

product news



With Voith's WinDrive technology, the maximum operating loads in the drivetrain are reduced by up to 20 percent for the tower and foundation.

Old Tricks for New Dogs

THE LATEST DEVELOPMENTS FOR WIND TURBINES RELY ON PROVEN TECHNOLOGIES

In the fast-paced and high-tech world of wind turbine development and manufacturing, it's all about incorporating the latest technology, right? Not so fast, say the experts at Voith Wind, established in 2007 as a new division of the German company Voith Turbo.

Voith, now more than 100 years old, manufactures components of industrial turbines and compressors, including hydrodynamic and mechanical drive systems for energy generation, petrochemical plants, metallurgical processing and other industries. In addition, more than a million units

of Voith turbo couplings have been installed in quarrying, mining and other applications.

Some of those well-established products and technologies are suited to applications in megawatt-sized wind turbines, says marketing manager Thomas Genz.

In fact, Voith Wind has developed the WinDrive unit, a complete power transmission package for wind turbines. Production began in March on the first 18 units, which are scheduled to be included in DeWind model 8.2 wind turbines being installed at wind farms in Argentina and Texas this year.

One of the challenges facing wind turbine manufacturers is being able to supply steady voltage to the power grid when the input—windpower—is variable. Most current-generation wind turbines use a mechanical gear drive coupled with a frequency converter to ensure that steady stream of power. The problem with that, Genz says, is that

frequency converters are failure-prone. In fact, the mean time between failures (MTBF) for frequency converters is about two years, Genz says.

The WinDrive system replaces the mechanical gearbox found in most modern wind turbines with a hydrodynamic gearbox. This type of variable-ratio gear drive automatically converts variable input speed to a constant output speed.

Because of that constant output speed, the WinDrive system doesn't need complicated power electronics. It can be hooked up directly to a synchronous generator, the same type of generator used for many years to provide reliable power to the grid at conventional, fossil fuel-powered plants. By eliminating the power electronics, you increase the system's overall reliability, especially considering the track record of similar equipment operating in other industries.

"The MTBF of traditional Voith

hydrodynamic speed converters is 39 years,” Genz says. That figure is based on variable-speed drives used on pumps and compressors in the oil and gas industry as well as at traditional power plants generating electricity from 1 to 30 megawatts.

But reduced down time isn't the only way the WinDrive can save turbine operators money. Because the WinDrive is designed for variable-speed operation, the wind rotor can be operated at the aerodynamic optimum speed for the rotor, even at different wind speeds. As a result, the overall efficiency of a wind farm improves by more than 1 percent, Genz says.

The WinDrive also provides initial cost savings on the equipment itself. Due to the elimination of the transformer and frequency converter, along with the reduction of size and weight of the generator and gearbox required, the drive system from the rotor to the power grid costs about 10 percent less than drive systems currently being used, Genz says.

Because the WinDrive uses fewer components, and because it's smaller and more compact, it weighs less—75 tons compared with 100–180 tons for competitive drive systems. In large systems, this translates into steel and cement material savings of up to 20 percent for the tower and foundation. Per wind turbine, this means hundreds of tons in weight that can be saved.

In January Voith Wind was selected as one of five finalists from among 269 entrants for the “Innovation Prize in German Industry,” which is awarded annually to a company for its outstanding innovation. Only companies whose developments and products have demonstrated significant advances over current technology are considered for the award.

Although no WinDrive units are yet operating in the field, Voith is confident the new product will be well received. “The product is a highly innovative product meeting the requirements of the market and providing exceptional



The highly mechatronic system is a single component with a size of approximately 2 m long x 1.5 m diameter.



By eliminating the frequency converter and step-up transformers, the complexity of the wind turbines is reduced significantly.

value to the customers,” Genz says.

Even better, the company has already received contracts for 100 more WinDrive units in 2008.

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Linear Actuators

IMPROVE
PERFORMANCE AND LIFE

Haydon Switch & Instrument, Inc. recently announced that its size 14 hybrid linear actuators are now available with an integrated connector. Offered alone or with a harness assembly, the connector is RoHS-compliant and features a positive latch for high connection integrity, according to the company's press release. The connector is rated up to three amps and the mating connector can handle a range of wire gages from 22 to 28. The motor is an option for those that want to plug directly into a preexisting harness.

Available in three designs—captive, non-captive and external linear—these actuators come in resolutions ranging from 0.00012" per step to 0.00192" per step and deliver thrusts of up to 50 lbs. The size 14 actuators can be micro stepped for finer resolutions. Applications requiring precise positioning and rapid motion are best suited for this



motor. Priced competitively, the product can be utilized for drop-in replacements to improve performance and life or for incorporation into your next project. Haydon can custom design the motor to meet specific application requirements.

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R+W America

EXPANDS COUPLING AND
TORQUE LIMITER LINES

BK8 Coupling Series Allows High Level of Torsional Stiffness—R+W America has developed a series of couplings for mounting to flange output servo

gearheads. According to the company's press release, the BK8 coupling series allows for an equally compact, flexible interface between gearheads and driven components that protects bearings and simplifies alignment. The BK8 utilizes stainless steel bellows, allowing for torsional stiffness while compensating for small misalignments between components. The series is available in a variety of sizes covering torque ratings from 15 Nm to 1,500 Nm and for special applications up to 10,000 Nm. In addition to the traditional clamping hub, they can be made into a variety of coupling output hubs including tapered conical clamping hubs and expanding shafts.

EK7 Couplings Offer Backlash-Free Connection—The EK7 coupling

series allows installers to slide the male portion of the coupling into the driven bore. With tightening of a single screw, the shaft will expand for a backlash-free connection. A cone, internal to the expanding shaft, forces the outer part of the shaft to spread and create the frictional connection to the bore. These couplings are available in eight sizes. Shore hardness allows designers to select the correct amount of flexibility, vibration damping or stiffness depending on their performance requirements. Torques range from 9–2,150 Nm, though some custom versions can transmit up to 4,000 Nm.

Torque Limiter Provides Inexpensive Insurance for Machine Performance— Torque limiters by R+W America are backlash-free and highly responsive with the ability to completely disconnect the drive and driven components in under three milliseconds, according to the company's press release. Disengagement torque can be field-adjusted with several disengagement behaviors available. The design uses a single screw radial clamping hub that's available in English or metric bores, with or without keyways. They are available in bore diameters from 3–80 mm and disengagement torques from 0.1–1,800 Nm.

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Allegro Hall-Effect Sensors

TARGET AUTOMOTIVE,
INDUSTRIAL, CONSUMER
MARKETS

Allegro Microsystems, Inc. has introduced a programmable, linear Hall-effect sensor with a 125 Hz pulse width modulated output. According to the company's press release, the thin package and PWM output of the sensor would benefit current and position sensing applications. The A1351 device

converts an analog signal to a digitally-encoded PWM output signal. A simple RC network can be used to convert the digital PWM back to an analog signal.

The BiCMOS, monolithic circuit inside integrates a Hall element and precision temperature-compensating circuitry to reduce the intrinsic sensitivity

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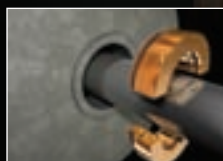
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product news

and offset drift of the Hall element. A high-frequency offset cancellation clock allows for a greater sampling rate, which increases the accuracy of the output signal and results in faster signaling capability, according to the company's press release. The A1351 is supplied in a thin 4-lead SIP (K) package and is priced at \$1.38 each in quantities of 1,000. It has a 12–14 week lead-time to market.

Allegro has also introduced the ACS756 family of low-noise, open-loop current sensors with bandwidth capability of 125 KHz. The Hall-effect sensor is appropriate for various 50 S to 100 A applications due to the high speed and increased accuracy, which result from the proximity of the magnetic signal to the Hall transducer, according to the company's press release. Standard uses include motor control, load detection and management, power supplies, overcurrent fault protection and other applications involving high-

side current sensing.

The sensor's internal electrostatic shield forces the effects of voltage-transient spikes around the silicon to reduce the voltage ripple on the device output. The linear Hall sensor circuit has a copper conduction path near the die, so an applied current moves through the conduction path to generate a magnetic field, which the integrated Hall IC senses and converts into proportional voltage. The copper conductor is thick enough for the device to survive at five times overcurrent conditions. The conductive path terminals are isolated electrically from the sensor leads, so the ACS756 sensors are suitable for uses that require electrical isolation without using expensive isolation techniques, such as opto-isolators. Geared towards the industrial and consumer markets, the ACS756 is priced at \$3.16 per unit in quantities of 1,000 with a 12–14 week lead-time to market.

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Powerstation

DESIGNED FOR HUMAN-MACHINE INTERFACE PROJECTS

Parker's Electromechanical Automation Division has developed a new Level 1 HMI platform for *Interact* software. The P13 Powerstation is designed to fit into existing cutouts of many common 6" HMI products. Every P13 Powerstation comes with *Interact* preinstalled. It can be tailored to meet the specific needs of the user and is compatible with all existing P1 family applications. Each Powerstation includes a new AMD LX700 CPU, 128 MB of DRAM and a 256 MB



CompactFlash card standard.

The hardware also includes two serial ports, a 100 BaseT Ethernet port and 24 VDC power. All P13 units are passively cooled, allowing the units to be deployed in harsh environments as there are no rotating media storage devices or fans of any kind. The P13 family comes with a 1/4 VGA TFT display and offers a VGA resolution TFT display.

The *Interact* software package offers basic panel tools, graphics, alarming and networking capabilities included in the base configuration. It also offers options such as recipes, reporting, historical trending, machine configuration and custom user programs. Parker's CTC HMI hardware and software are designed and tested under the same roof. The Powerstations include a 24-month warranty.

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Rolled Steel Motors

OFFER ALTERNATIVE TO CAST IRON

WEG Electric Motors Corp. has recently announced the addition of a

family of 3-phase motors with rolled steel bodies and cast iron endbells. These motors are available in 12 standard sizes with ratings from 1 to 20 hp for operation at 230 or 460 VAC mains. The 3-phase motors were developed using Finite Element Analysis software on their motor parts to detect irregularities and thermal simulations of mechanical components. Fans ensure low motor temperature rise, minimizing winding losses. The 3-phase motors use SAE/AISI 1040/45 steel as standard and are designed to withstand torques caused during motor acceleration and deceleration.

“Our customers have been asking us to develop an alternative to our popular cast iron motors for use in applications where a light-weight motor is required, without sacrificing WEG quality or reliability,” says Gerardo Elias, motors marketing manager at WEG. “Our new rolled steel family of motors meets these requirements, while establishing a new value proposition, with list prices typically nine percent less than equivalent cast iron motors.”



For more information:

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Power Up!



If you have a background in gears, bearings, motors, belts, couplings, sensors or actuators, we'd like to talk to you. Powerplay, the new back page feature in *PTE*, is all about your industry. If you've got a funny anecdote, an interesting observation or perhaps a limerick on motion control, feel free to send it our way. This column is dedicated to the stories too radical to make the cut in industry or product news. We need story ideas, and we're confident you can provide them.

The rules are quite simple: submit a story idea about the power transmission industry, make it entertaining as well as informative, and become a *PTE* magazine editor-at-large today (salary not included). Submit your award-winning material to publisher@powertransmission.com.



LoadMate Chain Hoist

DELIVERS
IN SMALL WORK PLACES

With load capacities from 1/8 to 1 ton, a lifting height of 262 feet and a wide range of lifting speeds and power supplies, the LoadMate Electric Chain Hoist from R&M Materials Handling is a viable option for wind turbine applications. The LoadMate can be installed inside the wind turbine nacelle to assist with standard maintenance activities such as change-outs and repairs of generators, high-speed gears and yaw and pitch motors.

According to the company's press release, the LoadMate is an ergonomic low-headroom hoist that allows for close trolley approaches. It's equipped with detachable parts and electromagnetic disc brakes to increase service life. A torque limiter protects against overloads and the hoist comes

standard with upper and lower limit switches. The lifting motor has 40 percent ED, IP55 protection and Class F insulation with thermal protection. It comes standard with a wide range of lifting speeds including 64 and 16 fpm, 96 and 24 fpm and 128 and 32 fpm. The LoadMate is also available in a variety of power supplies including 208, 230, 460, 575/3/60, or 380/3/50.

For more information:

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Slipstream Series Linear Stages

FOR PRECISION
POSITIONING APPLICATIONS

Available in travel lengths to six meters, the Slipstream series linear stages from LM76, Inc. feature 0.2 mm/300 mm accuracy and 0.1 mm repeatability. T-slots on three sides allow for installation and/or accessories, making the stages ideal for robotics, pick-and-place, assembly, packaging, sampling and testing, according to the company's press release.

Motor options for the Slipstream series include a NEMA 23 Stepper with a 100 W or 200 W servo motor with encoder. These motors can be mounted on the left or right side, and a fail-safe brake is also available. Mounting configurations include X, Y, and Z axes and gantries. The precision profile rails handle dynamic loads to 22.3 kN, and the 50 mm wide timing belt features maximum belt strength at 3,000 rpm of 1,300 N in high-duty applications. Stock linear stages can be shipped in less than two weeks.



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Efficient Motor Drive

MAINTAINS
CONSTANT VELOCITY

Trust Automation has introduced a compact, programmable TA2230 motor drive designed to run a brushless motor at a constant velocity. Using Hall sensors for velocity feedback, the motor drive can be programmed at start-up to ramp up at a present rate and maintain velocity regardless of changes in load, according to the company's press release. The motor drive, with optional cooling fans, measures 9.3 in. x 3.5 in. x 5.7 in. The TA2230 includes three speed setting options, soft start control, AC line filtering, and a self-contained, enclosed and optically-isolated user interface for safety. Software parameters include enable input level, fault output level, coast input level, target velocity, Hall active level and current limit. Applications include factory automation, machine tools, conveyors, injection molding

machines, air compressors, pumps and existing applications where improved performance and lower operating costs are desired.



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www.trustautomation.com

Hinged Shaft Collars

AVAILABLE IN 25 SIZES

Stafford Manufacturing has expanded its line of hinged shaft collars by offering various bore styles to match different types of shafts. The hinged shaft collars feature a triple-link hinge and a captive clamping screw to simplify assembly and provide the same holding power as conventional two-piece collars, according to the company's press release. They are offered with round-, threaded-, hex- and square bores and suitable for use as stops or spacers and for mounting devices with different shaft configurations. Available in 25 sizes from 3/8" to 4" I.D. and 16 metric



sizes from 6 mm to 50 mm, the shaft collars come in steel, stainless steel with stainless steel clamping screws and aluminum. These collars are viable for applications requiring frequent repositioning and maintenance.

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www.staffordmfg.com

World's Smallest Cable-Extension Transducer

SUPPORTS
DURABILITY, RELIABILITY

Celesco Transducer Products' M150 cable-extension transducer is about the size of a thumbprint, measuring .74 x .74 x .38" with a range of 1.5", making it the smallest transducer in the world, according to the company's press release. The M150 comes with a .014-

inch diameter nylon-coated stainless steel measuring cable offering durable construction and high reliability.

Celesco's M150 is suitable for various applications, especially those in robotics, biomedical firms and automotive-related companies. The transducer provides constant tensions, and the fully-retractable measuring cable attaches to the object in motion. Since cable alignment is unnecessary, installation is easier. The M150 has an internal spring-loaded spool that turns the potentiometer, which supplies a voltage directly proportional to the measuring cable's position when it is connected to a voltage source.



"What really sets the M150 apart from other solutions is the small size and the fact that it doesn't require precise manual alignment," says Jim Bishop, general manager for Celesco Transducer Products, Inc. "There is no need for customers to sacrifice any stroke range to properly position the sensor."

Each M150 package includes extra leader cable and an eyelit kit, so users can end the measuring cable precisely at the required stroke position. The transducer has an expected life of at least five million cycles, according to Celesco's press release.

For more information:

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Stand-Alone Output Hub

PROCESSES
VISMART VISCOSITY DATA



The VisConnect transmitter, launched by SenGenuity, the sensors and advanced packaging division of Vectron International, is a stand-alone, analog/digital output hub that accesses data from the company's ViSmart solid-state viscosity sensor. The devices are connected by a standard 4-20 mA output signal, so users can receive several channels of continuous viscosity and temperature data. Users can integrate the data into a host control platform without additional instrumentation. The ViSmart sensor provides immediate sample and/or continuous, real-time, in-process viscosity measurements for embedded real-time, in-line environments needing high resolution and accuracy in low- to mid-range viscosity liquids, according to the company's press release.

"The VisConnect provides a simple and self-contained path for acquiring ViSmart viscosity and temperature data that can be integrating to host control systems, as needed," says Shrvan Jumani, product manager for SenGenuity. "It is a highly portable solution that allows our customers to gather viscosity and temperature data

and start characterizing application opportunities, whether in the lab or in the field."

The VisConnect attaches to any legacy DAQ or host control system with an optional two-channel analog voltage output, which is standard communications protocol for industrial applications. The transmitter has two loop-powered, galvanically isolated channels of the 4-20 mA output, so users can arrange the minimum and maximum analog outputs that correlate to 4 mA and 20 mA or optional .5V to 4.5V, respectively. In the future, an optional CAN interface will be available, according to the company's press release.

Kerem Durdag, director of business development for SenGenuity says, "The introduction of the VisConnect transmitter will greatly facilitate the process of configuring, installing and managing viscosity data from the ViSmart, providing our customers with an easier, more cost-effective way to identify and define solutions that serve their monitoring and control needs."

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Unibrake AC Motor Brakes

REDUCE DOWNTIME FOR
STOP/HOLD APPLICATIONS

Warner Electric, an Altra Industrial Motion company, released the Unibrake AC Motor Brakes, which are spring-applied with a straightforward design that features fewer moving parts. The simpler design results in less

downtime for stop/hold applications typically found in material handling, food processing and baggage handling equipment, according to the company's press release.

The Unibrake has an external manual release lever, so the driven load can move without energizing the motor, and the lever automatically returns to its starting position once the brake is re-energized. The AC motor brakes' construction prevents dust and other grit from coming into contact with internal components. Torque transmission occurs efficiently by splined hubs and friction discs. The torque rating can be adjusted from full to 50 percent. Unibrake features single-phase AC coils, which provide quick engagement and release times as well as simple wiring.

Available in two versions, the Single C-Face Unibrakes, made from 3 ft.-lb. to 15 ft.-lb., mount to a motor's non-driven end and are designed for motors adapted to accept a brake. The Double C-Face Unibrake style achieves a dual function between C-Face motors and C-Face gear reducers, and they are offered from 3 ft.-lb. to 10 ft.-lb. Each style is interchangeable with standard motor brakes.



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