



Philips

DEVELOPS INNOVATIONS IN STANDARD LINEAR MOTORS

Philips Applied Technologies recently developed a technique allowing standard linear motors to simultaneously provide movement along two axes rather than a single axis. This technique, patented as NForcer Technology, will allow designers to reduce the number of motors and electronic drive modules typically required for industrial automation machines.

According to Philips, manufacturers of pick-and-place and wafer processing equipment can produce more accurate production stages using this technology. The dual-axis linear motor provides a cost-effective solution for pick-and-

place applications and comes with all the benefits of linear motors.

“The beauty of this new innovation in linear motor operation is that it requires absolutely no modification to existing motor components,” says Dr. George Angelis, senior scientist at Philips Applied Technologies. “All you need to do is reposition the components slightly, and drive them in an intelligent way.”

The technique allows horizontally mounted linear motors to generate lift as well as lateral motion, providing both axes of motion from just one motor. It also enables the production of precision, magnetically levitated platforms with six axes of controlled motion.

In a conventional linear motor, the current-carrying conductors are arranged in coils with only the vertical sides in the magnetic field, resulting in lateral

motion. To achieve two-dimensional motion from a single motor, researchers at Philips Applied Technologies have shifted the position of the coils so the lower horizontal section also sits in the magnetic field.

According to the company’s press release, NForcer Technology allows the production of fully floating bearingless platforms that can be used in a vacuum, unlike air-bearing solutions. This platform can be implemented with only four horizontal magnet tracks and six forcers.

Philips first tested NForcer Technology by electromagnetic and mechanical dynamic modeling in a simulation environment. To confirm simulations, engineers also tested a commercially available motor by measuring the forces and torques

continued

product news

generated with NForcer. The engineers began designing a few prototype systems with their results.

Philips demonstrated this technology last October at the American Society for Precision Engineering annual meeting in Dallas. Demonstrations included a single-track roller bearing pick-and-place mechanism with 20 cm horizontal and 3 cm vertical movements achieved with a single forcer and a magnetically levitated platform, movable in six degrees of freedom with nanometer accuracy. Both were constructed from standard “off-the-shelf” motor components.

“The reaction from the linear motor companies was, ‘Why didn’t we think of that?’” says Joost Maltha, communications manager at Philips Applied Technologies. “Engineers were dumbfounded and surprised by the simplicity of the invention.”

The development of NForcer stems from Philips Applied Technologies’ work in providing industry with mechatronic solutions ranging from servomechanisms to positioning platforms for silicon chip manufacturing. The company will license NForcer to linear motor manufacturers/suppliers so they can immediately utilize the technology.

For more information:

Philips Applied Technologies
High Tech Campus 5
5656 AE, Eindhoven
The Netherlands
Phone: +31 6 10558116
joost.maltha@philips.com
www.apptech.philips.com

Applied Motion

EXPANDS STEPPER DRIVE LINE

The ST10-Q stepper drive is the latest addition to the product line at Applied Motion Products. It offers eight digital inputs, four digital outputs and two analog inputs. According to the



company’s press release, it is engineered in a compact and cost-effective package and is easily programmed with Q—a comprehensive programming language used to create and edit stand-alone programs. Option boards are available to add encoder feedback and RS485 functionality.

For more information:

Applied Motion Products
404 Westridge Drive
Watsonville, CA 95076
Phone: (800) 525-1609
Fax: (831) 761-6544
sales@applied-motion.com
www.applied-motion.com

Parker

RELEASES CATALOG FOR TRILOGY BRAND

Parker’s Electromechanical Automation Division recently released its new catalog featuring its Trilogy brand of linear motors and linear motor positioners.

The 114-page guide covers ironless and ironcore linear motors as well as industrial-grade and precision-grade linear motor positioners. New products include the Ripped series ironcore linear motors and the T1S/T1D positioners.

The catalog also includes an engineering guide offering discussion of linear motor technologies, advantages

and applications. For a free copy of Parker’s new product guide, visit www.parkermotion.com or call (800) 358-9070.

For more information:

Parker Electromechanical Automation
5500 Business Park Drive
Rohnert Park, CA 94928
Phone: (707) 584-7558
thiserodt@parker.com
www.parkermotion.com

SKF

OFFERS SPECIALTY COATING FOR BEARINGS

SKF has recently announced a patented NoWear coating application for bearings to promote longer life and increased machinery uptime. According to the company’s press release, the coating can withstand severe operating conditions due to load and speed variations, poor lubrication conditions, vibration, smearing and/or solid particle contamination. Applications include compressors, pumps, fans and blowers, and gearboxes.

For insulation, INSOCOAT roller bearings by SKF are available to protect against damage caused by AC or DC



electric current. These bearings feature a thin oxide layer that integrates the electrical insulating function to protect against electric arcing and damaging bearing erosion. All coated bearing boundary dimensions conform to ISO and ABMA standards.

For more information:

SKF USA Inc.
1530 Valley Center Parkway
Bethlehem, PA 18017-2266
Phone: (800) 541-3624
Fax: (610) 861-4811
skfusainfo@skf.com
www.linearmotion.skf.com

Heidenhain

RELEASES COMPACT MAGNETIC ENCODERS



Heidenhain recently released the new ERM 2400 series of modular magnetic encoders. Featuring more compact dimensions than the 200 series, the ERM 2400 series can be used in applications such as in spindles for milling machines. According to the company's press release, the encoders consist of a scanning head and scale drum assemblies. The scanning head has been redesigned, and offers a choice between a radial or axial cable outlet. The scanning heads have a 1-VPP interface. The scale drums are available in two versions—one that features a continuous centering collar on its inner circumference and is fastened with a frictional connection, and another that has feather-key slots to prevent unintentional rotation. These features

result in a compact encoder series that offers higher accuracy than gear wheel encoders and high permissible shaft speeds.

For more information:

Heidenhain Corp.
333 E. State Parkway
Schaumburg, IL 60173

Phone: (847) 490-1191
Fax: (847) 490-3931
info@heidenhain.com
www.heidenhain.com

Garlock Klozure

ISN'T IT TIME YOU TAKE A CLOSER LOOK?

Only Garlock Bearing Isolators are designed with a unitizing element and patented Cam-Lock design for long lasting bearing protection.

1 ENGINEERED UNITIZING ELEMENT

Unlike other isolators that use a simple o-ring, our unitizing element eliminates metal-to-metal contact that can create bearing contaminants such as o-ring fragments and bronze shavings that can lead to premature bearing failure.

2 PATENTED CAM-LOCK DESIGN

GUARDIAN™ Bearing Isolators are engineered with a patented Cam-Lock design, which makes them easy to install with no special tools required. In addition, this patented design will not score the housing bore, which can result in metal shards being released into the housing, damaging costly bearings.

A technology leader in bearing protection.

Garlock Klozure
HIGH PERFORMANCE DYNAMIC SEAL

www.klozure.com / 1-866-klozure
24-HOUR shipment available at no extra charge!

GUARDIAN™
BRONZE BEARING ISOLATOR

MICRO-TEC® II / ISO-GARD®
BEARING ISOLATORS

product news

WEG

SUPPLIES AUTOMATION PACKAGE FOR USIMINAS



A WEG turnkey system including transformers, MV motors and MV frequency inverters is used to automate a crane that carries molten metal at a plant in Brazil. Usiminas, a producer of iron and steel, employs the crane, which is one of the very few in the world to be controlled by a PLC and digital frequency inverters connected over the Profibus-DP communication network.

According to the company's press release, WEG's motors are designed for use in difficult operating environments, notably offshore oil and gas installations where safety and reliability are necessary. The MV motors achieve high-voltage efficiency while minimizing components levels. They also employ high-voltage IBGTs to reduce harmonic currents to low levels.

For more information:

WEG Electric Motors Ltd.
1327 Northbrook Parkway
Suwawee, GA 30024
Phone: (800) 275-4934
bquattlebaum@weg.net
www.weg.net

Pepperl & Fuchs

INTRODUCES NEW DEVICENET GATEWAYS

With K20 housing styles, the new DeviceNet gateways from Pepperl & Fuchs are available in single- or dual-channel versions. They are cUL listed to simplify panel construction for North American-based machine builders and users.

According to the company's press release, these gateways provide diagnostic capabilities while supporting polled I/O and change-of-state (COS) operations. Additional features include detected slave display, visual fault diagnostics, support for analog I/O and the ability to network safety devices.

These devices handle the complete data transfer, cyclically polling all participants connected to the wiring

system. The gateway can be placed anywhere in the AS-Interface segment. Single-channel gateways can handle hundreds of inputs/outputs connected up to 62 addressable I/O modules. The dual-channel gateways can support twice as many modules.

For more information:

Pepperl+Fuchs Inc.
1600 Enterprise Parkway
Twinsburg, OH 44087
Phone: (330) 425-3555
Fax: (330) 425-4607
sales@us.pepperl-fuchs.com
www.pepperl-fuchs.com



Midwest Motion Products

UNVEILS DC GEARMOTOR

Midwest Motion Products recently released a DC motor that measures just 2.14" in diameter and has a keyed output shaft of 12mm by 25mm. Compact-sized, the motor requires 7.2 amps at 12 volts to generate full load torque. According to the company's press release, it's rated at an IP54 protection range for operation in harsh environments. This high-torque, low-speed unit provides benefits for battery-powered electric vehicles, UGVs and military robotics.

For more information:

Midwest Motion Products
10761 Ahern Avenue SE
Watertown, MN 55388
Phone: (952) 955-2626
Fax: (480) 247-4096
randy@midwestmotion.com
www.midwestmotion.com

Flomerics

OFFERS FLOXPRESS SIMULATION SOFTWARE

Flomerics Inc. recently announced that its *FloXpress* simulation software will be available free of charge to all *SolidWorks 2008* users. *FloXpress* is a cut-down version of its *COSMOSFloWorks* product that enables engineers and designers to simulate complex, 3D fluid flow and heat transfer processes via a user interface.

According to the company's press release, *FloXpress* will enable users to predict and optimize flow and heat transfer processes without leaving the *SolidWorks* environment. It utilizes a CAD-to-CFD technology to detect and

mesh fluid regions within the model.

"Now, for the first time, *FloXpress* enables all *SolidWorks* users to try their hand at fluid flow simulation free of charge and find out just how quick and easy it can be," says Mike Reynell, director of marketing at Flomerics.

For more information:

Flomerics Inc.
4 Mount Royal Ave. Suite 450
Marlborough, MA 01752
Phone: (508) 357-2012
Fax: (508) 357-2013
info@flomerics.com
www.flomerics.com

**INNOVATIVE,
DYNAMIC,
CREATIVE,
CHALLENGING.**

JOIN US!

Apache by Boeing, transmissions by Purdy.

Immediate Opportunities in Challenging Aerospace Careers.

The Purdy Corporation is a leader in manufacturing flight critical Jet engine and rotor components including gears, gear boxes and transmissions for OEMs and the United States Government. Aerospace manufacturing opportunities offering stability, job satisfaction and growth are available in the following areas of expertise;

- Gear Management - Aerospace Manufacturing
- CNC Programming (Unigraphics) - Gear Box Housings, High Speed Machining,
- Gear Engineering - Process, Planning & Manufacturing
- Gear Machining - Spiral Bevel and Parallel Axis • ID/OD Grinding
- Gear Metrology • Gear Box Assembly and Testing

Excellent benefit and relocation packages.
An Equal Opportunity/Affirmative Action Employer.

Take your career to a whole new level, contact us at 860.649.0000 Ext. 226 or e-Mail to finance@purdytransmissions.com

THE PURDY CORPORATION
60 YEARS OF EXCELLENCE
www.purdytransmissions.com
586 Hilliard Street, Manchester, CT 06042, USA • Phone 860-649-0000, Fax: 860-645-6293

TEAM APACHE
Proud Supporters of America's Military.

Schurter

OFFERS METAL SWITCH WITH
DOUBLE POLE CONTACTS AND
SEALED MICROSWITCH

Schurter Electronic Components has expanded its vandal-proof metal switch to include double pole and sealed microswitch versions. The MSM DP momentary switch is designed with separate switching contacts for applications including industrial, commercial and public access areas where signals are used to indicate when an apparatus is in use or an emergency situation is present.

According to the company's press release, The MSM SPDT and DPDT feature seal protection that enables the units to be used in adverse conditions where increased humidity, condensation or water may get into equipment. These switches are used in outdoor installations, commercial cooking appliances and industrial laundry equipment.

The MSM switches feature stainless steel construction and are available in several mounting dimensions. Standard

or lettered versions with optional point or ring illumination are also offered. Pricing starts under \$10 for 100 pieces.

For more information:

Schurter Inc.
447 Aviation Blvd
Santa Rosa, CA 95403
Phone: (707) 636-3000
mtibbs@schurterinc.com
www.schurter.com



Hoerbiger-Origa

LAUNCHES
NEW SIZING PROGRAM



Hoerbiger-Origa Ltd. recently released a program that assists design engineers with sizing and selecting electric linear actuators. According to the company's press release, *EL-sizing* offers an intuitive, user-friendly work environment that carries out calculations of static and dynamic movement parameters.

Upon entering the values, a list of suitable linear drives is created. Complete linear drive/motor packages can also be selected. An automatically generated

parts list, complete with order numbers, searches for the right drive, motor and accessories to meet clients' needs.

For more information:

Hoerbiger-Origa Ltd.
Unit 12 Brunel Court
Waterwells Business Park
Gloucester GL2 2AL
United Kingdom
Phone: (+44) 8700-600655
Fax: (+44) 8700-600656
info-hogb-sales@hoerbiger.com
www.hoerbiger.com

Ono Sokki

LAUNCHES SLIM-BODY
GAGE SENSOR



Ono Sokki Technology, Inc. recently unveiled its GS-4630 linear gage sensor capable of measuring dimensions, thickness, displacement, height, depth and flatness.

According to the company's press release, the sensor maintains high, consistent accuracy using linear glass scale technology. It produces measurements of 0.00004" with a measuring range of 0-30 mm. Endurance testing has rated the gage sensor over 5 million cycles.

Designed to fit tight quarters, the GS-4630 boasts a waterproof seal and a dust bellows. Its slim body makes it more flexible for mounting inside machinery with limited access space.

The sensor is compatible with an array of remote displays, comparators and interfaces with various outputs. A variety of interchangeable contact points are also available.

For more information:

Ono Sokki Technology, Inc.
2171 Executive Drive #400
Addison, IL 60101
Phone: (630) 627-9700
Fax: (630) 627-0004
kujjiye@onosokki.net
www.onosokki.net

Your custom gearing needs are unique. From tooth geometry to heat treating and grinding, everything has to be exactly right—every time. And the highest quality gears start with quality gear forgings.

Now—more than ever—Clifford-Jacobs is ready to meet your exacting needs for gear blank forgings up to 30 inches in diameter in quantities ranging from 25 to 1,000 pieces per run. Produced exclusively from Timken® quality steels, you can count on Clifford-Jacobs gear forgings giving you the best in performance. And with our expanded CNC equipped die shop and huge raw material inventory, we are **ALL GEARED UP** to serve you better than ever.



CLIFFORD-JACOBS FORGING

P.O. Box 830 Champaign, IL 61824-0830
217.352.5172 fax: 217.352.4629
sales@clifford-jacobs.com



CLIFFORD-JACOBS.COM ■ ISO 9001:2000 CERTIFIED

ALL GEARED UP

APRIL 2007 Power Transmission Engineering

FOCUS ON GEARS & GEAR DRIVES

- TECHNICAL ARTICLES
- CASE STUDIES
- FEATURES

plus
The Latest
product and industry news

Bortech

INTRODUCES WELD
OVERLAYING
AND RESTORATIVE SYSTEM



Bortech Corp. recently introduced BoreClad, a new system for weld overlaying and restorative buildup. The system is used for applications in restoring worn construction, industrial and military equipment, pit, quarry and mining processes and other parts needing rebuilding due to abrasive wear.

BoreClad uses MIG, solid or flux core weld processes along with the company's patented step method to position weld beads inside round components. This system offers optional weld/no weld zones to accommodate keyways, and can weld mild steel and all stainless steel and nickel alloys.

The BoreClad machine has a current capacity of 200 amps at 100% duty cycle. Standard torches work

within IDs of 1.2" to 13". Custom overlay machines can be manufactured for larger workpieces.

For more information:

Bortech Corp.
66 Victoria St.
Keene, NH 03431
Phone: (603) 358-4030
Fax: (603) 358-4007
lwhite@bortech.com
www.bortech.com

Belden

OFFERS CORROSION-
RESISTANT JOINTS FOR
VACUUM APPLICATIONS

Belden Inc. recently unveiled a line of corrosion-resistant joints for ultra-high vacuum applications. The assemblies are manufactured from a variety of stainless steel grades including AISI 303, 304, and 316L. The yokes and the pins and blocks of the joints are machined from the same stainless steel material.

According to the company's press release, the joints can be custom-assembled for specific applications and operating criteria. They can also be supplied free of grease and lubricants to minimize the effort needed to clean the parts for installation.

For more information:

Belden Inc.
2500 Braga Drive
Broadview, IL 60155
Phone: (708) 344-4600
Fax: (708) 344-0245
info@beldenuniversal.com
www.beldenuniversal.com

SKF

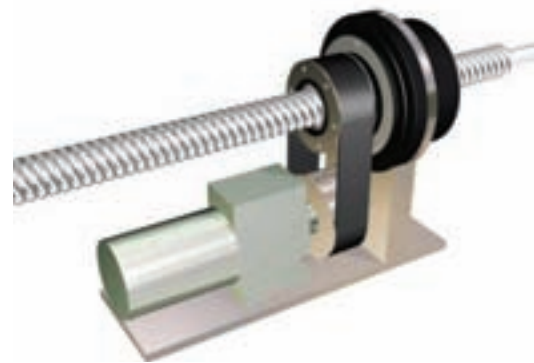
PROMOTES HIGHER SPEEDS
AND LOW NOISE WITH
BALL SCREWS

SKF's compact, long-lead ball screws with a rotating nut design allow the drive motor to move with the nut to reduce inertia, require less power and achieve higher linear speeds. According to the company's press release, these ball screws integrate a nut rotating inside the bearings and along the screw shaft.

They're available in Series SLT and Series BLT versions, with diameters ranging from 25 mm to 50 mm and leads ranging from 20 mm to 50 mm. Custom options include double-protection wipers and brush wipers as well as custom long-lead screws. Applications include packaging and automation systems, laser cutting and production machinery.

For more information:

SKF USA Inc.
1530 Valley Center Parkway
Bethlehem, PA 18017-2266
Phone: (800) 541-3624
Fax: (610) 861-4811
skfusainfo@skf.com
www.linearmotion.skf.com



Bosch Rexroth

OFFERS LINE OF HYDRAULIC CYLINDERS

The CDT1 and CDT4 series of NFPA tie-rod hydraulic cylinders are available with fluorocarbon, NBR, PTFE and wear-resistant polyurethane seals. Rexroth uses a chrome-plated piston rod to extend life and prevent damage. The cylinders also feature a single removable bearing made of ductile iron.

Piston rod diameters range from ½ inch to 5 ½ inches on the CDT1 series and from 1 inch to 5 ½ inches on the CDT4 series. The cylinders are designed for applications such as machine tool, automotive, press, plastics, civil engineering, material handling and wood/paper equipment.

For more information:

Bosch Rexroth
5150 Prairie Stone Parkway
Hoffman Estates, IL 60192
Phone: (610) 694-8298
Fax: (610) 694-8339
aaron.weida@boschrexroth-us.com
www.boschrexroth-us.com

Sakor

ANNOUNCES NEW TEST SYSTEM FOR HYBRID DRIVETRAINS

Sakor Technologies Inc. recently unveiled the *HybriDyne* series of hybrid vehicle driveline test systems. According to the company's press release, *HybriDyne* is a comprehensive test solution for calibrating the performance, efficiency and durability of all aspects of hybrid drivetrain systems including electrical assist, diesel electric and fully-electric vehicle systems.

The system is capable of simultaneously determining the performance and efficiency of each component and sub-system being tested, as well as the entire system as a whole, in real time. The mechanical control and data acquisition components manage and monitor all engine and mechanical system functions, while the subsystem monitors and controls all electrical values. The *DynoLAB* system provides steady-state testing, as well as complete road load and in-use simulation as customer requirements dictate.



For more information:

Sakor Technologies, Inc.
2855 W. Jolly Rd.
Okemos, MI 48864
Phone: (517) 332-7256
Fax: (517) 332-7250
info@sakor.com
www.sakor.com

Danfoss Drives

INTRODUCES FCD QDRIVE FOR WALL OR RAIL MOUNTING

Danfoss Drives recently introduced the FCD QDrive, an enclosed drive solution engineered for wall or rail mounting in any position or atop a motor without a circuit breaker or output contactor. According to the company's press release, the FCD

QDrives deliver 0.5 to 4 horsepower and provide automatic motor tuning, dynamic braking and AC braking and mechanical brake control.

Features include a closed-loop controller, precise stop, speed-compensated stop, counter stop and flying start. They can be utilized for bus communication across a number of industry standard configurations in material handling, packaging and food and beverage applications.

The QDrives eliminate the need for fuses and are equipped with a built-in RFI filter and harmonic filter. They provide complete drive and motor protection, with options including a local control pad, circuit breaker and output contactor.

"FCD QDrives minimize wiring to eliminate the need for expensive shielded cables and hours of costly installation work," says Darren Lecke, product manager at Danfoss. "Additionally, all drive functions can be grouped in one module of a plant to reduce installation time as well as planning and commissioning, which is particularly significant for OEMs striving for modularization."

For more information:

Danfoss Drives
4401 N. Bell School Rd.
Loves Park, IL 61111
Phone: (800) 432-6367
Fax: (815) 639-8000
salesinformation@danfoss.com
www.danfossdrives.com



product news

PI

EXTENDS LINE OF STEERING MIRROR PLATFORMS

PI (Physik Instrumente) recently extended its line of S-330 steering mirror platforms. According to the company's press release, these new additions will provide larger angles, higher bandwidth and more stability. Six closed- and open-loop models are available for mirrors up to 50 mm. These flexure-guided, piezoelectrically driven systems can provide higher accelerations than other actuators, enabling step response times in the sub-millisecond range.

Applications include beam correction, laser surgery, image stabilization, interlacing, dithering, laser scanning/beam steering, optical communications and high resolution microscopy/spectroscopy.

PI steering mirrors are based on a parallel-kinematics design with coplanar rotational axes and a single moving platform driven by two pairs of differential actuators. They provide symmetrical dynamic performance in both axes with faster responses and better linearity in a smaller package.



For more information:

PI
16 Albert St.
Auburn, MA 01501

Phone: (508) 832-3456
Fax: (508) 832-0506
info@pi-usa.us
www.pi-usa.us

Stafford

RELEASES ROTARY ENCODER COLLARS

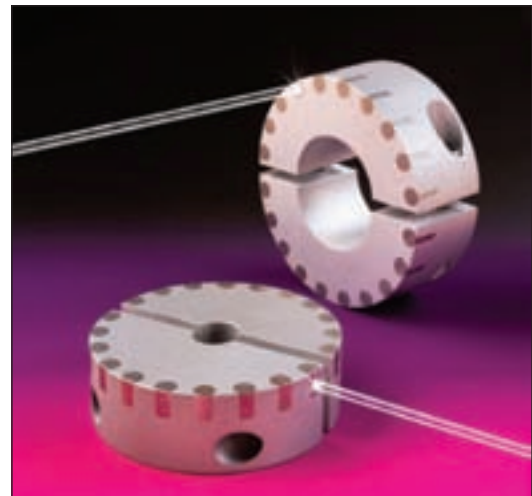
A standard line of rotary encoder collars providing sensing capability from their OD or face is now available from Stafford Manufacturing. According to the company's press release, the collars mount directly onto any shaft and feature corner-mounted steel targets. Made of anodized aluminum, these two-split designs come in 11 standard sizes and are unaffected by oils and coolants.

Applications for the rotary encoder collars include electromagnetic sensor mounting assemblies that are compatible with all popular sensors. Special bore

configurations, target locations and custom sizes for shafts up to 10" OD are also offered. Collars are priced to size and quantity; literature is available upon request.

For more information:

Stafford Manufacturing
P.O. Box 277
North Reading, MA 01864-0277
Phone: (800) 695-5551
Fax: (978) 657-4731
jswiezynski@staffordmfg.com
www.staffordmfg.com



Renold Gears

ASSISTS TIRE MANUFACTURER
WITH GEARBOX



Mitas, one of the largest tire manufacturers in the Czech Republic, recently commented on the use of Renold gearboxes for their calendar machines. According to the company's press release, the Renold PM series geared motors and smaller jPM wormgear units have been delivering faultless reliability 24 hours a day.

"Renold's products have proven over the last 10 years that they perform consistently under extremely arduous conditions," says Ivan Komanec, maintenance manager for Mitas in Prague. "We appreciate the local support we get from the Czech Renold sales operation. They provide the service we need to keep our production running without suffering costly breakdowns."

The Renold Gears PM series is a gearbox design featuring a single-piece case which allows worm gears, helical-worm gear combinations and complete helical-bevel gears to be assembled into the same case, thus giving the customer the advantage of flexibility of ratios and mounting variations.

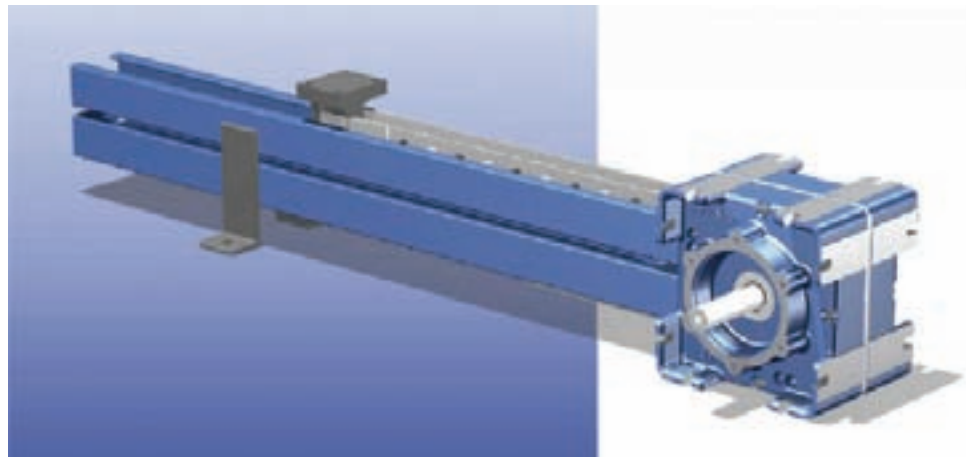
For more information:

Renold
Renold House
Styal Rd.
Wythenshawe, Manchester M22 5WL
United Kingdom
Phone: +(44) 161 498 4500
Fax: +(44) 161 437 7782
simon.chipchase@renold.com
www.renold.com

Serapid

BOASTS ACTUATOR FOR
HARSH ENVIRONMENTS

Serapid's LinearBeam rodless actuator is available for heavy loads, long travel or harsh environments where exposure to heat, contamination and debris are contributing factors. The actuator features a thrust force up to 35,000 pounds with a full range of options. According to the company's press release, the actuator is guaranteed over one million cycles at full load and continuous operation. Serapid's staff is also on-hand to engineer a solution suited to the customer's exact application requirements. The LinearBeam has been used in several quick die change applications as well as steel mill transfers, off-shore skid movements and high-temperature units and furnace loading.



For more information:

Serapid
5400 18 Mile Rd.
Sterling Heights, MI 48314
Phone: (586) 274-0774
Fax: (586) 274-0775
info-us@serapid.com
www.serapid.com