

Oriental Motor

INTRODUCES GEARMOTOR CONTROL SYSTEM

A majority of applications need an electric motor to operate at lower speeds (less than 800 rpm). This can be achieved by using a garmotor. The mating of the fractional horsepower brushless DC motor with the helical gearbox creates a garmotor that better matches the needs of many factory floor applications. Go one step further and develop the garmotor with the highest power density performance found in electric motors below 120 watts. Oriental Motor has created a family of small brushless DC gear motors used in the speed control market (Figure 1).



Figure 1 BMU garmotor and driver.

The Gearbox

The gearbox uses helical gears to achieve reduced audible gearbox noise and simultaneously enhance its torque and speed performance. The gear teeth on the helical gear are cut at an angle to the face of the gear in a helix pattern. The gears, as they move, engage more gradually than spur gear teeth, causing them to run more smoothly and to operate with a much higher load.

Oriental Motor engineering has developed a new family of helical gearboxes to interface with the high-performance BMU speed control system. The gearbox sizes have been developed to match the brushless DC motor's traditional frame sizes but to minimize the gearbox's axial length. Three garmotor frame sizes constitute the BMU series of garmotor-based speed controls. They are the:

- 30 watt - 2.36" square by 3.19" maximum combined axial length
- 60 watt - 2.36" square motor, 3.15" square gearbox with maximum combined axial length of 3.78"

- 120 watt - 3.54" square by a maximum combined axial length of 4.52"

Typical helical gear efficiencies range from 93% to 97% depending on the gear ratio.

The wide speed range of the brushless DC motor provides the user with a myriad of garmotor torque and output speed combinations.

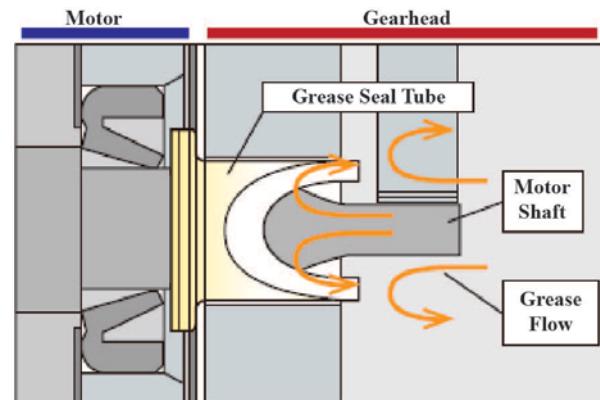


Figure 3 The grease seal tube redirects grease back into the gearbox.

Solving the Grease Problem

The curved gear teeth can provide a "pumping action" of the gearbox lubricant out of the gearbox and sometimes into the motor. The lack of lubricant will cause the gearbox to become noisier. The use of a motor shaft seal will prevent the lubricant from entering the motor. But shaft seals create motor friction torque that reduces overall motor efficiency and output torque. The tighter the seal, the higher the friction torque and the lower the motor efficiency.

Oriental Motor engineering has solved this problem by developing a new shaft seal system (patent pending). The new sealing system is shown in Figure 2. The grease seal tube mounted on the shaft directs the gearbox lubricant back into the gearbox (Figure 3) even before it reaches the motor shaft seal.

The New Brushless DC Motor

The new Oriental Motor brushless DC motor is a completely new design approach. This motor was designed to reduce motor losses, increase motor efficiency, shrink motor size and increase more motor torque and speed performance. The BMU series offers a speed range from 80 to 4,000 rpm or 50:1. Its speed accuracy keeps the speed ripple below 0.2%.

Energy efficiency is a major benefit for this brushless DC motor when coupled with the new driver. A typical 120 watt, 4 pole, AC induction motor and drive can reach a motor efficiency of just 70%, while the 120 watt BMU will top 82.7%. Add a low ratio helical gearbox to the mix and the total 120 watt BMU motor-drive-gearbox system achieves an industry leading 80% near power efficiency level.

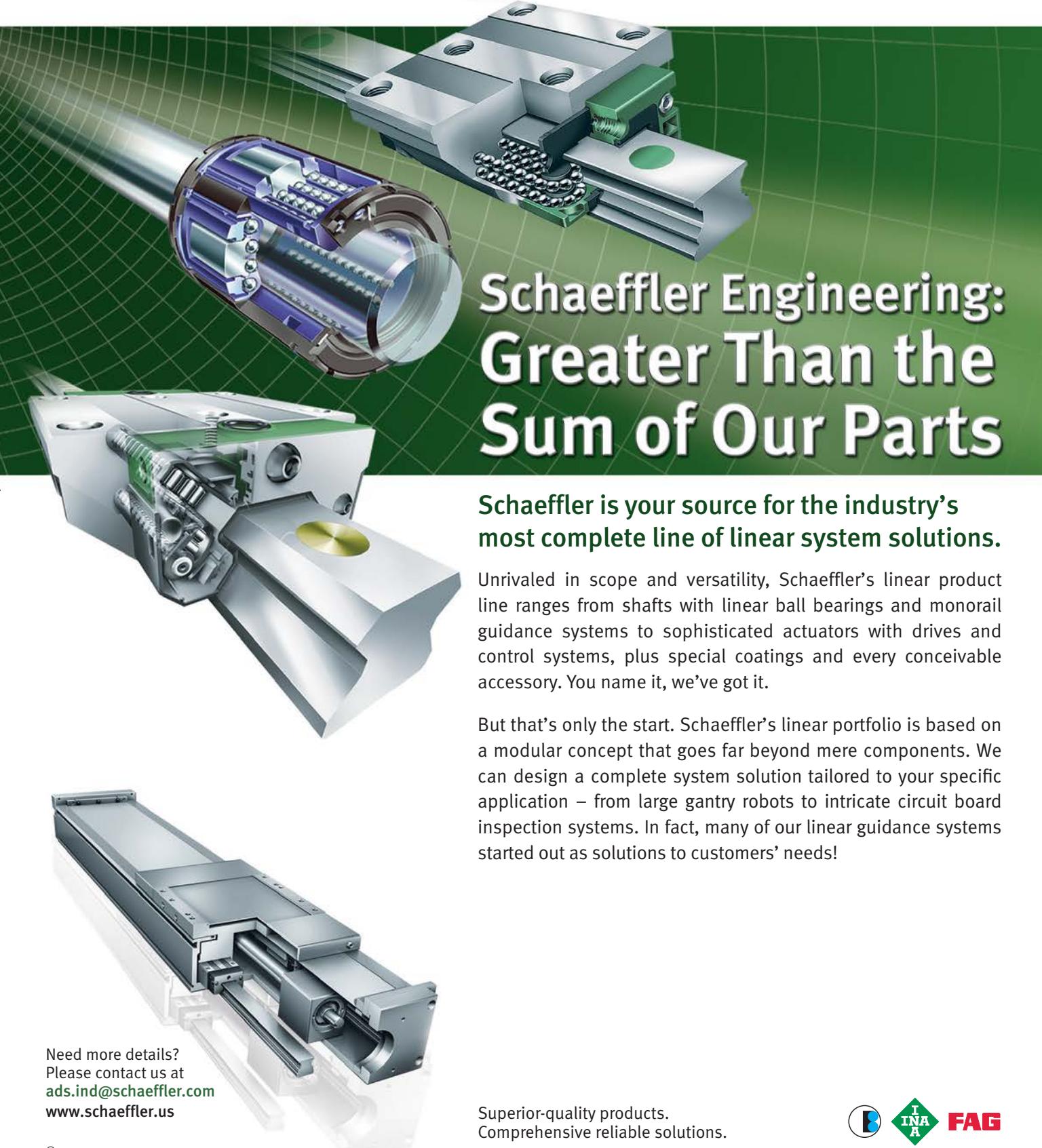
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Figure 2 BMU motor output shaft, including the new shaft seal system.

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Klüber Lubrication

INTRODUCES LATEST BEARING GREASES

Klüber Lubrication, a worldwide manufacturer of specialty lubricants, has introduced Isoflex Topas NB 52 and Isoflex Topas NB 152, two rolling and plain bearing greases based on a synthetic hydrocarbon oil and a barium complex soap. The products are suited for amusement industry applications, such as roller coaster wheel bearings, in order to optimize operational reliability, cut servicing costs, conserve energy and extend maintenance intervals. The special barium-soap thickener used in the Isoflex Topas NB 52 and 152 greases offers good load-carrying capacity, as well as resistance to water and ambient media. Both products protect against corrosion, as well as oxidation and aging.

Isoflex Topas NB 52 is suitable for temperatures ranging from -60°F to 250°F and short peak temperatures up to 300°F depending on the application. Isoflex Topas NB 152 can be used in a wide service temperature range of -40°F to 300°F . Isoflex Topas NB 52 is a versatile grease for many applications, including:

- rolling and plain bearings subject to high speeds and loads, as well as low temperatures—ideal for road, side-guide, and up-stop wheels
- tooth flanks in precision gears, such as bevel gears in milling machines and electromechanical actuators for valves

- electric contacts and components to reduce insertion forces

Isoflex Topas NB 152 is compatible with many plastics and is used primarily for medium speed rolling and plain bearings, such as coaster wheels, wheel bearings in racing cars, fan bearings and pump bearings. The grease is also suitable for plastic/plastic or steel/plastic friction points.

"Using Isoflex Topas NB 52 and Isoflex Topas NB 152 greases leads to more consistent torque over a wide temperature range as well as longer component life when exposed to water or aqueous media," said Stephen Mazzola, director of engineering and technical services for Klüber Lubrication North America L.P.

Mazzola recently conducted two training seminars on lubrication fundamentals and advanced lubrication of gears, bearings and chains at the Amusement Industry Manufacturers and Suppliers (AIMS) International Safety Seminar, Jan. 12-17 in Orlando. The AIMS International Safety Seminar is a comprehensive safety-training experience for individuals responsible for the care and safety of the amusement industry's guests.

For more information:

Klüber Lubrication
Phone: (603) 647-4104
www.klubersolutions.com



Curtiss-Wright

SUPPLIES MOTOR CONTROLLERS FOR RACING TEAM

Curtiss-Wright's Industrial division has announced that, via the Lynch Motor Company, it has supplied SigmaDrive motor controllers from PG Drives Technology to Cardiff University's Cardiff Racing Formula Student team.

Lynch Motor Company (LMC) has been designing and manufacturing traction motors and generators for



over 20 years and is known globally as a specialist in the field of low-voltage, high-torque permanent magnet DC motors and generators. The company has supported universities throughout the world for many years, and its traction motors have been used for numerous Formula Student (FS) electric-powered vehicles.

Throughout 2013/14, Cardiff Racing has taken its first steps in creating an alternative-fuel Formula Student car with the production of CRT01, a university research project the team intends to enter in the 2015 Formula Student event. This year, however, Cardiff Racing's budget and efforts have been split, with one team continuing the development of an internal combustion powered car for the 2014 FS event and

a second team researching and developing the alternative fuel version.

Whilst much research has been undertaken to prepare the team for the conversion from internal combustion to alternative fuel, one of the greatest challenges has been the development of an electric drive system. However, a breakthrough came when LMC managing director Trevor Lees offered student Matthew Moore a work experience placement during his GAP year between A-Levels and starting at Cardiff University. The work experience drove Matthew to get involved with the FS team when he started University and, having been involved with different universities and FS teams during his twelve-month work experience, Matthew decided to approach Trevor Lees for help during the development program for the alternative-fuel car, and so the relationship started.

Commenting for LMC, managing director Trevor Lees says: "I take great pleasure from working with universities and do what I can to help both students and teams. This can take the form of educational discounts and, in the case of Cardiff University, a presentation I gave on designing and developing electric drive systems, following which I offered advice on the components that can be used within them."

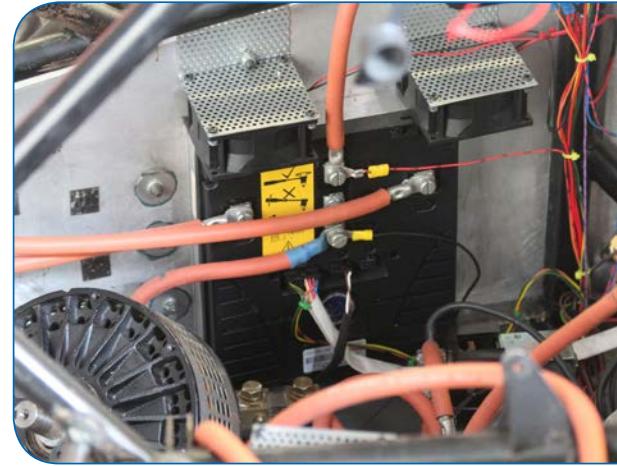
Having designed the drive system for its CRT01 electric car, the Cardiff Racing team approached LMC for the supply of two LEM-200 72 V, 15 kW DC motors and two PG Drives Technology Sigmadrive PMT835M controllers. The four-quadrant Sigmadrive controllers are supplying each LMC motor separately with a CANbus link to produce a differential effect and, like a hybrid vehicle, provide instant acceleration and regenerative braking to put energy back into the batteries. The electric drive system on the CRT01 is capable of providing a peak power output of 28.5 kW and rated torque of 400 Nm at 6,000 rpm.

PG Drives Technology's Sigmadrive PM motor controllers provide smooth and predictable speed control of permanent magnet traction motors across a wide range of system voltages and power ratings. Their advanced design includes features such as IMS technol-

ogy, high-resolution current measurement, CANbus communications and extremely low heat dissipation. The Sigmadrive PM range can also be configured for dual-traction applications and includes a range of dedicated electric power steer assist controllers.

For more information:

Curtiss-Wright Corporation
Phone: (973) 541-3700
www.curtisswright.com



A composite image featuring two photographs. The top photograph shows two men in hard hats and work clothes talking outdoors in front of a brick building with industrial signs like 'NO PARKING' and 'WARNING STOP, LOOK, LISTEN RAIL TRAFFIC'. The bottom photograph shows two workers in a workshop, one in the foreground working on a wheel and another in the background. The text 'DAY & NIGHT WE WORK HARD FOR YOU' is overlaid in large, bold, white letters across the center of the image.

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Maxon Motor

INTRODUCES HIGH-SPEED BRUSHLESS DRIVE

The new brushless drive with a diameter of 19 mm has been specially designed for high speeds and features low heat development and extremely quiet and low-vibration running. This little powerhouse has applications in centers for miniaturized processing, hand-held tools and medical technology. When combined with planetary gearheads, many possible variations

are available for applications in these key markets.

With its modular construction, this new brushless DC motor is available in three performance classes: the cost-optimized EC 19 at 60 Watt, the strong and high-speed EC 19 at 120 Watt and the sterilizable high-end version EC 19 at 120 Watt.

With Maxon motor's winding technology, it is possible to offer various voltage versions. The stator has been designed without slots. Therefore, no cogging torque occurs resulting in excellent control properties and extraordinarily smooth running. Together with an optimally balanced rotor, low-noise and low-vibration operation is easily achieved.

Maxon's new sterilizable planetary gearhead, the GP 19 M is suitable for applications requiring very high speeds - input speeds of up to



40,000 rpm. To accommodate such high speeds, the toothing and materials have been especially designed to minimize friction. A key demand placed on the material is 1,000 sterilization cycles. The gearhead contains a special shaft seal. Worth noting is the no-need to disassemble the drive unit for the sterilization process. The new 19 mm drives are particularly suitable for surgical and dental devices, such as arthroscopic shavers and bone drills. There is also a focus on respirators and CAD/CAM spindle drives.

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Maxon Precision Motors
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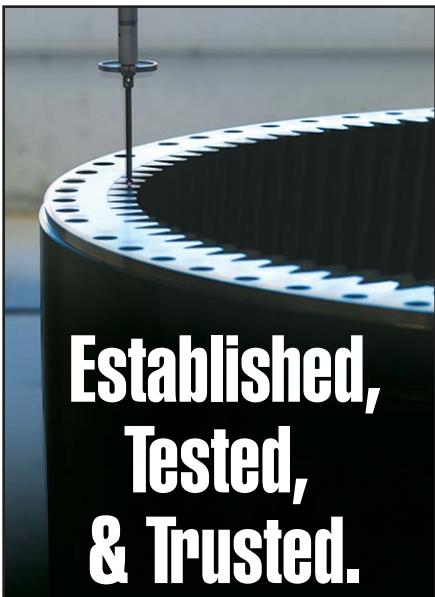
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Brevini Gear

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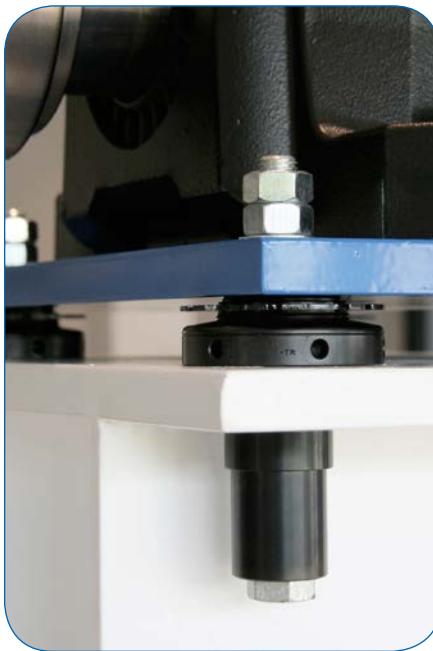
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SKF Spherical Washers optimize bolt mounting of machinery and bolted equipment by integrating unique design features promoting suitable performance in industrial, marine, and



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SKF Spherical Washers ultimately serve to reduce the likelihood of bolt relaxation by distributing bolt tension evenly, retaining proper bolt tension by preventing bolt bending, and keeping bolts straight as intended. The extended length of the spherical washer allows for the use of longer bolts, resulting in additional bolt clamping length and elongation in the bolt.

These two-part spherical washers incorporate a larger ring with a concave surface, which connects to its corresponding smaller convex piece to achieve application benefits, such

as an enlarged contact area with a reduced surface contact pressure. All washers are manufactured from high-grade alloy steel and feature a special surface treatment to enhance corrosion protection in humid, salty, and other corrosive or harsh environmental conditions.

Versions available for quick turn-around and delivery include Type SW standard height (60 mm or 2.36 in.), which users can easily machine down for lower washer heights as necessary, and Type SWLP low profile (20 mm to 34 mm or 0.79 in. to 1.34 in.). In addition to the stocked product line, custom spherical washers can be ordered (including the opportunity to specify alternative materials).

For more information:

SKF USA Inc.
Phone: (267) 436-6000
www.skfusa.com

Taylor Hobson

OFFERS BEARING MEASUREMENT TOOL

A precision surface measurement tool featuring an industry-leading high-speed column drive, precision positioning and 4 mm roundness and contour gauge has been introduced



by Taylor Hobson, a unit of Ametek, Inc. The new Talyrond 500H measures roundness, profile and surface finish on a single platform with high accuracy due to an extremely low noise floor. It is ideally suited for high-accuracy measuring applications including precision bearings, fuel injectors, crankshafts and turbocharger parts. Numerous specialized accessories allow the instrument to accommodate the industry's most demanding applications.

It accurately duplicates a machine tool's movements and exactly reproduces a work piece shape. This allows the Talyrond 500H to provide users with rapid feedback for efficient quality assurance. A low-noise metrology frame, accurate axis alignment and a patented data collection method provide it with unmatched straightness and roundness measurement capabilities. A high-resolution gauge measures linear or circumferential surface roughness. A frictionless air-bearing spindle and precision column measure roundness, cylindricity and straightness. A patented calibration technique performs radius, angle, height, length and distance measurements.

Simplified teach and learn programming techniques, comprehensive user prompts and on-screen instructions combine for easy, error-free operation. It performs calibration, center and level functions along with measuring routines automatically.

For more information:

Taylor Hobson (Ametek)
Phone: +(44) 116 276 3771
www.taylor-hobson.com

Heidenhain

EXPANDS ROTARY ENCODER SERIES

Heidenhain is expanding its third generation of absolute inductive rotary encoders with the ExI 11xx series, providing a single encoder safety solution for many industries such as packaging, automation and robotics. These new products are especially suitable for safety-related applications up to SIL 3, PLe, and Category 4. These applications involve high risks for the operator such as when they may interact with a robot.

The ECI 1119 and EQI 1131 each feature an increased single turn resolution of 19 bits while the EQI 1131 can track 4096 (12 bits) revolutions. The ECI and EQI encoders showcase improved vibration specifications (400 m/s² stator and 600 m/s² rotor), as well as a more durable multi-turn gearbox, and an increased permissible axial motion of the shaft up to ± 0.4 mm. These encoders also have the advantages of previous bearingless, inductive encoders which include the non-contact de-

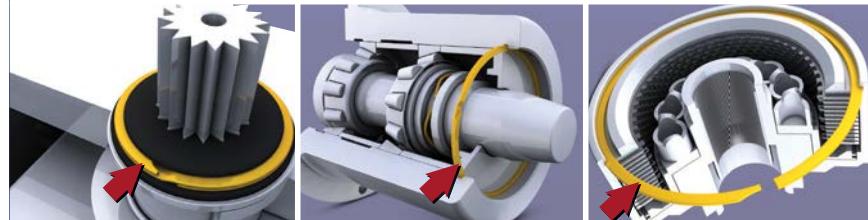


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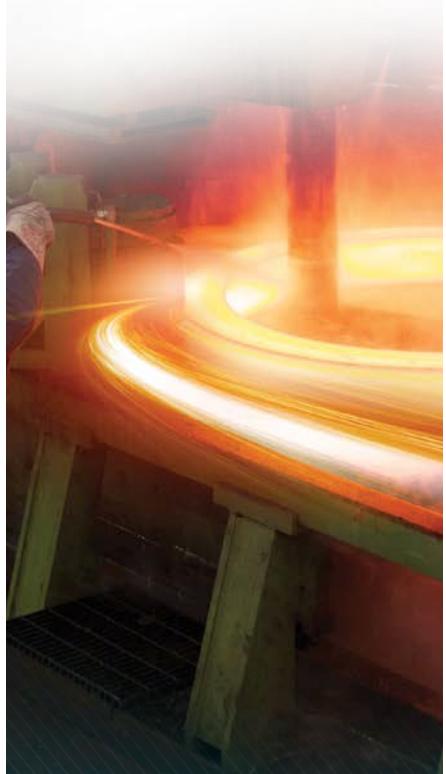
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sign, resistance to contamination, no mechanical self-heating, and reduced sensitivity to radial runout.

The ExI 11xx series joins the ExI 13xx encoders as the new generation of Heidnehain encoders that feature functional safety and improved robustness. These encoders offer a host of different safety related functions that can be upgraded even further with the implementation of safe control that supports the EnDat Safety Master. These additional measures can be implemented independently of the control loop parameter. This allows the safety measures available to work directly with a controls safety module, without being affected by changes in control-loop parameters.

For more information:

Heidenhain Corporation
Phone: (800) 233-0388
www.heidenhain.com

J.W. Winco
RELEASES STAINLESS STEEL
HANDWHEELS

J.W. Winco, Inc., a supplier of standard industrial machine components, announced it now offers GN 227.4 A4 stainless steel spoked handwheels, in inch and metric sizes, with and without revolving handle.

These RoHS-compliant handwheels, often used where a noncorrosive component is necessary, such as the marine and food industries, are renowned for their high mechanical strength and are not affected by shock and knocks. They are of an attractive design and shape at a reasonable cost.

Handwheel body is pressed A4 (AISI 316L) stainless steel, with a shot blast satin finish. Solid hub is also made of A4 (AISI 316L) stainless steel, welded to body. Inch size versions are available with round bore without keyway. Metric sizes are offered with round



bore without keyway, round bore with keyway, and square bore. Various additional bore sizes, keyways, set screw holes are also available upon request. Diameters range from 160 to 400 mm (6.3 to 15.74 inches).

J.W. Winco offers an extensive selection of inch and metric size adjustable levers, cabinet U-handles, plastic and steel hinges and locking mechanisms, revolving and retractable handles, hand wheels, hand cranks, tube connection and conveyor components, and more.

For more information:

J.W. Winco
Phone: (800) 472-0670
www.jwwinco.com

Bosch Rexroth

DEVELOPS SMART CONTROL IN
AUTOMATION

In the future, mobile devices like smartphones and tablet PCs will conquer offices and production halls of modern companies. With the help of these devices many processes can be simplified and made even more efficient. Glaub Solution GmbH situated in Salzgitter, Germany, develops HMI solutions which can be used to operate complete automation systems from smart devices by means of apps.



The systems are based on Open Core Engineering with Open Core Interface technology as well as the controls IndraMotion MLC and IndraLogic XLC from Rexroth.

Since 2012 Glaub Solution GmbH in Salzgitter has been working on a native app for controlling automation systems. The solution that is suitable for Android and iOS devices allows today operation and diagnostics for a three-axis system via smartphone and tablet PC.

First attempts to connect apps via OPC servers to the PLC were not sat-

isfactory with regard to performance and flexibility. Finally, Glaub found an efficient way to develop the ECO/App SmartControl using Open Core Engineering – without the need for additional hardware or software licenses. “Open Core Engineering from Rexroth gave us the opportunity to realize controlling independently of IEC programming, because we can directly intervene into the control core of the PLC – with an effort of only a few hours,” explains Niko Glaub, managing director of Glaub Solution GmbH.

The solution by Glaub demonstrates how easily and quickly numerous functions can be implemented with Open Core Engineering. The access to PLC variables, to axis functions and the diagnosis log can be realized comfortably in high-level languages (C++, Objective-C or Java) using the function libraries of Open Core Engineering. And this can be accomplished within a minimum of time: After having configured the PLC with the Rexroth engineering tool IndraWorks, Glaub merely had to add the headers and the library files from Rexroth into the project. For this, Rexroth offers, for example, libraries with more than 500 ready configurations.

The result: In the case of the ECO/App SmartControl, a toolbar on the side of the screen allows direct access to the most important menus. Apart from gesture control, the user can utilize the motion sensors of the mobile device: The axes of the machine move towards the direction, to which the user tilts his tablet. The tilt angle determines the speed of the movement. Unlike conventional, stationary operator devices, smart devices that communicate over WLAN offer the user a significantly higher degree of flexibility.

“With Open Core Engineering from Rexroth we can create optically attractive user interfaces for machines which don’t discourage their use, but are fun,” says Glaub. “With this solution, Rexroth pushes the door to Industry 4.0 wide open.”

For more information:

Bosch Rexroth

Phone: (800) 739-7684

www.boschrexroth.com

Glaub Automation & Engineering GmbH

Phone: +(49) 53 41 86 39-0

www.glaub.de

Emerson

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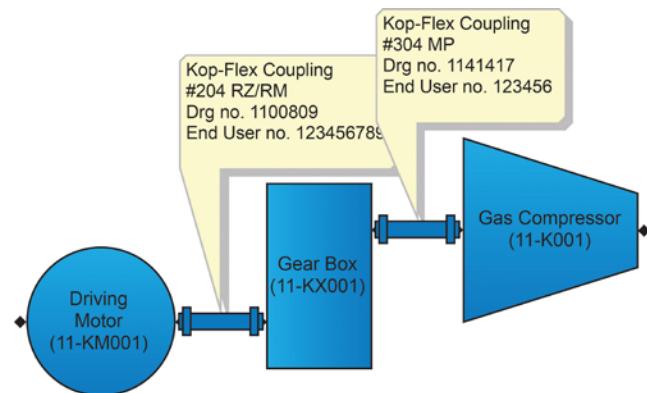
Emerson’s Power Transmission Solutions introduces industry’s first online tool for tracking the location, life history and latest revision drawings and installation instructions for all critical drivetrain couplings owned by customers, whether installed or in spares inventory. Developed by Emerson’s Kop-Flex business unit, the web-based tool, known as the Asset Management Program (AMP) for couplings, accurately identifies couplings, graphically displays the location in a specific drive, identifies parts/couplings at the site that are interchangeable, makes assembly drawings a click away and gives a detailed service history and action to be taken during service intervals. The Coupling AMP will be introduced and demonstrated at the Turbomachinery Show, September 22-25, in

Emerson’s booth 1231. The demonstration site is available at <http://amp.emerson-ept.com>, with the login and password of “turbouser.” Users can see two plants and two rotating equipment assemblies in each, with sample data.

Developed by a worldwide engineering team experienced in coupling design, maintenance, repair and troubleshooting, the Coupling AMP provides in-depth information on components critical to the operation of major systems such as compressors, turbines or pumps. “Plant engineers plan shutdown maintenance with tight timeframes, yet they struggle to identify couplings by make, model, serial number, stock code, manufacturer’s part number, etc.,” said Parimal Deshpande, senior industry specialist for Kop-Flex. “Adding to this disorganization are emergencies. Engineers may take parts from new or old couplings and use them in repairs. This is not only bad practice because of balancing issues, but it makes it almost im-

possible to track where all these parts went, and what’s been stripped from old or new couplings, etc. In a couple of years, they have no idea what’s happening. Moreover, it’s very difficult to track the service history of couplings. Customers told us there’s no commercially available software designed with a friendly, useful system to organize the needed information the way they’d like to access it. Coupling AMP addresses this void.”

Coupling AMP has been carefully built to categorize, display and log information in the exact same way that plant engineers already visualize it. “Engineers sometimes identify



couplings by serial number, assembly drawing number or their own stock code,” explained Joe Corcoran, manager, global services and training for Kop-Flex. “For them, we have a search function. More commonly, rotating equipment engineers know the exact location of a coupling by heart, and for these cases there is an ‘Equipment Overview’ which is the first page after login.”

Coupling AMP’s custom graphics display specific drive configurations for rotating equipment. By clicking on a coupling, AMP opens a “coupling card” with all related information, such as end-user stock code, serial numbers, OEM part numbers, Kop-Flex part numbers, location of spares or interchangeable parts, bill of material, latest revisions of the assembly drawing, installation instructions and service history. The system also maintains records on customer training, trouble-shooting analyses, service reports, and more in a history associ-

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ated with a specific serial numbered coupling. This information is available 24/7 on the Internet.

Coupling AMP is a subscription service maintained by Emerson. It begins with a survey of a customer's site by a Kop-Flex representative where all relevant data is collected. Kop-Flex then

populates AMP and provides a user name and password to the customer. Edits and additions are handled via e-mail to Kop-Flex.

For more information:

Emerson Power Transmission
Phone: (800) 626-2120
www.powertransmissionsolutions.com

Ruland Manufacturing

UTILIZES BEAM COUPLINGS FOR MEDICAL APPLICATIONS



Ruland beam couplings are zero backlash, have high torsional stiffness and accommodate misalignment, making them well suited for encoder, tachometer and light duty power transmission applications commonly found in medical equipment. They offer low inertia, light bearing loads, and a balanced design for reduced vibration at higher speeds.

Ruland beam couplings utilize two sets of overlapping spiral cuts to increase torque capabilities and torsional rigidity when compared to the commodity style single beam coupling. Separating the spiral cuts into two sets gives the coupling better parallel misalignment capabilities while easily accommodating angular, complex, and axial misalignment. Zero backlash beam couplings are ideally suited for test and measurement, robotics, imaging, patient positioning, liquid chromatography, and lab analysis equipment which require accuracy of motion.

Ruland beam couplings are available with four or six beams in inch, metric, and inch to metric bore combinations ranging from $\frac{3}{32}$ " (2 mm) to $\frac{3}{4}$ " (20 mm). Four beam couplings are

more flexible with lower bearing loads while six beam couplings feature a larger body size with shorter spiral cuts to provide increased torque capability, repeatability, and torsional stiffness. Multiple beam couplings are available in aluminum for additional flexibility and low inertia, or in stainless steel for higher torque and increased corrosion resistance. Special dimensions, spiral cut patterns, finishes, and materials are available by request.

Beam couplings are part of Ruland's complete zero backlash coupling line which includes rigid, beam, bellows, disc, jaw, and oldham types. All couplings are manufactured in Ruland's Marlborough, Massachusetts factory and are RoHS2 and REACH compliant.

For more information:

Ruland Manufacturing Co., Inc.
Phone: (508) 485-1000
www.ruland.com

Zero-Max

DESIGNS LARGER ETP TECHNO SHAFT BUSHINGS

New, large size ETP Techno shaft locking bushings are now available for bore sizes of 110, 120 and 130 mm (4.330, 4.724 and 5.118 inches) from Zero-Max. They are designed for locking components to large shafts with repeatable precision for applications requiring frequent mounting operations. They are suitable for locking into position gears, pulleys, sprockets and other components in automated machinery.



Handling torque ranges from 247,820 inch lbs. to 283,223 inch lbs. (28,000 to 32,000 Nm), these ETP Techno shaft locking bushings from Zero-Max provide the highest radial load performance within the ETP radial actuation screw product line.

For more information:

Zero-Max
Phone: (763) 546-4300
www.zero-max.com

Stafford Manufacturing

OFFERS LATEST SHAFT COLLARS

A line of lever-actuated hinged shaft collars now offered with a mounting flat to create high-strength, quick-change pipe mounts and pipe hangers has been introduced by Stafford.



Staff-Lok Hinged Shaft Collars feature an integral hinge with a conformal cam lever for clamping and a knurled nut for adjusting the clamping preset, which makes it easy to open-close and clamp by hand. Now offered with a mounting flat with a countersunk hole and attachment screw, they are ideal for securely mounting pipe and tube requiring frequent or fast changes.

For more information:

Stafford Manufacturing Corp.
Phone: (800) 695-5551
www.staffordmfg.com

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- ▲ Independent laboratory with international CNAS certificate
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- ▲ The spindle Slewing bearings are extensively applied on China's largest rectangular shield pipe jacking, attributed to a substantial cost reduction in manufacturing shield machines.

- ▲ 25 years mfg experiences.
- ▲ More than 70 patent products, 50% of our products are sold to all over the world.
- ▲ Qualified supplier for Chinese army
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