrick Hantschel is in charge of the Digitalization Center at Wittenstein, where 30 or so sensor, electronics, software, data and cloud specialists are actively shaping the digital transformation and driving it forward Group-wide.

"There's no doubt that digitalization's greatest potential lies in the increased efficiency and added value of our own products as well as in the development of smart products, additional services and derived business models," said Hantschel.

This is reflected in the company's experience since 2012 with "Future Urban Production," the shop window factory at the Group's Fellbach facility.

"That's where Industry 4.0 concepts have been implemented, tested, optimized and successively integrated into production and logistics,"

The new smart gearboxes with cynapse from Wittenstein alpha are a significant milestone on the company's path into the digital future.

Hantschel explained.

"It's accelerated the build-up broad digitalization expertise in manufacturing, assembly, logistics and materials management processes for the entire Wittenstein Group."

## Gearboxes Learning to Talk

Mechatronic drive systems that can collect and communicate information independently are fundamental to the IIoT's implementation. Their decentralized intelligence enables data that was previously hidden from sight to be mined, so that new knowledge can be created and information flows made more efficient.

"Our drive solutions are increasingly smart as a result, and we're expanding them with suitable digital services for the Internet of Things and the cloud. This gives Wittenstein the ability to analyze and interpret data. The knowledge gained from data analyses can then be incorporated into data based services and shared with customers," Hantschel said.

The development of a smart gearbox, which was recently unveiled during Hannover Messe 2019, is one example.

"Gearboxes have always been unable to talk in the past, but now they literally have something to say," commented Michael Herkert, product management, at Wittenstein alpha.

The Wittenstein product catalog has been gradually going digital for some time now with offerings like the sensorized Galaxie drive system, the iTAS servo drive system with a web server for automated guided vehicles and the smart drive system for heavy-duty torque multipliers.

Herkert said that the new smart gearboxes with cynapse from Wittenstein alpha are a significant milestone on the company's path into the digital future—thanks to an integrated sensor module that enables Industry 4.0 connectivity.

"In fact, after unveiling the smart gearboxes during Hannover Messe, Wittenstein became the first component manufacturer in our field to bring smart gearboxes to market as standard products," Herkert said. "They come



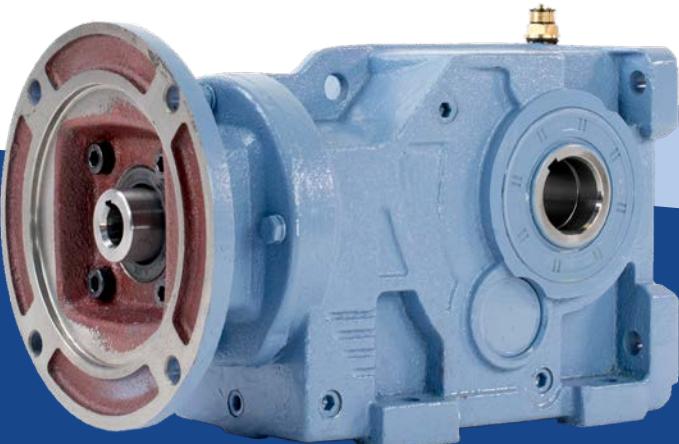
The digital transformation represents a major technological and social challenge. At the same time, it opens up new prospects for the future.





# INDUSTRY READY

## GEAR REDUCER PRODUCTS



### WINL Series Helical Inline Reducers

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in an industrial grade design, in other words there are no externally mounted parts—with its IO-Link interface and form-closed connection, the sensor module is elegantly integrated into the gearbox."

It's a fact that there are no major, external constructional differences between the Premium Line gearboxes with cynapse—they are identical in terms of design, size and contour, so that existing drive solutions need no further modification.

"The most important differentiator is the sensor module, which lets us output data using IO-Link as a standardized interface," Herkert said.

In practice, this means that smart gearboxes are able to identify and measure influencing quantities in the process and the environment which impact on gearbox operation, and exchange them with the machine control as well as with applications on IIoT platforms.

The cynapse line comes hand in hand with integrated logic functions that are capable of "thinking" and allow gearboxes to execute intelligent monitoring activities independently. Smart gearboxes measure temperatures and report overheating, they detect vibration, they count operating hours, and they store and document all events linked to gearbox use.

"All of this supports condition monitoring and preventative maintenance, minimizes the risk of gearbox damage

or machine downtime, and optimizes the availability and productivity of machines," Herkert added.

### Double ROI

For the first time in this form, gearboxes with cynapse deliver process data that originates directly from the gearbox itself. According to reports from the first lead customers, this direct and transparent visibility enables even more performance, reliability and availability, especially with critical axes. Critical operating states are avoided, laying the ground for efficient process improvements—an invaluable return on intelligence for machine operators.

"Invaluable but not priceless," Herkert said. "At the very latest, the costs which result from damage far outweigh the comparatively modest markup for the integrated sensor module. When you look at it that way, the return on investment is right as well."

It comes as no surprise to learn that Wittenstein alpha intends to follow up the launch of its Premium Line gearboxes with cynapse by gradually extending this feature to all other gearbox series.

*(This information first appeared in recent issues of Wittenstein's Move magazine.)*

### For more information:

Wittenstein North America  
Phone: (888) 534-1222  
[www.wittenstein-us.com](http://www.wittenstein-us.com)



The lessons learned from the Smart Factory are now paving the way for a new generation of Wittenstein products.



## Igus

### OFFERS NEW E4Q ENERGY CHAIN

Igus has introduced its new E4Q energy chain, which can be opened and closed in seconds without tools and has been specifically developed for the special requirements of unsupported lengths and long travels.

Igus, the Germany-based manufacturer of motion plastics, unveiled a prototype of the new E4Q in April at Hannover Messe. The chain links have a smooth, contoured design and a completely new crossbar concept with locking straps for weight reduction.

The company runs its North American operations out of Providence, R.I. More information about the new energy chain is available on the Igus website below.

High unsupported lengths and long travels with large fill weight create extreme stress on energy chains. The Igus developers have designed the E4Q e-chain intended for such application scenarios.

Based on the robust energy chain standard E4.1 from Igus, the new series brings along a long service life and a high degree of modularity. In order to optimize material and therefore the weight of the energy chain, shapes inspired by nature are used. The



and soft material that further reduces the sound level without restricting the stability of the stop-dogs.

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