Siemens

OFFERS EFFICIENT MACHINE TOOL OPERATION WITH SINUMERIK SOLUTIONS

At EMO Hannover 2017, Siemens displayed an array of new hardware and software solutions for its integrated Sinumerik portfolio. This included integrated industrial software and automation technology designed to enable machine tool manufacturers to leverage the full productivity potential of the digital factory.

"The end-to-end digitalization approach taken by Siemens encompasses not only hardware, but also software across the entire value chain from design to machine tool application, enabling our customers from the machine tool industry to achieve a significant boost to their productivity. The combination of advancing digitalization and innovative automation technology provides the key to creating a sustainable competitive edge," explained Head of Machine Tool Systems Uwe Armin Ruttkamp.

With its new Sinumerik CNC software release 4.8, Siemens is making a range of new functions available to significantly improve the speed, precision and safety of machine tools. Benefits of version 4.8 include facility for compensating unwanted axis nodding movements and protection against machine, tool and workpiece collisions. Nodding compensation (NoCo) is used to compensate for dynamic position deviations in one or more linear machine axes caused by acceleration processes. These position deviations are caused by what is known as mechanical compliance within the machine. NoCo compensates for the dominant position deviation by initiating a corrective movement in the relevant machine axis, enabling improved machining quality simultaneously with higher jerk and acceleration values. Nodding compensation can be used in conjunction with any technology, such as milling, multi-tasking, tapping, laser ma-



chining or water jet machining. NoCo is available in two variants: Eco and Advanced. The Eco variant is designed for dominant acceleration effects in which the compensation axis is combined with one influencing variable. Where there are several influencing variables which require several compensation axes, the Advanced variant is the option of choice.

The new Sinumerik software release 4.8 also comes with an advanced collision protection: Collision Avoidance Eco and Collision Avoidance Advanced. The Eco version enables simple, reliable machine protection by preventing collisions of the machine body with its own components within the work area. To achieve this effect in real-time, the assemblies which need protection are calculated as simple geometric bodies. This reliable collision monitoring system is available in all three operating modes: JOG, MDA and Automatic. The protected areas can be simply and efficiently engineered and visualized as a 3D image

at the control interface. The Advanced variant includes full machine, tool and workpiece protection. The software provided by the Sinumerik product partner ModuleWorks runs via an interface integrated on an external PC, and works together with the Sinumerik CNC in real-time to ensure that the machine, tool and workpiece can be continuously monitored and are dynamically protected during the stock removal process. The workpiece and tool data required is made available to the system during set-up. Collision Avoidance provides a permanent, high level of safety during operation.

For more information:

Siemens Industry, Inc. Phone: (847) 640-1595 www.usa.siemens.com/cnc4you



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Plenary Speakers



Wolf-Henning Scheider

Chairman of the Management Board and CEO, Mahle Group

President of the Executive Board, Bosch Rexroth AG

Prof. Dr Peter Gutzmer

Chief Technology Officer, Deputy CEO, Schaeffler AG

Dr Wolfgang Warnecke

Chief Scientist Mobility, Shell

Dr Sven Beiker

Founder and Managing Director, Silicon Valley Mobility, LLC Lecturer in Management, Stanford Graduate School of Business









Tatsuya Osone

Vice President Advanced Technology Development and CTO, Jatco Ltd

Vice President and Project Director, Great Wall Motor Transmission Research Institute

Alessandro Coda

Chief Technology Officer, CLEPA - The European Association of Automotive Suppliers

Anders Nielsen

Chief Technical Officer, Volkswagen Truck & Bus AB

CHAIRMAN OF THE CTI SYMPOSIUM

Prof. Dr Ferit Küçükay

Director of the Institute of Automotive Engineering, Technische Universität Braunschweig

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ITAMCO

RAMPS UP ADDITIVE MANUFACTURING WITH EOS PRINTER

ITAMCO (Indiana Technology and Manufacturing Companies) is delivering components to the medical device industry made with their new EOS M 290 additive manufacturing printer.

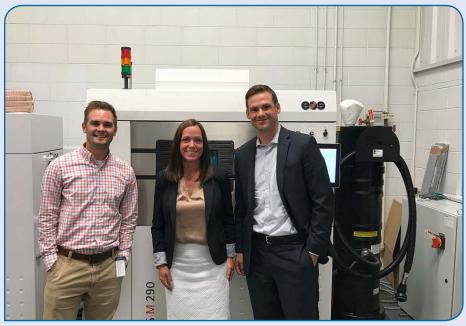
The EOS printer was delivered in June 2017 and ITAMCO was shipping components to a medical device supplier in August. The fast ramp up is partially due to the experience the ITAMCO team gained while contributing to the development of additive manufacturing software. They were part of a consortium of manufacturers and universities that collaborated to develop the program through a multi-million dollar manufacturing initiative called "America Makes." The software, named "Atlas 3D," is now marketed through a division of ITAMCO.

The ITAMCO and EOS **Partnership**

Another reason for ITAMCO's efficient entry into additive manufacturing was EOS-a global leader in additive manufacturing systems and solutions. "The EOS printer is the right tool for our complex components

made with DMLS (Direct Metal Laser Sintering) and the EOS team trained our staff and got us up and running quickly," said Joel Neidig, director of research and development for ITAMCO. "The printer works seamlessly with Atlas 3D, too," he added.

In addition, the technology team at ITAMCO quickly built a good working relationship with the EOS sales and support team. Jon Walker, area sales manager with EOS North America, said, "ITAMCO is an ideal partner for EOS because three generations of ITAMCO leaders have supplied traditional subtractive manufactured parts to some of the best known organizations in the world. Due to their reputation, ITAMCO's investment in additive manufacturing validates the 3D printing market, especially in highly regulated industries where testing and validation of components or devices is critical. We're thrilled that they have invested in an EOS M 290 3D printing platform, smartly positioning themselves to become an additive manufacturing leader in robust medical and industrial markets for the next three generations and beyond."



Left to right: Joel Neidig, director of research and development at ITAMCO, Jennifer Howe, area sales representative at EOS, Jon Walker, area sales manager at EOS.

Servicing the Medical Device Industry

The medical device industry is a relatively new market for the company that has serviced heavy-duty industries for decades. "Additive manufacturing is allowing us to do things we've not done before, like producing the smaller, more intricate components for the medical device industry," said Neidig.

Given ITAMCO's capabilities and their close proximity to numerous medical implant manufacturers in Indiana, the entry into this industry is a logical move. "We've hired two people from medical device companies to work for us," said Neidig. "Of course, we will continue to expand our presence in our current markets by offering additive manufacturing and the high-quality subtractive manufacturing that made us so successful."

Why Additive Manufacturing?

ITAMCO has been on track to include additive manufacturing in their offerings since the launch of their "Strategic Technology Initiative for Additive Manufacturing" in 2015. ITAMCO is using additive manufacturing to expand their market position in a global economy and to deliver real benefits to their customers. These benefits include faster turnaround, lighter yet stronger components, lower prices, design freedom, product customization and reasonably priced small-batch production.

For more information:

ITAMCO Phone: (574) 936-2112 www.itamco.com

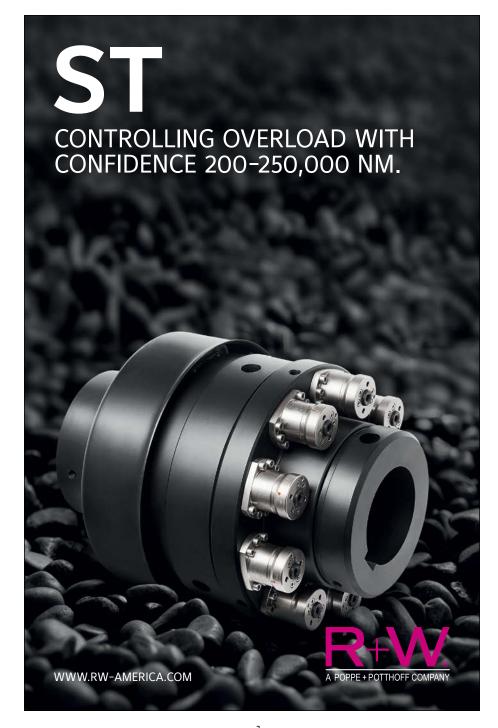
LM76

INTRODUCES PEGASUS SERIES 1 LINEAR BEARINGS

LM76 has developed corrosion resistant linear bearings. In space, deep under the sea, or in the harshest environments when there can be no "Plan B," Pegasus Series 1 Linear Ball Bearings can be counted on to perform. In some applications linear bearings will not move for days, weeks, months or even years, however, when called on to perform they must work as if they

just came out of the box. LM76's Pegasus Series 1 Linear Bearings feature Silicon Nitride (SiNi) Ceramic Balls in a shell with retainer and end caps all made from 440 Stainless Steel and then Armoloy coated.

Silicon Nitride was selected for the balls because it is: 40 percent lighter than steel, inert to chemicals (vapors, sea water, caustic washing





and sterilizing solutions), capable of higher speeds and higher loads: (RC78 hardness), FDA compliant (used in surgical instruments), and does not corrode or support electrolysis.

The shell, bearing retainer and end caps are made from 440 Stainless Steel and coated with Armoloy TDCTM (Thin Dense Chrome). Armoloy is a hard (78Rc) coating with a micro-nodular surface texture. The coating's nodular finish reduces the amount of surface area in contact with the SiNi balls. reducing friction and extending life.

Pegasus Linear Bearings are available in two series (closed and open), and in four sizes (1.000", 1.250", 1.500" and 2.000"). Dynamic load rating for these bearings are: 1.000" 220 lbs, 1.250" 352 lbs, 1.500" 490 lbs, and 2.000" 858 lbs. Bearings are designed for zero clearance on Class L linear



shafting. For maximum performance they recommend LM76 Case Hardened 440 Stainless Steel shafting with Armoloy coating.

For more information:

I M76 Phone: (800) 513-3163 www.lm76.com

ACS

INTRODUCES MODULAR MOTION CONTROL SYSTEM

ACS Motion Control has developed a modular rack-mounted motion control system that quickly and easily integrates up to eight universal motor drives with power supplies and an optional EtherCAT motion controller to deliver a customized solution. The complete MP4U control system simplifies the development cycle and shortens the lead time for implementing a tailored solution. Completely self-contained in a compact 19" rack-mounted chassis, the MP4U can be a replacement for high power, high cost linear drive based solutions.

The unique MP4U control system can be configured with up to 8 axes of high performance UDM3U drives and/ or ultra-high performance NPM3U (NanoPWM) drives, a 48 Vdc and/or 96 Vdc motor bus voltage power supply and an optional internal motion controller, with optional EtherCAT network slave (DS402 multi-axis drive) functionality to be released in 2018.

The MP4U drives are EtherCAT slaves that may be managed by either an external motion controller, such as the SPiiPlusEC, or by an internal one. The internal controller is to be released



Faulhaber

OFFERS BRUSHLESS DC SERVOMOTOR WITH INTEGRATED **SENSORS**

The 2264...BP4 brushless DC servomotor from Faulhaber achieves a torque of 59 mNm with a weight of just 140 g and a diameter of 22 mm. Furthermore, the 2264...BP4 reaches up to 34,000 revolutions per minute.

"Since the history of modern micromotors began with the Faulhaber winding in 1947, winding technology has been one of our core competencies. With the new segment winding, which we developed for our brushless DCmotors of the BP4 family, we continue this tradition and open a new performance class," said

Product Manager Anne Schilling.

With the winding, the motor performance increases with the copper content. With the compact coil, a resilient shaft with 4mm diameter and suitable bearing can also be installed. "As a result, the small motor can also readily serve as a direct drive, e.g., in

during 2018; it's functionally is identical to the SPiiPlusEC.

The MP4U may also include an optional high-speed EtherCAT-to-Ether-CAT bridge that enables to connect the entire system as a node in an EtherCAT network managed by any automation controller supporting DS402 protocol (SPiiPlusES functionality).

"The MP4U is a customizable motion control subsystem, ideal for meeting the needs of high-end motion control applications such as wafer inspection and metrology equipment," said Jason Goerges, product marketing manager. "The LEGO-like MP4U system offers advanced motion control functionality and flexibility in a compact unit."

The MP4U has a current range of 3.3A/10A (continuous peak) to 13.3A/40A. The compact unit has a height of 260 mm, width of 483 mm and depth of 306 mm.

For more information:

ACS Motion Control Phone: (763) 559-7669 www.acsmotioncontrol.com





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Partnering with QualityReducer to provide Gearbox repair, rebuilding and reverse-engineering. handpieces of motorized tools." Furthermore, the four-pole motor has a low inertia and is therefore very well suited for dynamic start/ stop operation," added Schilling.

In addition to the torque, the new motor is also characterized by its compact and economical sensors. Optionally analog Hall sensors precisely determine the position of the output shaft. The sensors are integrated in the motor, i.e., they do not require additional installation space. In most

cases, they can replace an encoder, thereby making very compact and light solutions possible. If even more precision is required, e.g., with optical systems, in measurement systems or in semiconductor production, compatible optical and magnetic encoders are available. They can very easily be attached to the rear multifunction flange of the motor.

The 2264...BP4 is overload-resistant. It operates without wear-prone mechanical commutation and, as a result, has a service life many times longer



than standard DC-micromotors. Also unusual is the very large temperature range in which the motor can be used: it spans from -40 to +125°C.

"With these features, the 2264...BP4 is an ideal drive solution for nearly all applications of this size class - whenever space is tight or weight plays a decisive role yet a high torque is required," Schilling said. She considers the two most important areas of application to be in handpieces of electrical tools and in industrial automation. "With electric loppers, electric screwdrivers or motorized instruments for surgery, users often work with their devices for many hours. Thus, every gram that needs to be held and moved counts. At the same time, the tools should be fast, robust and effective. They need to operate at maximum performance so that every work step can be completed on the first pass."

Similar requirements—at least with respect to the size-torque ratio - apply in many areas of factory automation, e.g., with grippers

or robots, with mobile robots such as sewer robots, in aerospace with cabin equipment or with active prosthetics that can perform an ever larger range of functions for missing limbs. With suitable precision gearheads from Faulhaber, the 2264...BP4 can be optimally configured for practically every type of drive solution.

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Faulhaber (Distributed by Micromo) Phone: (800) 807-9166 www.micromo.com

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Regal Beloit

DEBUTS LOCKING COLLAR DURING PACK EXPO 2017

Regal Beloit Corporation, a leading manufacturer of electric motors, electrical motion controls, power generation and power transmission components, debuted the next generation of its SealMaster Skwezloc Locking Collar concentric locking collar during Pack Expo 2017 in Las Vegas. The new design accommodates commercial turned and polished shafting while improving lock reliability on turned ground and polished shafting.

The Skwezloc Locking Collar achieves improved lock reliability through an innovative circumferential groove on its inner ring bore that reduces stress on the inner ring when properly clamped to the shaft. A larger cap screw and collar also improve the clamping force and holding power to the shaft.

"Through extensive research, we found that the overwhelming majority of our customers prefer concentric locking for ease of installation, but needed a design that meets customer shaft tolerances," said Ian Rubin, director of marketing, bearings, Regal Beloit Corporation. "By reducing the stress on the inner ring and adding a groove that decouples from the inner ring to improve elasticity, we've arrived at a design that meets the customer shaft tolerance need, especially for customers in the warehouse distribution, parcel distribution and baggage handling industries."

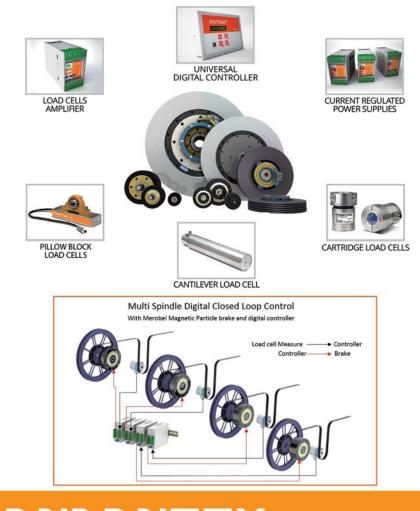
The next generation Skwezloc Locking Collar also reduces stress concentrations when the collar is tightened through an optimized chamfer profile. It maintains the same simple singlescrew installation of preceding models that prevents axial movement while also eliminating the risk of preloading the bearing.

For more information:

Regal Beloit Phone: (608) 364-8800 www.regalbeloit.com



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Miki Pulley

CS ELECTROMAGNETIC ACTUATED CLUTCHES FEATURE OUIET, ZERO BACKLASH OPERATION

Miki Pulley's CS Electromagnetic Actuated Clutches are durable, versatile and have excellent torque transmission features. CS Clutches provide an efficient connection between a motor and a load, providing low inertia, minimal drag and very quiet operation. They function utilizing the magnetic force generated by the energized coil providing engagement of input and output members of the clutch.

Available with three different armatures, Miki Pulley CS Clutches consist of a clutch stator, rotor and armature assembly. They feature an integrated bearing design, making mounting fast and easy while ensuring application concentricity and excellent system runout. CS Clutches operate well in temperatures from $+14^{\circ}$ F to $+104^{\circ}$ F (-10° C to $+40^{\circ}$ C).

Available in bores ranging from 10 mm to 15 mm, with brake torques ranging from 3.687 ft. lbs. to 236.02 ft. lbs. (5 Nm-320 Nm), the CS Clutch utilizes corrosion resistant materials, and is RoHS compliant like all other Miki products.

"Miki Pulley's CS Clutches stand apart from competitor's models, in that they incorporate specialized



composites and alloys promoting durability and longer operational life," reports Jon Davidson, Miki Pulley sales specialist. "Miki Pulley's friction-type design operates smoothly and quietly, making them an ideal choice for digital printing systems and similar equipment requiring near noiseless operation."

For more information:

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

Drive Lines

EXTENDS BEVEL GEARBOX RANGE

A new size, the P-65, has been added to the Graessner PowerGear P range of bevel gearboxes available from Bedford, U.K.-based Drive Lines. Being 65 mm cubed in size, it is expected to prove very popular in a wide range of applications, such as for use with screw jacks to create vertical lifting and lowering mechanisms.

With miniature sizes recently added to the standard range, Graessner PowerGear P units are now available in 12 sizes from P27 to P450.

They are all of identical design and use and optimized bevel gear geometry that delivers increased torque

and high efficiency in a compact and lightweight package. These high performance gearboxes are available in flange, solid or hollow shaft versions.

PowerGear P gearboxes are characterized by high torque and low to medium input speeds, in a sturdy, rigid design that ensures the highest performance while being space and weight efficient. The optimized gearing delivers high torque ratings up to 7,000 Nm, while an optimized contact pattern assembly delivers uniform load distribution for increased reliability and longer life.

The gearboxes are available in four configurations. FL models provide an input with hollow shaft and flange, and output with solid shaft on one or both sides. L models feature input and output with solid shaft, and output on one or both sides. FH models offer input with hollow shaft and flange, and output with hollow shaft and feather key groove. And H models offer input with solid shaft, and output with hollow shaft and feather key groove. Fretting-free torque transfer is achieved using a friction locked fit between the shaft and the bevel gear.

Offering input speeds up to 7,500 rev/min, the gearboxes are available in ratios from 1:1 to 5:1. A high efficiency rating of 98% provides opportunities to save energy costs. Lubricated for life, the gearboxes are virtually maintenance free under normal operating conditions.

With the input and output axes intersecting instead of being inline, a key benefit of the bevel gearbox is its ability to change the direction of rotation by 90°. The PowerGear P range builds on this ability by offering a compact and robust design that combines tapered roller bearings with a ductile iron housing. The result is a versatile right-angle gear which delivers high performance in a highlight compact and lightweight package.

With their high torque, compact dimensions, high efficiency and robust, long-life design, the PowerGear P gearboxes reset user expectations for power and precision, delivering low backlash and high transmission accuracy. Typical applications for the PowerGear P bevel gearboxes include industrial machinery in challenging sectors such as paper and print, textiles, iron and steel, defense and aggregates.

Where higher torques are required within the same footprint as the P series, Drive Lines also offers the PowerGear X version in nine gearbox sizes from 54 to 280. With a 1:1 ratio, the X version offers nominal output torque up to 5,500 Nm with input speeds up to 4000 rev/min. PowerGear gearboxes are also available in miniature versions and high speed versions, meeting the needs of the most diverse spread of applications.

Finally, Drive Lines offers food safe versions of the PowerGear range, using







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Rexnord

OFFERS LONG SPAN XTSR AND 4-BOLT XTSR DISC COUPLINGS

Rexnord introduced the latest additions to its line of Thomas XTSR Disc Couplings, the Long Span XTSR (XTSRLS) and the 4-Bolt XTSR offering (an extension of the 8-Bolt and 6-Bolt configurations). Designed for applications primarily in the energy sector, the 4-Bolt XTSR and XTSRLS also have common applications in the industrial equipment and material handling sectors, including industrial fans and centrifugal compressors, blowers, ANSI & API pumps, chemical processing, gas turbines, pulp & paper, and oil & gas, among others.

The XTSRLS Disc Coupling was designed for longer spans, up to 349 inches. "The XTSRLS is an exciting new product that replaces legacy Thomas SN, SN-GA, and SN-Single products that have a very mature product lifecycle. It enables us to bring value to our end-users by featuring a modular design, higher torque capacity and an optimized bore design that is suited for floating shaft applications requiring long distances between shaft ends, such as pulp & paper machines, turbines, and compressors," says Chino Imediegwu, director global product management for couplings and shaft management solutions products.

The new 4-Bolt XTSR disc coupling design offers a more optimal solution



The new range of optimized sizes "brings a significant competitive advantage and plugs a hole in our XTSR disc coupling product line by offering right-sized solutions for our customer's applications where we were oversized in the past," adds Imediegwu.

The 4-Bolt XTSR disc Coupling and the XTSRLS products are available for order in all markets served globally.

For more information:

Rexnord Phone: (866) 739-6673 www.rexnord.com

Yilmaz Reduktor

FILLING MARKET HOLES, MEETING CUSTOM DEMANDS

Yilmaz Reduktor has released several new products recently ranging from new planetary gearbox sizes to full drive train solutions, all of which have been focused on the construction sector.

Primary among their new offerings is the V Series hoist gearbox, which has been designed specifically for use in cranes. According to Metin Yilmaz, general manager at Yilmaz Reduktor, the company quickly found that it would need to design its V-Series to meet different design considerations than with past products.

"The main problem is that crane ap-

plications have completely different requirements to those of [gearboxes] used in general industrial applications," Yilmaz said. "So most of the products were not specifically designed to the crane demands and they were not optimal."

For most of those general industrial gearboxes, pitting resistance is a primary issue Yilmaz sees talked about often, but according to him, root strength is the most important factor they found in developing a gearbox to work specifically with a crane, since cranes operate in shorter, noncontinuous time spans than would be seen in most general industrial applications. In addition, the V-Series is not only a hoist gearbox — a rare beast on the market — but also in a mono-block housing to provide additional rigidity.

Yilmaz Reduktor's other new products all fall into a similar vein, filling holes in the market where there are few or diminishing options to for customers to choose from. For instance, Yilmaz noted that the supply of larger, higher-torque gearboxes has been shrinking, and so the company has stepped in to fill the gap with their H-Series heavy duty gearboxes and extended the series range up to 470,000 Nm. The company has also rounded out their portfolio with four different frequency inverters, which now allows them to offer full drive train solutions.

Another common theme amongst Yilmaz Reduktor's new products is that most are designed specifically for cement mixing. The H-Series, for example, got its extended range with cement factories, among other applications such as steel mills and underground mining, in mind. The company has also released new versions of their planetary gearboxes that were designed for the express purpose of operating with cement mixers.

Some of these new designs may sound like incredibly niche products, but according to Yilmaz, this is all part of a larger trend towards custom-built gearboxes for individual customers. Yilmaz has found that the number

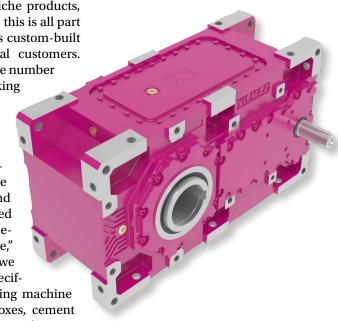
of their customers asking for specialized gearboxes has increased over time from 10 percent to almost half.

"Every machine builder wants its machine to be compact as possible and an optimization is needed for the gearbox for the specific needs of the machine." Yilmaz said. "Therefore we have also designs for specific applications like sawing machine

gearboxes, crane gearboxes, cement mixing gearboxes, agitators, plastic injection gearboxes, etc."

For more information:

Yilmaz Reduktor Phone: +90 212 886 50 43 vr.com.tr



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