

# Lubrication Scientifics

OFFERS FLEXIBLE, MODULAR DUAL-LINE LUBRICATION SYSTEM

The costs of bearing failure continue to plague heavy industrial plants, including steel and metals mills, particularly in rolling mills, multi-roll cluster mills, wire and rod mills and continuous casting operations.

Frequently these costs are a consequence of the failure to verify that bearings are receiving the proper amounts and types of lube oil or grease via the integration of monitoring capabilities into large, automated lubrication systems.

Without proper lubrication bearings seldom survive more than 5-10 percent of their potential service life. This is due to multiple factors, among which corrosion, heat, caustic elements and high shock loads are major players. However, according to Richard Hanley, president of Lubrication Scientifics (Irvine, CA), failure to properly lubricate production equipment, particularly at the critical points, can be an even greater cause of bearing failure, resulting in unnecessary downtime and replacement costs.

Lubrication Scientifics engineers and manufactures a variety of automated lubrication systems and components that are installed on equipment used in a wide variety of applications in industries including steel, pulp & paper, petrochemicals and mining.

The critical points Hanley refers to include those bearing points that, if not provided the appropriate lubricant at necessary intervals, will cause the most extensive damage to equipment or present risks to plant personnel.

"You can't be sure that you are lubricating all of those points successfully unless you have consistently accurate monitoring, or verification, that the lubricant is dispensed through the pump to the point where it should be injected—at proper intervals," Hanley said.

Yet, the large investments required to install and maintain lubrication systems with monitoring capabilities—often \$500,000 or more—discourages steel and metals processing plants from doing so. Or, if they are installed, they often require frequent and expensive repair or replacement.

## The conventional approach

The traditional methodology for heavy industrial lubricating applications is the conventional dual-line lubrication system. Capable of delivering varied amounts of lubricant, this type of automated system is ideal for lubricating thousands of points over long distances, with lube oil or grease output being controlled individually at each point. Also important, a single blockage will not shut down the entire system.

Yet, there are drawbacks to this standard dual-line system. Because it is composed of multiple one-piece lubrication dispensing blocks (each ser-

## A modular alternative

To dramatically reduce those monitoring investments and simultaneously reduce bearing maintenance and replacement costs, Lubrication Scientifics has introduced a new design in dual-line lubrication systems, one that can continuously lubricate and monitor critical equipment bearing points over long distances. The new system, known as the MDL-50 Series, is a modular design with lower investment costs and higher system sustainability.

Because of its modular design, the MDL-50 retains all of the benefits of standard dual-line systems; the MDL



vicing up to eight points), whenever a single lube point fails, the entire block must be replaced, resulting in added time and labor to the cost of a replacement block. But even more significant to many applications, critical point monitoring, or verification, is very expensive with standard dual line systems.

"In heavy industrial application such as steel mills and metalworking plants, the cost of critical point monitoring has become a key issue," Hanley says. "In large systems, it can cost thousands of dollars to monitor a single bearing point."

series offers several additional features that dramatically reduce lifetime maintenance costs. For example, it is never necessary to disconnect MDL supply or discharge valves to change out a non-working section. When valve replacement is required, only the piston section—rather than the entire valve block—is replaced, a job that takes only about two minutes instead of two hours.

In order to meet the largest lubrication system requirements, the MDL-50 system design also permits the creation of dual-line valves with an infinite number of outlets, making this technology ideal for the automated lubrication of equipment used in the

steel, cement, pulp and paper, mining and other heavy industries.

"Essentially, the user can tap into the dual lines anywhere and insert a dual-line valve, a capability that enables and the grouping of critical lubrication points into zones," Hanley explains. "Creating zones enables system designers to economize on monitoring hardware. In effect, this provides systems design options that have never before been available."

The new modular system is available in both carbon steel and 316 stainless steel for use in highly caustic environments, including those that are washed down with caustic solutions.

Plus, the MDL-50 series provides the flexibility of a "hybrid" system because it can be easily converted to dispense either grease or oil without having to abandon the original investment in dual-line components.

#### **Long-term benefits, short-term payback**

Hanley says that conventional dual-line systems with monitoring capa-

bilities cost users in excess of \$100 per point to incorporate monitoring hardware, plus installation expenses.

"Using the new modular dual-line approach with critical points grouped in zones, users can monitor everything tied to that valve, up to 360 points, for less than \$1,000," Hanley says.

He adds that, with modular dual-line systems dispensing grease, significant reduction of lubricant usage is required—sometimes a reduction of 90 percent. "This not only saves on grease costs but also virtually eliminates the high costs of grease disposal."

Hanley adds that while the savings of lube oil will not be as great as that of grease, ensuring that a constant supply of clean oil in the required amount and intervals will also greatly im-

prove on bearing life, which is the biggest payoff of the modular system.

#### **For more information:**

Lubrication Scientifics, LLC.  
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## Nexen Group

INTRODUCES COMPLETE GEARED BEARING SOLUTION

Nexen Group, Inc. has introduced a complete Geared Bearing solution based on their innovative Roller Pinion System (RPS). The new Geared Bearing package comes complete with a zero backlash gear mounted and dialed in on a precision grade high capacity bearing. Nexen's Geared Bearings are available in a wide variety of sizes and gear ratios, and preconfigured for fit, form and function, for easy integration into any precision rotary motion application.

Nexen's new Geared Bearing Product Selector tool makes it quick and easy to select the gear needed. Customers simply adjust online sliders for torque, gear O.D. size, accuracy and gear ratio requirements. The tool instantly shows all the options that fit. OEMs also have easy access to STEP files and specifications. Nexen holds bearings in inventory and gear raw material on hand, so bearings are available for fast delivery.

**For more information:**

Nexen Group  
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[www.nexengroup.com](http://www.nexengroup.com)



## AutomationDirect

EXPANDS AC MOTOR LINE

AutomationDirect's IronHorse line of general purpose three-phase motors now includes the MTRP-series 56HC-frame premium efficiency motors available from 1 hp to 3 hp. The rolled steel motors are available in 1,800 and 3,600 rpm models and feature 4:1 constant torque and 10:1 variable torque speed ranges, TEFC frames, cast aluminum end bells and removable mounting bases. MTRP-series motors start at \$142.00, meet RoHS and low voltage directives and are CSA and EU approved; available accessories include bases, junction boxes, fans and fan shrouds.

**For more information:**

AutomationDirect  
Phone: (800) 633-0405  
[www.automationdirect.com](http://www.automationdirect.com)



# Kollmorgen

SERVO DRIVE SYSTEM REDUCES OEM COSTS

Kollmorgen offers the AKD-N Decentralized Servo System, which reduces costs for OEMs while increasing machine effectiveness and design flexibility. Robust construction in protection class IP67 eliminates the need for protective enclosures, allowing for a smaller and more easily integrated switch cabinet. Because of its size, durability, and IP67 rating, the AKD-N can be mounted in the immediate vicinity of the motor. The patented design also allows for substantial cable reduction: The power supply, safety and fieldbus communication are combined in a single cable of only 11 mm, saving machine builders significant control panel space, weight and the related expense. (On the motor side, only one cable is needed for power, brake control and feedback—machine builders can save more than 80 percent in cabling.) The AKD-N's simple connection technology saves time on assembly, installation and start-up, while the integrated DC connection saves energy during operation. Faster cleaning cycles allow maintenance and service tasks to be completed more quickly.

#### For more information:

Kollmorgen  
Phone: (540) 633-3545  
[www.kollmorgen.com](http://www.kollmorgen.com)

# Schaffner

MOTOR DRIVES IMPROVE  
PERFORMANCE

Schaffner introduces the FN510 dv/dt filter which eliminates premature motor damage caused by high dv/dt, over-voltages on motor cables, motor overheating and more, to prolong service life motors in high precision environments. Suitable for motors from 1.5 to 30 Kw with frequencies up to 400 Hz (4 to 24A) or to 200 Hz (33 to 66A), this proven technology reduces high output voltage dv/dt from IGBT motor drives and restricts over-voltages caused by line reflections on motor cables. In addition to providing efficient motor and insulation protection, the FN510 includes an IP20 housing and touch-safe terminal blocks which contribute to overall equipment safety. Typical applications include servo drives, closed loop vector drives, machinery with servo or torque motors, robotics, pick-and-place machinery, motors with short to medium cables, and applications where sine wave filters are not applicable.



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Temperature monitoring and an internal cooling fan protect the filter from thermal overload. The FN510 eliminates the interference propagation towards components or conductors in the vicinity. They are easily installed and provide immediate results. Models are available to accommodate switching frequencies of 2 to 16 kHz. Meets UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939.

Schaffner FN510 filters are part of an extensive family of dv/dt filters and sine wave filters which improve motor-drive performance for applications where long cable lengths are a concern, even up to 690 vac.

### For more information:

Schaffner EMC  
Phone: (800) 367-5566 ext. 276  
[www.schaffnerusa.com](http://www.schaffnerusa.com)



## Warner Linear

STEERS UNMANNED VESSEL DESIGN

Research and development into unmanned vehicles has made considerable progress in the past few years. Designing fully autonomous vehicles presents additional challenges since they need to share operational space with human-operated vehicles. In an effort to advance the technology for marine surface vessels, a biennial competition is being held for univer-

sities to showcase their expertise; an endeavor that has been supported by Warner Linear.

The development of autonomous marine vessels and the technology required to operate them will bring significant benefits to applications in search and rescue, shipping security, environmental monitoring and marine science. Incorporating the latest technology and cutting edge software for the sensor systems with precise and reliable propulsion and steering arrangements will soon bring benefits to a number of applications.

15 university teams from five Pacific Rim countries, Australia, Japan, South Korea, Singapore and the USA, were set the challenge to design and build a highly capable unmanned surface vessel (USV)



to complete against each other in the Maritime RobotX Challenge (MRC), held in Singapore.

One group of undergraduate and postgraduate students from the University of Newcastle in Australia, was chosen to take part in the competition and needed some assistance with the steering system of their USV. The challenge led them to Warner Linear, part of the Altra Industrial Motion Group, and a leading manufacturer of rugged service electro-mechanical actuators.

Each team was provided with a 16-foot (5 meter) Wave Adaptive Modular Vessel (WAM-V) that needed to be equipped with propulsion, guidance and sensors that would enable it to complete a set of predetermined tasks. Each challenge, which included detection and avoidance of obstacles, as well as an underwater search for an acoustic source, was designed to test the design and implementation of the sensors and control systems.

One of the more basic elements of the design are the propulsion and steering systems that have to be integrated with the vision and guidance systems so that the vessel can avoid obstacles. The team from Newcastle chose to design a linkage that turned the electric outboard motors using linear actuators.

Following some initial research, the designers contacted Warner Linear to discuss the challenge and find a solution. Based on the team's design requirements, Warner engineers configured two identical K2x ball screw linear actuators, which operate at 24 VDC, with a 2,800 lbs (1,270 kg) load capacity. The 12" (300 mm) stroke and 5:1 gear ratio offered the required speed and torque to provide fast and accurate steering control, while the position feedback would provide the necessary information for the guidance software.

Nicolas Weightman, student team leader - hull mechanical and electrical comments: "While we didn't win the competition, the pair of donated Warner Linear actuators definitely gave us the advantage of being able to outmaneuver most of the other teams. We wouldn't have been able to run such a steering system without their help."

The high quality K2x linear actuators

are from Warner's B-track range. They have been designed for use in tough, high-load applications where they will be in frequent use. The ball screw actuators are designed to provide years of trouble-free service in harsh, marine environments. They feature integral o-ring seals, bi-directional holding brakes and Nitrotec treated end fittings for superior strength and corrosion resistance.

Models also feature heavy-duty, sealed double ball bearing motors and

a mechanical torque limiter for end-of-stroke and overload protection. High performance, synthetic, lifetime lubrication is used throughout, while unique, patented screw-end bearing guides provide smooth extension operation, high side-load capability and aids screw re-lubrication.

#### For more information:

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## Smalley

### EXPANDS WAVE SPRING SERIES

The question you are asking should not be how many miles did I ride or how many steps did I take, but "how did someone make a wave spring that small?" As engineers around the world design smaller and smaller assemblies, the question becomes, where can I find the compact components to support my designs?

Smalley has the answer with its newly expanded Crest-to-Crest Wave Spring Series. Smalley's popular C (imperial) and CM (metric) Series have been expanded; standard sizes are now available from stock down to .188" and 5 mm in diameter.

"Smalley was the originator of the Crest-to-Crest Wave Spring," states Darryl McBride, Smalley's director of engineering. "I was amazed when I saw our springs coiled up to 12 feet in diameter. What surprised me even more was how much engineering went into designing smaller springs. Our expanded spring series will open up possibilities for designers in the medical, computer and robotics industries, where wave springs couldn't fit before," states McBride.

#### For more information:

Smalley Steel Ring Co.

Phone: (847) 719-5900

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

## Fuji Electric Corp.

### EXPANDS VFD SERIES

Fuji Electric Corp. of America has announced that they have expanded their portfolio of variable frequency drives with the addition of FRENIC-Ace, a full-featured, versatile drive with advanced integration capabilities including applied power ratings, sensorless dynamic torque vector control, PM synchronous motor control, 2-channel on-board RS485 communication port and customer customizable logic.

"Flexibility was the main objective with the FRENIC-Ace, and this series, designed for the varying needs of OEMs, integrates easily into a wide variety of equipment and processes," said David Schrader, general manager of Fuji Electric Corp. of America's Drives and HMI Departments. "Today's customer is focused on reduced operational costs and lower total costs of ownership, and FRENIC-Ace delivers on those demands."

The FRENIC-Ace, which will be available for shipment in April, is the latest

innovation from the electronics manufacturer as they continue to expand their portfolio of variable frequency drives for the Americas. All models in the new series come standard with an industry-leading three-year warranty, and customers will now have the ability to use an optional keypad from a multi-function keypad with LCD display or a keypad equipped with a USB port for convenient connectivity to PCs. Additionally, the HMI with Keypad functionality allows customers to change function codes and modify the display layout.

"Fuji Electric continues to develop products that solve specific problems for our customers, and provide them with a reliable solution that's going to get the job done for many years to come," added Schrader. "The FRENIC-



Ace is a great addition to our existing product lineup, with the features and benefits that OEMs need."

#### For more information:

Fuji Electric Corp. of America

Phone: (732) 201-3842

[www.americas.fujielectric.com](http://www.americas.fujielectric.com)

# Encoder Products

## OFFERS MODEL 30MT ENCODER

Encoder Products Company (EPC) has introduced the all new Model 30MT, a low-profile 30 mm diameter magnetic encoder module. By means of advanced sensing and signal processing technology, the Model 30MT provides accurate incremental feedback, even in harsh operating conditions. With its threaded housing, the Model 30MT is simple to install. See the unboxing video for an overview.

Designed for tough industrial environments, the Model 30MT offers sealing up to IP69K and is virtually impervious to dust, dirt and moisture.

The Model 30MT features a chemically inert high-temperature nylon composite housing and non-contact magnetic sensing. The encoder is capable of operating in temperatures from -40° C to 120° C and features a threaded housing for easy installation. With a generous sensor-to-magnet air gap of 0.022", the Model 30MT holds ratings of 100g at 11ms for shock and 20g at 10 to 3,000 Hz for vibration.

Even with its tough housing, the Model 30MT features advance signal processing circuitry which allows for a wide sensor-to-magnet air gap while still providing excellent waveform symmetry and repeatability, delivering signal accuracy exceeding that of many magnetic encoders.

The Model 30MT is a versatile, cost-effective solution for non-contact, end-of-shaft rotary feedback in commercial, industrial and non-industrial applications. Some examples are: servo or stepper motor control; mobile equipment speed and steering sensing; timber processing machinery; studio and stage equipment; solar panel positioning; vending machines; rotary valve positioning; punch presses; and robotics.

### For more information:

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# Moticont

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Moticont has added two linear motors to its SDLM series of high speed direct drive linear motors which are also known as electric cylinders. These direct drive linear motors feature resolutions of 5  $\mu\text{m}$  (0.000197 in.) and 1.25  $\mu\text{m}$  (0.000049 in.) The integral, linear optical quadrature encoder directly connects to the shaft for the greatest possible accuracy.

Each motor features a continuous force rating of 20.1 oz. (5.82 N) and a peak force of 66.3 oz (18.4 N). This motor is designed with a larger air gap of 0.059 in (1.5 mm). The larger airgap allows the motor to be used for vibration, noise cancellation, photonics, gimbals, antenna positioning, medical devices, semiconductor handling, SMT machines, assembly, wafer handling, optical focusing, dynamic vibration absorption, scanners and laser beam steering and filtering where excessive side play or tilt is required.

The non-commutating SDLM-025-095-01-05 (5  $\mu\text{m}$  resolution) and the SDLM-025-095-01-01 (1.25  $\mu\text{m}$  resolution) Direct Drive Linear Motors have quiet long life plain linear bearings, a non-rotating shaft, pre-drilled and tapped mounting holes, and threaded (internal) ends of the shaft for easy integration into new and existing applications. These low cost direct drive motors are coupled directly to the load



providing high acceleration and speed with zero cogging and no backlash as with other drive systems such as ball screws, gear, and rack and pinion drives.

The SDLM-025-095-01-05 and SDLM-025-095-01-01 Direct Drive Linear Actuators are also available as a complete plug-and-play linear motion system with a matching motion controller.

### For more information:

Moticont  
Phone: (888) 785-1804  
[www.moticont.com](http://www.moticont.com)

# Zero-Max

## ETP-EXPAND IMPROVES PUMP DRIVE CONNECTION

Connecting a rotating piston lobe to a hollow shaft has been improved using the ETP-Expand, a patented bushing device that is fast and easy to install and adjust. The ETP-Expand was developed to simplify exchanging seals in pumps when fluid viscosity is changed. This is often required in pharmaceutical, chemical, food and beverage processing systems with the seal change needing to be done quickly and easily.

ETP-Expand is a device that con-

ncts to a hollow shaft, locking the impeller/lobe wheel of the pump motor into position using just one actuation screw. Considerable space-savings are gained by mounting within the hollow pump shaft.

### No Axial Movement When Tightened

The ETP-Expand is a patented precision bushing designed just for pump applications. Its unique design configuration accurately expands OD of the

ETP Expand when a single actuation screw is tightened. Since the expansion is caused by self-contained hydraulic pressure, the resulting force is perfectly even along all surfaces. Most important, the bushing aligns precisely without axial movement as it is tightened. The positioning is very accurate and takes just seconds.

Another key feature is its robust and precise design allowing it to be actuated thousands of times with repeatable accuracy and without any axial movement. An Allen wrench is all that is required to mount and lock it into position. ETP-Expand has sealed, clean lines that resist debris collection and cleans easily without any special maintenance. These features increase the efficiency of the pump system for a lower total operating cost.

### For more information:

Zero-Max  
Phone: (800) 533-1731  
[www.zero-max.com](http://www.zero-max.com)



# SG Transmission

DESIGNS CURVED PERMANENT MAGNET BRAKE

SG Transmission has designed a curved permanent magnet brake to be used in specialist medical equipment. The customized brake has been designed to control the height of a vertical and extendable pole, which moves linearly in oncology treatment machines.

The dual curve surface brake increases the working face of the brake to match that of the curvature of the pole, this ensures maximum contact and therefore a higher holding force.

Paul Short, technical manager at SG Transmission said:

"As this brake is used in an operating theatre to control a system suspended above the patient, it is very important to the customer that the brake is fail-safe. In the event of a power failure, the suspended weight of the mechanism must not fall freely. The challenge was to maximize the working pole area within a specific envelope size to suit the customer's needs. We delivered this unique concept to the customer in just 15 days."

This bespoke, curved brake is suited to applications in the medical, military and robotics industries, due to its precision, increased holding force and fail-safe qualities.

## For more information:

SG Transmission

Phone: +44 (0) 1388 770 360

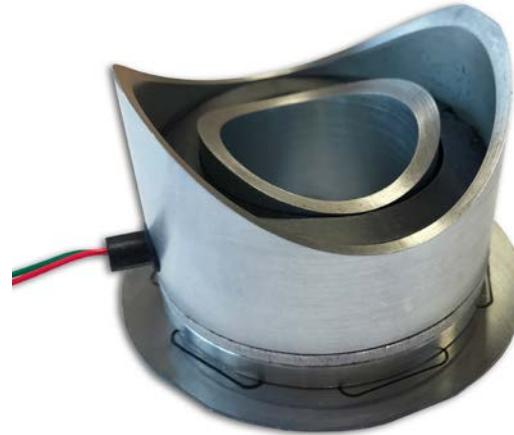
[www.sgtransmission.com](http://www.sgtransmission.com)

## Iwis Drive Systems

INTRODUCES MAINTENANCE-FREE STAINLESS STEEL CHAINS

Iwis Drive Systems introduces b.dry maintenance-free stainless-steel chains. The corrosion-free chains run completely dry, are extremely wear-resistant and withstand high dynamic loads. They are also maintenance-free and do not need any form of lubrication. These characteristics make them predestined for use in aggressive environments, for applications in which water or steam are applied or where strict cleaning regulations apply, such as the food and pharmaceuticals industries, in cleanrooms and in painting lines.

The new b.dry precision chains are suitable wherever relubrication is undesirable or not possible. They are hy-



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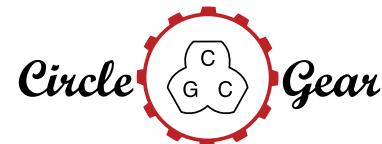
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gienic and run completely dry. Thanks to the high-performance plastic friction bearings in their links, they need no lubrication of any kind, which also eliminates the need for relubrication. Made from a high-performance polymer, the sleeves are heavy-duty, low-friction and FDA-compliant. Contact with foodstuffs or hygiene products is safe. The stainless-steel bushes are thin-walled, seamless and ball-drifted. The CF base chain is made from austenitic stainless steel, making it highly resistant to aggressive media. The wear life of the b.dry chains is significantly long. They can be used in a temperature range from -100 to +200°C. They are also available as roller chains with attachments or extended pins. Custom-developed chains and ANSI chains are also available on request.

**For more information:**

Iwis Drive System, LLC  
Phone: (317) 821-3539  
[www.iwisiausa.com](http://www.iwisiausa.com)



## Rexnord

### LAUNCHES SMART SPHERICAL ROLLER BEARINGS

Designed as an off-the-shelf solution for quick turnaround needs, Rexnord recently launched its new Industrial Internet of Things (IIoT) Smart PT Select Mounted Spherical Roller Bearings offering. These bearings are ideal for conveyor and fan and blower applications in the aggregate, air & fluid handling, cement, and material and package handling industries. A suite of digital technology is built into and around this bearing offering to make customers' jobs easier. Features include:

**Product specific QR code**—each bearing tag features a laser-etched QR code that enables the user to quickly access product specific information such as how to videos and instruction manuals from their mobile device.

**Dedicated mobile app**—Rexnord has updated their no-cost Bearing Mobile Pro app to include the capability to scan the product specific QR code found on each bearing.

**Proven quality**—every bearing is tested before it ships, including custom, state-of-the art testing for quality and reliability, spin testing under load, and backed by the standard Rexnord one-year warranty.

**Off-the-shelf solutions for quick turnaround**—designed using the latest techniques, combined with decades of application knowledge, and provides durability and value for a wide range of in-stock configurations for fast turnarounds.

Engineered bearing seals for increased product life—standard triple lip and clearance seal provide maximum ingress protection against contaminants; clearance seal reduces operating temperatures at higher speeds; and features nitrile material with protective metal shield.

**For more information:**

Rexnord Corporation  
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