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A NOTE ON THIS ISSUE:

J. Campbell, Editor
Modern Pumping Today

Welcome October's issue of MPT! Appropriately enough for the start of "spooky season," we face down some frights and scares in our Case Studies section. First off, Sandpiper's Edward Kupp tackles the terror of unexpected downtime and safety risks inherent to handling hazardous wastewater in the pulp and paper sector (pg. 12). Reliable AODD pumps can make these plants safer and more efficient.

Next, Shyam Mallen of Spirac exorcises the specter of capital investment and upgrade expense (pg. 16). As one client learned, long-term savings from improved performance are possible with a revitalized treatment process.

Also, trips through dark and dismal sewers are a common trope of horror movies, but what if that became a thing of the past? In our Water & Wastewater Focus section, we follow safely as Pipetronics' innovative robotic solutions make the trip in our stead (pg. 18). No need to fear; these precise and durable tools are ready for whatever's lurking underground.

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WWW.MPTMAG.COM
3100 Lorna Rd., Ste 101
Birmingham, AL 35216

J. CAMPBELL *Editor*
jay@mptmag.com

TONYA BROWNING *Vice President*
tonya@mptmag.com

JEFF FLETCHER *National Sales Manager*
jeff@mptmag.com

LISA AVERY *Art Director*

SETH SAUNDERS *Digital Media Specialist*

INGRID BERKY *Office Manager*

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TIM GARMON
CEO

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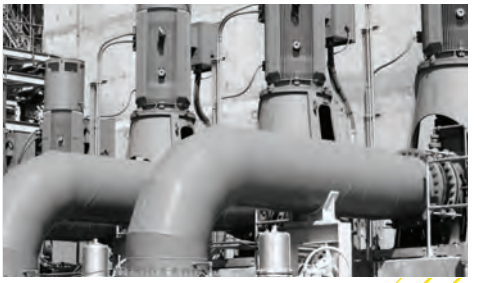

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KAESER KOMPRESSOREN CEO AWARDED THE BAVARIAN ORDER OF MERIT

Thomas Kaeser, president and CEO of Germany's Kaeser Kompressoren, has been awarded the Bavarian Order of Merit by Markus Söder, minister-president of Bavaria. Kaeser is a highly successful economic leader and active member of the business community. In an Upper Franconian economy that has undergone extensive change, he has used structural transformation to help the economy locally and to grow Kaeser Kompressoren globally.

The Bavarian Order of Merit has been awarded annually since 1957 as a symbol of honorable and grateful recognition for outstanding services to the Free State of Bavaria and the Bavarian people by the Minister-President. It symbolizes the extraordinary commitment and outstanding contributions of the citizens of the Free State to the community.

Presenting this prestigious honor, Söder sates, ''He is a steadfast advocate for the Upper Franconian economy. He always has excellent ideas and suggestions for what can be done to benefit society.'' Additionally, Söder emphasized that to receive the Bavarian Order of Merit one must accomplish something exceptional. ''It cannot be bought or inherited; it must be earned,'' he adds.

In accepting this honor, Thomas Kaeser promised to continue applying his skills for the benefit of society as a whole as well as his company.

KRAFTPOWERCON NAMES NEW OPERATIONS DIRECTOR

KraftPowercon, a global leader in advanced power supply systems, announces the appointment of Stefan Hultman as the new operations director. Hultman will be responsible for overseeing the production, sourcing, and logistics functions of the company's operations on a global scale.

Hultman's versatile experience spans across both small- to medium-sized enterprises and multinational corporations. Prior to joining the company, he has held various key positions at Tetra Pak Processing Solutions, where he gained a deep understanding of operations, business development, and productivity enhancement. His extensive background and insight will be instrumental in driving KraftPowercon's continued growth and success.

"We are thrilled to welcome Stefan Hultman to our management team and the KraftPowercon family," says KraftPowercon's CEO. "As we continue to expand our global presence and face increasing complexity in our operations, Stefan's proven track record in optimizing operations and supply chain management will be invaluable.

Hultman will be based at the company's headquarters in Surte, where he will lead the implementing of strategic initiatives that align with KraftPowercon's commitment to delivering innovative power supply solutions while maintaining operational excellence.

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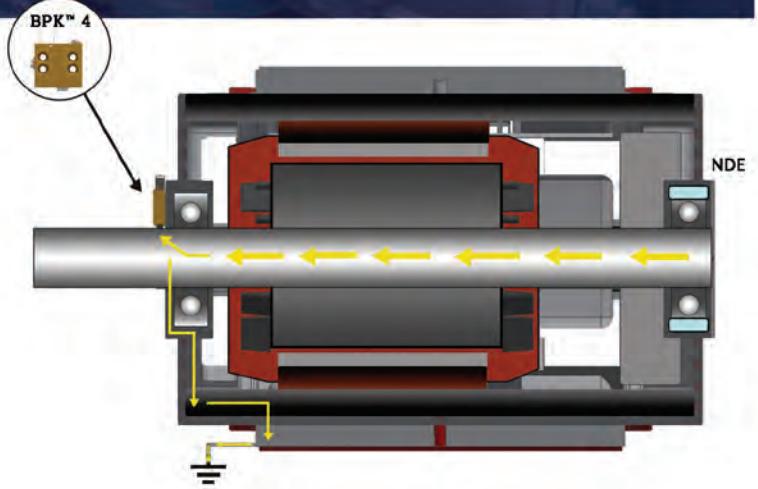

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CEMTREX RECEIVES $1.5 MILLION UPGRADE ORDER FOR VICON VALERUS SYSTEM

Advanced security technology and industrial services company Cemtrex has received a $1.5 million order through its Vicon Industries subsidiary for a large correctional facility, and current end-customer, in Maryland to upgrade its security technology system with new Valerus software and hardware.

The enterprise-class system installation includes Vicon's state-of-the-art end-to-end Valerus video surveillance security system and Roughneck AI cameras, as well as servers to support a large increase in storage hardware. The order is expected to be fulfilled in the third quarter of the calendar year.

"Vicon continues to expand rapidly on strong demand and sales execution, leveraging its advanced surveillance technology to attract customers," says Saagar Govil, chairman and CEO of Cemtrex. "Multiple large orders are demonstrating Vicon's ability to address escalating demand as end-users seek a reliable source of video surveillance and access control technologies fit for today's highly dynamic environment.''

Vicon offers customers a complete solution with the ability to monitor license plates, access control and video management, all from Valerus. Its sophisticated interface helps users monitor and investigate video, audio, alarms, access control, license plate recognition, and system health.

VEEDER-ROOT AND TOTAL METER SERVICES LAUNCH BIOFUEL BLENDING SYSTEM

Veeder-Root, in collaboration with precision measurement solutions expert Total Meter Services, is launching the Biofuel Blending System (BBS), an in-line solution utilizing the same technology as the highly successful Additive Injection System (AIS), offering a versatile and accurate biofuel blending solution designed specifically for retail locations. The BBS represents a significant advancement in fuel blending technology. Operating with a high degree of blend accuracy, the BBS ensures consistent and precise blending of biofuels, meeting the demands of fuel retailers and their environmentally conscious customers.

Designed with space optimization in mind, the BBS boasts a compact footprint, making it an ideal choice for retail locations where space is at a premium. Moreover, its flexible installation options allow for both aboveground and underground placement, catering to diverse site requirements.

"We are excited to introduce the Biofuel Blending System in partnership with Total Meter Services," adds Steve Coppola, director of product for Veeder-Root. "This advanced in-line solution represents a significant step forward in biofuel blending technology, offering a versatile

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and precise system that meets the evolving needs of our valued customers."

TSG WATER COMPLETES LANDMARK BITURBO PROJECT

FEDCO announces the completion of a 1.4 million-gallon-per-day BiTurbo installation in Cabo San Lucas, Mexico. The project was carried out in partnership with TSG Water Resources and H2O Innovation and marks the largest BiTurbo high-recovery SWRO system commissioned to date in the Western Hemisphere. The facility will provide water for the area's tourism industry.

TSG Water Resources selected the BiTurbo high-recovery seawater reverse osmosis (SWRO) technology in order to expand the production capacity of the site without requiring additional construction works or pretreatment equipment. The two-train system operates at 55 to 57 percent recovery with low energy consumption and optimal membrane performance, meeting the client's requirements both for water production and carbon emission reduction. The small footprint of the BiTurbo technology also allows the client unparalleled flexibility by leaving space free for future expansions. With space at a premium in coastal resorts, providing desalination technology is compact, as well as efficient and reliable, is crucial for the tourism sector.

RMI PRESSURE SYSTEMS TO SHOWCASE MA CERTIFICATION AT CCME 2023

China Coal & Mining Expo 2023, renowned as Asia's largest international coal and mining exhibition, will provide a fitting platform for RMI Pressure Systems to showcase its local pump systems after achieving its MA certification earlier this year when the conference kicks off at the New China International Exhibition Center, in Beijing, China, later this month.

RMI Pressure Systems notes that this MA certification marks a significant milestone for the company's presence in the Chinese mining sector, enabling local manufacturing of its world-renowned high-pressure pumps and expanding its participation in local tenders.

Sabrina Zhang, director for aftermarket sales, services, and RMI operations in China, notes that this achievement allows RMI to open new avenues for increased sales of their quality equipment. ''Our presence at the conference will provide the opportunity to share our growth plans for the Chinese market, while demonstrating our expertise and solutions offering. With over a century of experience in designing, manufacturing, and supporting this technology, RMI is well-positioned to leverage this MA certification."

RMI Pressure Systems has been a trusted supplier of premium quality pump stations to Chinese underground mines for more than three decades.

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AVOIDING DOWNTIME AND INCREASING SAFETY IN THE PULP AND PAPER MARKET

Sandpiper AODD pump empties sump of hazardous wastewater

BY EDWARD KUPP, SANDPIPER

Reliable air-operated double-diaphragm (AODD) pumps make every pulp processing plant safer. When functioning properly, they safely dispose of hazardous wastewater generated during the papermaking process. Recently, a major pulp and paper producer that operates nearly thirty facilities around the country needed an AODD pump for one of its kraft mills that makes paper products for U.S. and international markets.

THE CHALLENGE

The paper producer needed a sump pump to dispose of rainwater in a containment area at one of its plants. But rainwater wasn't all that needed to be disposed of by the pump. Black liquor soap—a byproduct extracted during the conversion of wood into wood pulp—also entered the containment area. Therefore, the sump pump needed to be able to pump rainwater as well as this hazardous byproduct.

There are many pump options available for sump and rainwater applications, but this particular application was more demanding than normal. Black liquor soap, or tall oil soap, is extracted from black liquor before the liquor is processed for reuse or used to create power. For the black liquor processing to continue at the highest efficiency and at reduced maintenance downtime, the soap needed to be removed.

The soap is essentially a fatty acid that foams and retains air when agitated and creates slippery and hazardous work surfaces when released. The soap is removed from the black liquor by skimming it off the tops of vessels and pumping it away using positive displacement pumps. During upset conditions, the soap can actively dump into the collection area and a pump would have 100 percent black liquor soap in the sump. The pump used to evacuate this sump area would see pumpage with entrained air, suspended solids, large swings in viscosity and unique control challenges, which would quickly fail some pump technologies.

THE SOLUTION

To contain the hazardous black liquor soap and black liquor, the company created a containment area with a sump that could be pumped out to a safe area for processing. The challenge was finding a pump that could handle the liquid, the varying operating conditions and would not leak. They originally installed another style of pump that leaked excessively. Needing to find a versatile and trustworthy solution for its containment area, the company turned to a pump manufacturer

PROJECT AT A GLANCE

CLIENT:
A major kraft mill that produces paper products

INDUSTRY:
Pulp and paper production

PUMP APPLICATION:
Sump pump service to handle the disposal of rainwater and hazardous byproducts

known for making durable and dependable products for the harshest applications: Sandpiper.

After assessing the situation, Sandpiper experts recommended installing a 2-inch heavy-duty ball (HDB) valve pump to remove both rainwater and black liquor soap from the plant.

The Sandpiper HDB down-ported pump was the perfect fit for this black liquor soap application. Here's why:

- It's self-priming and can completely pump out the sump.
- It can be controlled easily by one float connected to one discharge valve. When the discharge valve is closed, the pump simply stops and restarts when the valve is reopened.
- The AODD design has no mechanical seals like a rotating positive displacement or centrifugal pump. Mechanical seals have a tendency to fail in this application and will leak, causing more issues.
- It can run dry without damage. This is a plus when emptying sumps that can have varying liquid levels causing dry running.
- It can pump liquids entrained with air or other gases, such as the foamy black liquor soap.
- The Sandpiper HDB model with a bottom-port configuration is excellent at pumping solids-laden fluids by leveraging gravity to keep the pumping chambers free of blockage.

The pump was chosen because its AODD design could easily handle everything from water to highly viscous and abrasive fluids. The unique down-ported design uses gravity to evacuate the abrasive slurry from the diaphragm chambers, eliminating solids buildup. The pump also has weighted check balls to allow the balls to seat properly when pumping high viscosity fluids. The self-priming AODD pump can handle the air-entrained product without interruption or damage to the pump, and its seal-less design prevents leaks. To automatically turn the pump on or off for unattended service, plant management installed a Sandpiper Liquid Level Control.

THE RESULT

As a result of its partnership with Sandpiper, the company was able to find a reliable solution to a challenging pumping application faced by pulp and paper producers and avoid a potential emergency. If you're in charge of keeping plant employees safe and maintaining systems and machinery, it's important to partner with manufacturers you can trust. Sandpiper's wide range of products and deep pumping expertise can deliver the solution clients need for the most complex industrial problems. With Sandpiper's quick lead times and an after-sale support team that will ensure the equipment is running as efficiently as possible, this client received the reliability, durability, and value they deserved.

EDWARD KUPP is director of product management for Warren Rupp. Warren Rupp pumps are offered worldwide through independent authorized distributors in at least seventy-five countries, including Sandpiper. With over fifty-five years of trusted solutions expertise, Sandpiper delivers best-in-class pumping and engineering innovations for customers' most difficult and demanding pumping challenges. For more information, visit **www.sandpiperpump.com**.

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UPGRADE PROVES ITS WORTH

Minimal site installation time, but new screens revitalize inlet works

BY SHYAM MALLEN, SPIRAC

A prefabricated packaged treatment plant (constructed offsite) from Spirac has enabled a water company in the north of England to make much-needed improvements to its inlet works, and in doing so, keep its carbon footprint to a minimum.

For the wastewater treatment plant that serves a population of 25,000, Spirac designed and built three of its proven Fineguard screens at its manufacturing plant so that there was minimal civils and no concrete pouring on site.

Spirac's new treatment system sits on a reinforced precast concrete pad, supported by a galvanized steel support structure, elevated over 16 feet above ground level. This allows flows to gravitate easily to the downstream process units.

Prior to the installation, the inlet could no longer cope with the volumes it was receiving. Rags were constantly bypassing the old screens and getting into the secondary treatment area.

KEY IMPROVEMENTS

Part of a $15 million upgrade, the new treatment process has already resulted in key improvements to the quality of water being released into the local river, helping the environment and fish population. Before the new investment, ammonia discharge was at 13 parts per million, but this has now been reduced to just 0.1 parts per million.

Spirac's three Fineguard screens are capable of passing a maximum flow of 150 gallons per second of sewage at a design water depth of 1m downstream. Each screen consists of a band of perforated screen panels that are secured to drive chains on either side of the panels. On reaching the discharge section of the screen, a self-adjusting brush mechanism (with water spray jets) cleans the screen panels of debris. This ensures that the oncoming flow always meets unsullied panels for maximum performance. Furthermore, the screen panels are secured so that replacement of any individual units can be achieved with a minimum of effort and downtime.

Screenings are transferred from the screens via a launder trough system. Spirowash units then wash out the organic material, reducing the volume and weight of the screenings by compaction before delivering them to a skip via a press tube.

A grit vortex unit also removes suspended grit from the sewage flow. This consists of a pre-fabricated grit vortex chamber capable of handling up to a maximum 628 l/sec of screened raw sewage flow. The grit is extracted by means of a grit pump, and is fed to a Spirac Sandsep grit separator unit capable of handling up to 5 gallons per second of grit

slurry. The Sandsep unit dewaters and discharges grit into a skip.

COMPLETE PACKAGE

We are seeing far more focus and demand from water companies and Tier One contractors to provide a complete package, with minimal site time and use of civils materials, especially concrete.

With the comprehensive range of screens and grit removal solutions that we design and manufacture, we also have the capacity to create significant savings for our customers. Offsite build, testing and wiring is a big benefit for wastewater projects.

For over forty years, Spirac has been market leaders in shaftless spiral (screw) conveyor systems and inlet works packages. With offices located around the world, Spirac can provide the best solids material handling solutions developed with the benefit of international and local experience. The company's diverse product range and experienced team of engineers offer solutions for the smallest to largest WWTP. Spirac is also a major supplier of sludge silo systems, offering complete design, fabrication, and installation services for the efficient, clean, and odor-free handling of large or small capacity systems. For more information, visit **www.spirac.com**.

KEYS TO MINIMALLY INVASIVE SEWAGE RENOVATION

Innovation in robotics means great gains for municipal markets

BY MARKUS LÄMMERHIRT, PIPETRONICS

As is the case with any type of infrastructure, sewers require regular maintenance. But the often narrow pipes below the ground are difficult to access. Instead of unearthing them at great expense, users of trenchless renovation procedures use specialized robots that carry out the work in the interior of the pipelines. Pipetronics is a market and technology leader when it comes to the development and manufacture of sewer robotics.

MY HISTORY WITH UNDERGROUND SEWERS

I had studied precision engineering—called mechatronics today—and in 1990 I interned for a semester at D.T.I., an engineering office for special machinery construction. At the time, the company was developing a machine that was capable of milling off projecting parts of residential connection lines in pipes with a diameter of 6 to 12 inches. This cleared the path for an inspection camera. I was tasked with testing and improving the prototype.

While the customer approved the aforementioned prototype, the device was difficult to work with. As part of my degree thesis, I had the idea for a milling robot. This product was further developed at D.T.I and the first robots for sewer repairs were born. In 2000, I and the sales manager acquired the sewer robotics division from D.T.I. for the company we owned back then.

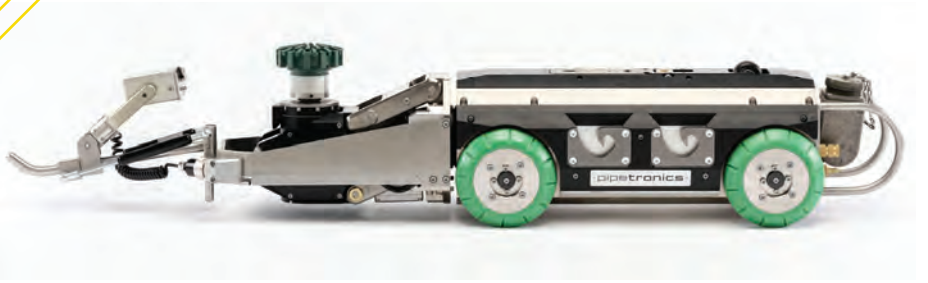
BUILDING A CUSTOMER BASE

Those initial customers were mainly from Germany, France, and Switzerland. Trenchless sewer renovation was already popular in these countries early on. At the time, we only had one competitor from Switzerland. As the industry was relatively small, we quickly made a name for ourselves worldwide and soon began exporting to Asia and the United States. The notion of working in the sewer without having to dig up the road is an irrefusable sales pitch. It saves time and money and traffic is not interrupted.

The length of the German sewage network is about 375,000 miles. According to our estimates, about 18 percent of this requires short-term renovation or replacement. I assume that it is about the same or worse in other countries.

PARTNER PROFILE: FAULHABER

Drive systems from Faulhaber are masterpieces of precision engineering and electromechanics at the limits of the technically feasible. Founded in 1947, Faulhaber offers today the most extensive range of miniature and micro drive systems available from a single source worldwide. On the basis of this technological diversity, Faulhaber designs drive solutions that are unique with respect to their precision and reliability in the smallest of spaces. Their main areas of use include production automation and robotics, aerospace, optical systems as well as medicine and laboratory technology.



THE CHALLENGES AND TRENDS IN SEWER ROBOTICS

The machines and devices that work in the sewer require sturdy and durable technology on the smallest possible footprint. Standard solutions are rarely feasible, which is why we develop most of the components ourselves. In terms of operation, we are expecting an increasing shortage of expert personnel. The idea is to replace humans with intelligent technology that can be operated without specialized training. The trend leans towards automatic traveling to the damaged location and automatic repair.

PARTNERSHIP WITH FAULHABER

If you need a lot of power in a small package, you need corresponding motors. Faulhaber's product range includes motors that meet all of our requirements, such as for the robot's drive, which has to pull a very heavy cable, or for the miniature wiper of a small camera.

DECIDING BETWEEN HYDRAULIC AND ELECTRIC DRIVES

Hydraulic drives are very solid, but their efficiency is limited for our scope of applications. Add to that the noise pollution and exhaust from the generator and the hydraulic unit. This should be avoided particularly when working in inner cities and residential areas. Electric drives and batteries allow us to operate the robot systems emission-free and almost noiseless.

Thus far, we have predominantly used brushed drives because suitable control options for brushless drives in our machines were not available in the past. The controller must be right on the motor, because it cannot be controlled over a 500-foot-long supply line. Our newest technology works with CAN-Bus, which also enables the controlling of brushless motors. The trend is moving towards bus technology and brushless drives. Brushless motors are subject to less wear, and they can be controlled and programmed.

Our top priorities are a small installation space and high-power density both for the motor and the electronics. And of course combined with robustness and durability.

THE UNIQUE STRENGTHS OF PIPETRONICS

Our core expertise lies in the development and manufacture of robotic systems. Our know-how is based upon decades of experience. That also extends to the vehicle equipment and generator design. We are also offering other innovative products on the market and to the users, such as pinpoint repairs with synthetic resin, for example. And we are continuously investing large amounts into further developments.

Our technology gives us a lot of flexibility, which enables us to easily integrate special designs into standard products on request. Sewer repair is clearly our core business. But in principle, the technology can also be used for the trenchless renovation of potable water pipes. It can conceivably be used in other pipeline systems, such as in the chemical industry, to inspect gas lines, tank systems, or pressure tanks.

People ask, do you think it's possible for humanoid robots to one day open manhole covers and descend down into the sewer? Anything is possible in principle. But such a technology would be highly complex and expensive. There are simpler solutions that are more expedient in every which way.

Pipetronics offers innovative solutions for trenchless sewer renovation. This includes a wide range of electric and hydraulic robots. The high degree of consulting and servicing expertise is supported by the company's five service locations, which also repair the devices. The company also offers individual equipment options for the vehicles and attachments including accessories and a wide range of consumables for sewer repairs. The product range also includes the internal pipe sealing systems RedEx®, Pipe-Seal-Fix, Pipe-Seal-Flex, and Pipe-Seal-End as well as the appropriate equipment. For more information, visit **www.pipetronics.com**.

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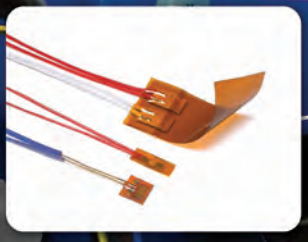

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IMPROVING VERTICAL TURBINE PUMP RELIABILITY

Materials matter when electing the right bearings Part 1 of 2

BY KEITH BRAND, THORDON BEARINGS

Vertical turbine pumps (VTPs) are available in a variety of configurations and are used for a number of different applications such as flood control, cooling water, wastewater, and drinking water supply. One of the biggest contributors to pump failures are issues involving the pump bearings. The type of water that lubricates the bearing as it is pumped varies considerably from application to application. Additionally, the amount of abrasives in the pumped water can vary significantly in different regions whereby the amount of abrasives can drastically effect bearing life. It is therefore critical to select the appropriate bearing material for the service as bearing life is influenced by the media being pumped.

The VTP bearings found in the bowl and column assemblies are one of the most critical components of any pump. Bearings not only

COMMON VERTICAL TURBINE PUMP BEARING MATERIALS

MATERIAL	MAXIMUM SUSPENDED SOLIDS	REMARKS
BRONZE	10 – 50 PPM	POOR DRY RUNNING, ESPECIALLY ALLOYS WITH LOW LEAD CONTENT
CARBON GRAPHITE	0 - 10 PPM	SELF-LUBRICATING, CORROSION RESISTANT
VESPE	0 - 10 PPM	SELF-LUBRICATING, CORROSION RESISTANT
RUBBER	50 - 200 PPM	GOOD WITH ABRASIVE, POOR DRY RUNNING
HARDENED METAL	50 – 200 PPM	EXPENSIVE ALTERNATE FOR ABRASIVES, NORMALLY POOR DRY RUNNING.

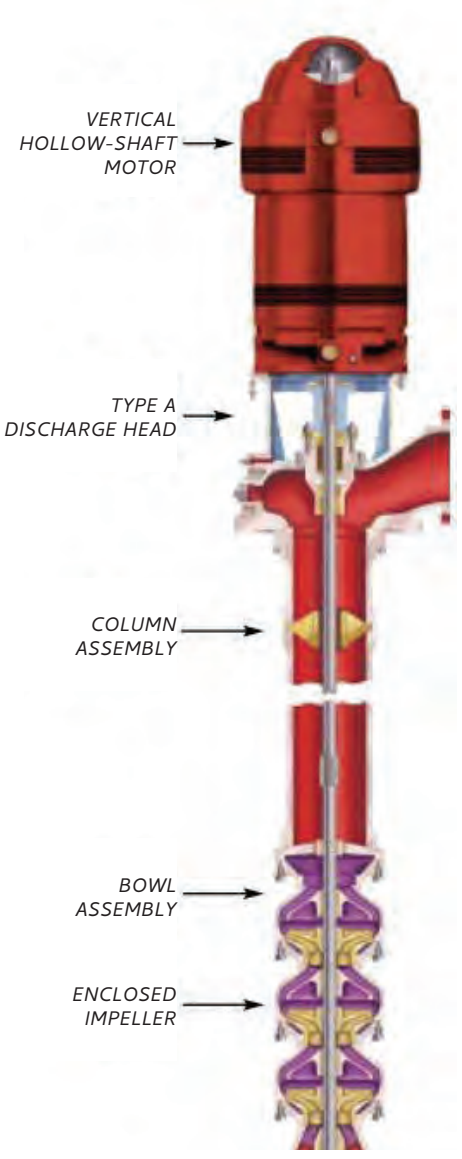
Figure 1

support the shaft; they also reduce friction on the pumps moving parts. In this series, we'll begin by looking over some of the most common bearing materials uses in vertical turbine pumps, examine the most frequent causes of bearing failure, and conclude with examples of different Thordon solutions that have met these challenges in the field.

COMMON BEARING MATERIALS USED IN VTPS

BRONZE

Bronze is the most popular bearing used in VTPs as it is readily available, easy to machine, and easy to install. However, it has poor abrasion resistance and is malleable and can deform under impact, which can



translate into increased shaft clearances. Bronze is also not recommended for dry starts and requires oil or grease, which can contaminate pumped water.

Other limitations include weight and its toxicity. Bronze is seven times heavier than non-metallic bearings making installation of large sizes difficult, and, due to lead content, most bronze bearings are not approved for drinking water. Additionally, bronze can be expensive in large sizes.

RUBBER

Rubber offers good abrasion resistance and accepts some vibration and shock loading but is too soft to install directly into a pump housing and requires a metallic or phenolic carrier to install into the housing. Rubber has a high coefficient of friction, thus dry starts are not recommended. Some manufacturers try to address this by applying a thin layer a nonstick chemical to the bearing. However, while these coatings offer low coefficient of friction, they are often not abrasion resistance so if the pump is running in abrasive water, the coating will wear away and the bearing will lose its dry start capabilities.

Rubber has lower mechanical strength so longer bearing lengths are recommended. Shorter bearings allow abrasives to pass through a bearing quicker and allows water to cool the bearing faster, which can translate into longer bearing life.

Furthermore, rebuilding a pump is difficult with rubber bearings. During the rebuild process the housing and shaft are usually machined and now require a non-standard size. The wall of the metal shell of the bearing is thin to begin with and rubber is difficult to machine so a non-standard size must be ordered. This can lead to long lead times and extra costs. Also, rubber is bonded into the shell, and there are numerous cases of the bond breaking causing catastrophic failures.

CARBON GRAPHITE AND THERMOSET LAMINATE

In short, carbon graphite bearings provide good dry running capabilities and temperature resistance, but they offer very poor abrasion resistance. These bearings are typically brittle and can fracture during installation or from thermal shock.

Likewise, thermoset laminate bearings also have poor abrasion resistance and poor dry run capabilities, but are used in some applications due to their low costs. There are many manufacturers and grades of this type of bearing, so physical properties can vary depending on the manufacturer. Most are made with cotton or glass cloth layers impregnated with thermosetting resins.

Another concern arises in the machining of thermoset laminates, which can pose health issues due to fine resin dust being generated during the process. Special breathing apparatus is required. Also, during the machining process, some surface cords may become exposed and leading to significant surface swell which can

reduce running clearance causing the pump to bind up.

THERMOPLASTICS

There are many manufacturers of thermoplastic materials using different materials. Some are not preferred for bearing applications—for example, nylon thermoplastics have high moisture absorption and poor abrasion resistance and acetal's abrasion resistance is worse than nylon and it has poor impact resistance. Polyphenylene sulfide (PPS) has good chemical resistance and thermal properties but can be brittle and crack due to shock or vibration. Due to its chlorine resistance, it is often used as a bearing for applications in water parks and aquariums.

Engineered thermoplastic, such as Vespel and PEEK, are used in many pump applications but are overkill for water-lubricated pumps. More appropriate applications for these materials would be in harsh chemicals or high temperatures.

PEEK has high temperature capabilities combined with good chemical and steam resistance as well as thermal and hydrolytic stability. Most bearing grades are reinforced with carbon fiber or graphite making it challenging to process and machine.

Vespel CR-6100 is a carbon reinforced PFA that can be found in pump applications dealing with harsh chemicals and high temperatures. A specialty product, its higher cost is due to high resin costs and limited number of molds available. AR-1 is another expensive filled PFA, but has lower abrasion resistance and is limited in applications to 100 degrees Fahrenheit (37.8 degrees Celsius).

A LOOK AHEAD: COMMON CAUSES OF BEARING FAILURE

Abrasion resistance and dry start capabilities are the prime causes of bearing failure. Most of the bearing materials mentioned above might be good with one of these issues but seldom are good at handling both. In next month's conclusion we'll discuss some of the technical factors that create these challenges and the solutions Thordon has been providing to address them.

KEITH BRAND is strategic account manager for vertical pumps with Thordon Bearings and has traveled the world training OEM pump engineers how to design non-metallic pump bearings. Thordon Bearings Inc., a Thomson-Gordon Group company, is a family-owned business manufacturing high performance, oil and grease-free bearing systems, seals, and other shaft line products for the global marine, clean power, pump, and industrial markets. For more information, visit **www.thordonbearings.com**.

THE RIGHT AODD PUMP CAN HELP DECREASE ENERGY CONSUMPTION

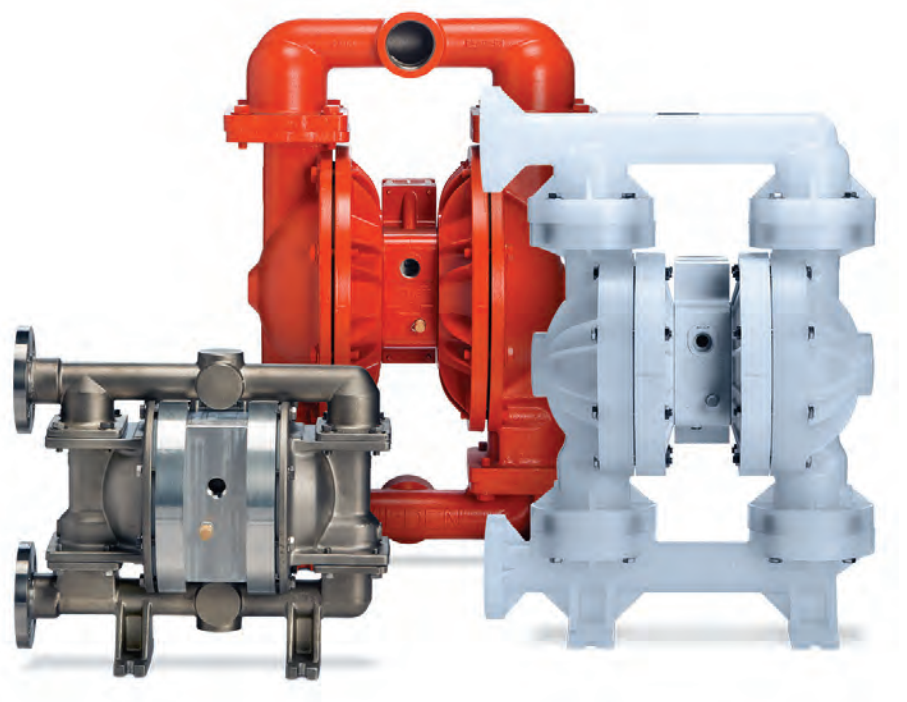
Optimize air usage and satisfy the tenets of the sustainable-manufacturing movement

BY TOM ZUCKETT, WILDEN

There is no aspect of human existence that can function properly or reliably without energy, the preponderance of which is produced from refined crude oil, natural gas and coal. Therefore, it is imperative that companies that rely on energy to power their industrial-manufacturing operations create and implement systems that are as energy-efficient as possible, especially as energy costs continue to rise.

To aid these companies in both creating sustainable manufacturing regimes and battling increasing energy costs, a number of utilities—especially those that supply energy through the electrical power grid—have created rebate programs in which those industrial companies that are able to demonstrate that their methods of operation require less energy and are environmentally sustainable can be eligible to receive monetary refunds in their energy bills.

Knowing this, many industries are commendably attempting to develop new manufacturing and production methods—known as "sustainable manufacturing"—that are more environmentally and socially friendly. The caveat, however, is that while these methods can have long-term benefits for the future, they can also have higher upfront implementation costs.



THE CHALLENGE

For our purposes, since air-operated double-diaphragm (AODD) pumps are powered by air, and air compressors are ultimately powered by electricity, let's focus on that form of energy and how prices for a kilowatt/hour (kWh) of electricity have been influenced in recent years. In 2017, the average national price for a kWh was $0.07, or 7 cents. In March 2022, that price had more than doubled to an average of 14.47 cents per kWh, which was up from 13.33 cents per kWh a year earlier.

The lucky residents in three states (Montana, Oregon, and North Dakota) actually saw a decline in electricity prices from 2021 to 2022, but their averages (10.03 to 11.01 cents per kWh) were still higher than 2017's national average. On the other hand, the state of Maine had seen its average kWh price jump more than 40 percent to 23.03 cents per kWh in 2022, making it one of eight states—with Alaska, California, Connecticut, Hawaii, Massachusetts,

New Hampshire, and Rhode Island being the unfortunate others—to have a kWh average higher than 20 cents.

While we may be talking about pennies, these higher costs can quickly add up, not just for homes and businesses trying to stay warm in the winter, but for industrial operators that are the backbone of the global manufacturing chain. The Hydraulic Institute revealed the importance of electricity in industrial manufacturing in a study that showed industrial pumping systems can account for nearly 20 percent of the world's electricity demand and that energy consumption can be up to 90 percent of the total cost of owning and operating a pump.

At the same time, it has been estimated that 30 percent to 50 percent of the energy that is consumed by pumps can be saved through the implementation of equipment or control-system upgrades. This makes pump systems an easy target for developing operational improvements that can lower energy consumption that will help optimize operating costs and create a more environmentally friendly mode of operation.

Which brings us back to the aforementioned "sustainable manufacturing." According to the World Commission on Environment and Development, sustainable manufacturing is designed to "meet the needs of the present without compromising the capability of future generations to meet theirs." This can be accomplished by manufacturing products via economical means and utilizing components that reduce waste and negative environmental impacts.

The claim that this altruistic mindset is being adopted by many of the world's largest companies is backed by KPMG's 2020 Survey of Sustainability Reporting that showed that 80 percent of the world's leading companies are now reporting on their sustainability efforts and are incorporating sustainability programs into their day-to-day operational goals.

There are six elements that must be optimized to create a reliable, sustainable-manufacturing process and pumps that are capable of operating efficiently and sustainably can contribute to at least four of them: manufacturing cost, power consumption, operational safety, and environmental friendliness. So, to overcome the challenges of energy acquisition and consumption while still being able to live up to the tenets of the growing sustainable-manufacturing movement, operators of industrial-manufacturing facilities must find ways to improve their pumping systems and processes.

THE SOLUTION

Pumps are required pieces of equipment in many applications within a manufacturing facility, from loading and unloading raw materials and finished products to the transfer of critical fluids and waste products. While the pumping landscape is rife with different technologies, all of which must be powered through some type of energy source, AODD pumps have proven over the decades to be one of the top choices for utilitarian pumping applications.

Jim Wilden invented the AODD pump in 1955, which became the foundation for his eponymous Wilden AODD pump brand. AODD pumps are reciprocating, positive-displacement pumps that are driven by electricity-generated compressed air. AODD pumps are the best solution for many industrial liquid-handling applications because of their simple design, which simply features two diaphragms that are connected by a common shaft, two inlet valve balls, and two outlet valve balls. The diaphragms are driven by the compressed air, which removes mechanical stress from the pump's operation, leading to a longer and more reliable service life.

While the AODD pump's features and benefits were an undoubted revelation when introduced to the market nearly seventy years ago, the pumps required large amounts of compressed air to operate properly. This compressed air is delivered to the pump via electricity, which, as we have noted, has been increasing in price in recent years.

More than anything, Jim Wilden was an innovator and that mindset has been ingrained in his company's DNA from the start. This has led to a pursuit of excellence that has resulted in a number of innovative improvements to the design and operation of Wilden AODD pumps over the years.

The engineers at Wilden invented the Pro-Flo® Shift Air Distribution System (ADS) to help reduce the overall amount of compressed air needed to operate the pump

while simultaneously optimizing the air that is used. The Pro-Flo Shift was not just an incremental improvement in ADS technology, it was a true game-changer, one that represented an entirely new way of looking at how pneumatic pumps operate.

The inefficiency in the operation of traditional ADSs is the time delay that AODD pumps experience when pressurized air is switched from one air chamber to the other. This results in overfilling of the air chamber, with the excess air vented into the atmosphere without having any beneficial effect on the pumping process.

To combat overfilling, the design and operation of the Pro-Flo Shift ADS restricts the air flow into the air chamber near the end of each pump stroke so that only enough air is introduced to keep the pumping process functioning. The key here is the incorporation of a specialized air control spool that automatically meters the air to prevent overfilling with no reduction of product yield. The result is reduced air consumption while still maintaining maximum operational efficiency and flow rates.

In fact, the Pro-Flo Shift ADS can operate reliably and efficiently with up to 60 percent less compressed air when compared to other AODD-pump technologies while still being able to achieve flow rates that are up to 34 percent higher than competitive AODD-pump models.

Whether it's for an existing Wilden installation using older ADS technology or the upgrade of a non-Wilden pump, the company and its distribution partners have developed tools and usage calculators that can provide proof that Wilden AODD pumps are more energy efficient and able to be used in a sustainable-manufacturing system.

For example, one manufacturing facility replaced its existing AODD pump with a Wilden Pro-Flo Shift model, which was run 7.5 hours a day and five days a week. The result: savings of up to $1,000 in annual energy costs to operate just that one pump. Additionally, since the manufacturer was able to show documented proof that the Wilden pump was reducing energy consumption to its energy supplier, the utility gave the manufacturer a rebate that helped it pay for the new Wilden pump.

Examples like this abound among manufacturers who have begun using Wilden Pro-Flo Shift pumps and there are no limitations on the type or style of pump that can be used. Currently, Wilden offers its Pro-Flo Shift ADS on its full lines of plastic or metal, clamped or bolted AODD pumps in sizes from 1/2 to 4 inches.

CONCLUSION

With energy costs continuing to increase and companies encouraged to make their manufacturing operations more sustainable, finding the right pumping technology has never been more important. Wilden Pro-Flo Shift pumps are the one AODD-pump technology that has been proven to ease energy consumption and contribute to more sustainable manufacturing processes. With documented reductions in air consumption and simultaneous improvements in flow rates, Wilden Pro-Flo Shift Series AODD pumps deserve a spot as a first-choice pumping solution for many of the world's most significant manufacturing operations.

TOM ZUCKETT is the AODD business development manager, Americas for PSG® and Wilden® and can be reached at tom.zuckett@psgdover.com. Wilden is a brand of PSG, a Dover company. PSG is comprised of several leading pump companies, including Abaque®, All-Flo™, Almatec®, Blackmer®, Ebsray®, em-tec, Griswold®, Hydro™, Malema, Mouvex®, Neptune®, PSG® Biotech, Quantex™, Quattroflow®, RedScrew™, and Wilden. For more information, visit **www.psgdover.com/wilden**.

MORE SUSTAINABLE PUMPING USING PERMANENT MAGNET MOTOR TECHNOLOGY

This proven technology helps pump owners and operators optimize system performance
Part 1 of 2

BY MARIO DESIMONE, FRANKLIN ELECTRIC

Being good stewards of natural resources like water and energy while still maintaining or even improving productivity is an ever-growing challenge for business owners and operators in search of sustainable solutions. That's why high efficiency equipment has become a more viable option than ever. Specifying engineers across a variety of industries, including the mining, industrial, commercial, municipal and agricultural sectors, want to understand how high efficiency systems will work for their application needs. Will these systems not only deliver financial savings but also perform reliably with steady operation—using resources more intelligently without sacrificing equipment life, maintenance, and other operational concerns?

A growing solution for delivering higher efficiency with proven reliability is a pumping system built around a permanent magnet (PM) motor. PM motors are a proven technology many people use throughout their lives; automotive equipment, computer drives, vacuum cleaners and outdoor tools are just a few examples. The rotors inside PM motors are magnetized at all times due to the raw material selection and require no electrical power, making them more efficient—especially at reduced speeds and partial loads. PM motors operate more efficiently using rare earth magnets that perform with no slip. This translates into lower input power for the same output power, saving on operational costs every time the motor runs. In fact, running these in specific applications can provide energy savings that quickly offset additional initial investment costs. Motors with a 94 percent efficiency rating provide an investment payback of less than two years in most long- or continuous-run applications. This series takes a closer look at the benefits PM motors deliver in various applications.

LOWER OPERATIONAL COSTS AND INCREASED ENERGY SAVINGS

Energy used by induction motors to produce work can reach up to 97 percent of its lifetime cost, while the purchase price represents as low as 2 percent of its total cost of ownership (TCO). In contrast, a pumping system powered by a PM motor and optimized with a drive runs much more efficiently. This is especially true in a setting that requires continuous duty, where these savings can add up and will multiply over the years. PM motors run with an efficiency rate of up to 94 percent which is 10 to 12 points greater than a standard induction motor and delivers up to 21 percent energy savings when compared with its counterpart. The Hydraulic Institute rates the interior permanent magnet design as the best peak efficiency available when compared to any other motor constructions, including surface-mounted or even induction motors.

PM motors offer benefits whether the application requires constant or intermittent operation, since the PM rotor does not need to be magnetized. This concentrates all the power into motor shaft rotation for improved efficiency. Because of this power concentration, PM motor systems can run at a synchronous speed, providing improved hydraulic performance. With no slip, the motor speed is consistent and will not vary regardless of load.

LOWER OWNERSHIP COST CONSIDERATIONS

When looking for greater long-term savings and a lower total cost of ownership (TCO) over conventional systems, there are several other factors to consider that add to daily operating costs. In addition to the initial acquisition cost to purchase and transport the pumping system, TCO calculations for PM motors should include:

- **SERVICE COSTS PER YEAR:** Service costs per hour times service hours per year.
- **DOWNTIME COSTS PER YEAR:** Cost per downtime hour times downtime hours per year. Multiply each of the annual costs above by pump life span and add in the initial acquisition cost to calculate the TCO of a pumping system.
- **ENERGY COSTS PER YEAR:** To account for your system's costs, consider the utilization of all components. Take the local cost per kilowatt-hour (kW/h) times hours of operation per day times the number of days the pump operates per year times the kW absorbed at duty point by the pump.

Here are examples of from our customers illustrating how permanent magnet technology can impact your energy costs per year and can deliver energy savings:

- A dairy application in Pickett, Wisconsin, relying on a 60-horsepower pump-motor assembly (PMA) that operates twelve hours a day for most of the year, can observe up to $3,500 in energy savings when its motor is replaced with permanent magnet technology design.
- Even with only eight-hour operation days, a 100-horsepower pump-motor assembly serving a municipal water system in Williamsburg, Virginia, achieves savings of up to $2,000 per year.
- In the demanding mining market, a dewatering application in a mine site located in Parrish, Florida, requires a 175-horsepower submersible pumping set at depth of 2,000 feet. While their energy costs are slightly under the national average at only 10.0 c/kWh, their annual consumption can achieve energy savings of up to $4,000 in each well, if switched to a motor that leverages permanent magnet technology.

Many factors can improve return-on-investment (ROI) time, including energy consumption costs in the region. Additional considerations for cost savings include:

1. **REDUCED STARTUP/ PROGRAMMING TIME.** Select manufacturers have engineered their systems so that drives can easily be paired with a variety of motors in minutes—eliminating time wasted on programming.
2. **REDUCED TRANSPORTATION COSTS.** PM motors also feature a lighter and more compact size than standard induction systems, offering ease of installation while reducing freight and setup costs. In some cases, a more compact unit can be delivered to the jobsite quicker and more cost effectively.
3. **MORE EFFICIENT MATERIAL SELECTION.** Select components have smaller size requirements. The system's lower current means that specific components (like wire/ cable and required VFD) might be smaller and less costly.

RELIABILITY

For any business using pumping equipment, reliability is critical. A more efficient pump is only as good as the consistent output it delivers. This is especially true in mining or municipal operations, where a down pump can have a catastrophic effect. PM motors in submersible pumping systems feature fewer moving parts as well as minimal aboveground

components, which can mean easier initial installation and less scheduled maintenance down the road when compared to a vertical line shaft turbine installation.

When supplying water to homeowners and businesses, reliability equates to quality. PM motors should be National Sanitation Foundation/American National Standards Institute (NSF/ANSI) 61 certified and safe for drinking water systems to provide this peace of mind.

A LOOK AHEAD

In the second part of this series, we'll expound upon more benefits PM motors can provide across different applications. When taken as a whole, the benefits of these efficient, reliable, and sturdy machines prove their value to pump operators time and time again.

From groundwater to water treatment and more, Franklin Electric's diverse product portfolio, combined with industry-leading technical support and service tools, helps save customers time and money. Franklin Electric is a global leader in the production and marketing of systems and components for the movement of water and energy. Recognized as a technical leader in its products and services, Franklin Electric serves customers around the world in residential, commercial, agricultural, industrial, municipal, and fueling applications. For more information, visit **www.franklinwater.com**.

HOLDING STEADY IN HARSH CONDITIONS

Hitemp 160 pump bushings successfully tested in fuming sulfuric acid

BY PHILLIP DE VILLIERS, VESCONITE BEARINGS

It's one thing to promise reliable performance under hazardous and demanding conditions, but what happens when a product is put to the test? A prominent industrial entity in South Korea carried out testing on Vesconite Bearings' Hitemp 160 machined bushings by fully submerging the bushings in an oleum (fuming sulfuric acid at 30 percent concentration) up to a temperature of 176 degrees Fahrenheit (80 degrees Celsius) while utilizing an alloy 20 stainless steel shaft on a sump pump. Even under the conditions of this demanding application, the customer was pleased with the material's success.

PASSING THE TEST

The test results have been gratifying, reaffirming Vesconite Bearings' commitment to providing reliable and durable solutions for challenging environments. The Hitemp 160 machined bushings, developed to have good resistance to extreme chemicals and high temperatures in bearing applications, have proven their worth in this demanding application.

Both the company and manufacturer were thrilled with the performance of the Hitemp160 machined bushings in the recent testing conducted in South Korea, which further reinforces Vesconite Bearings' position as a leading provider of high-quality engineered bearing and wear materials for critical applications in challenging environments.

REAPING THE REWARDS

Due to the resounding success of the testing, the client has expressed its confidence in Vesconite Bearings' products by placing an immediate order for an additional set of three Hitemp160 machined bushings.

The repeat order underscores the client's satisfaction with the product's performance and its trust in Vesconite Bearings' ability to deliver reliable solutions to meet its

PHILLIP DE VILLIERS is senior technical representative at Vesconite Bearings. Vesconite Bearings is a world-leading manufacturer of low-friction, low-wear bearing materials for a wide range of industries. Selling to over 100 countries, these include the pump, agriculture, railways, mining, heavy transport, hydro, renewable-energy, earthmoving, marine, and construction industries. For more information, visit **www.vesconite.com**.

industrial needs, and in short delivery time frames.

Vesconite Bearings takes pride in its commitment to customer satisfaction and continuous improvement, striving to develop innovative, high-performance solutions that withstand the most demanding operating conditions.

SUCCESS BREEDS SUCCESS

The successful testing in South Korea is a testament to Vesconite Bearings' dedication to providing reliable and durable products for numerous applications across various industries around the globe. Just in the last year, the Water Regulations Approval Scheme (WRAS), an independent certification body for plumbing products and materials in the United Kingdom, approved Hitemp 160 bearing material for contact with water up to 150 degrees Fahrenheit (65 degrees Celsius).

With the certification, the material is certified as safe for water intended for human consumption up until that high temperature. U.K. pump and potable water component manufacturers can confidently use the product within the given temperature parameters, and the certification also provides comfort for the general safety of the bearing material where it is used outside of the United Kingdom.

FEATURED PRODUCT

CRANE PUMPS & SYSTEMS

BARNES SOLIDS HANDLING PUMPS

The Barnes family of pump products from Crane Pumps & Systems provides versatility, high performance, and unequaled value. For more than a century municipalities, engineers, plumbing contractors, builders, and developers have relied on Barnes wastewater pumps and pressure sewer systems for reliability and durability. From fractional horsepower sump pumps to robust grinder and chopper pumps, Barnes delivers innovative, cost-effective Solids Handling Pump solutions.

One of the main issues plaguing customers has been and will continue to be the changing waste stream's capability to handle solids. This led to the development of the Barnes SH Non-Clog and SITHE Chopper products. The SITHE chopper features a patented open center cutter design, field replaceable heat-treated stainless-steel blades, and plug-and-play cord, making it the preferred pump of choice in municipal wastewater applications, especially those with clogging issues. Furthermore, Barnes understood the rising demand for a more efficient submersible pump that could attain premium efficient, IE3, motor ratings. Utilizing their proven non-clog and chopper technologies, they introduced the envie3 motor line. These pumps took Barnes' proven non-clog and chopper wet ends and outfitted them with a premium efficient motor that can run in both wet applications and dry pits, as well as in horizontal or vertical configurations. The development of this platform expanded the portfolio and pushed the envelope on one solution solving a variety of needs.

Don't have a ton of flow or need a lot of head at your waste station? Still focusing on this clogging issue, Barnes has also launched a new and improved grinder platform. The RAZOR grinder pump is the ideal 2-horsepower pump for light commercial and residential solids handling applications. With the Razor's thoughtfully designed innovative axial cutting technology, it is engineered to efficiently reduce solids like flushable wipes, diapers, and other non-biodegradable items. This grinder product is especially useful in pressure sewer systems. The Barnes' pressure sewer system with the Razor grinder can reduce installation costs, increase system flexibility, and limit the overall environmental impact of the sanitary sewer system. Its flexible capabilities allow it to be a turnkey solution or easily integrated into existing systems.

Barnes' innovation doesn't stop there. Their offering expands to sewage ejectors and sump pumps that are used in smaller applications as well. Designed for long operational life, quiet operation, and dependable service, Barnes has your residential needs covered.

The Barnes brand from Crane Pumps & Systems is a leader in the design and manufacture of advanced pump solutions for wastewater applications of all sizes. They are your trusted partner in wastewater transportation and management, setting the bar higher with each innovation.

For more information, visit

WWW.CRANEPUMPS.COM.

SHIMADZU SCIENTIFIC INSTRUMENTS

BREVIS GC-2050 GAS CHROMATOGRAPH

Shimadzu Scientific Instruments introduces the Brevis GC-2050 gas chromatograph with built-in analytical intelligence to deliver best-in-class analytical performance in a space-saving compact design. The eco-friendly Brevis GC-2050 consumes 30 percent less power than conventional models, minimizes helium gas use, and supports alternative carrier gasses. The Brevis GC-2050 system delivers analytical precision with the AOC-30i auto injector to enable continuous analysis with a high level of accuracy that manual operation cannot achieve. For more information, visit **www.ssi.shimadzu.com**.

CIRCOR INTERNATIONAL

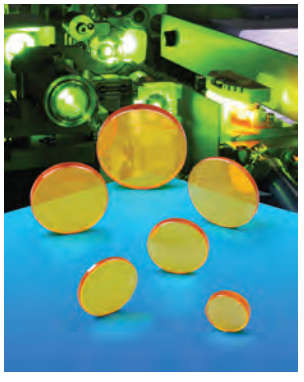
IMO 3-SCREW ROTARY PUMP TECHNOLOGY

The IMO 3-screw positive displacement rotary pump technology is ideal for lowering transformer oil purification operating costs. Its design excels under low/vacuum inlet pressures and provides enhanced reliability and longevity. The pumps are available in the 3D and 3E series for transfer/circulation of transformer insulating oil. Series 3D pumps offer very low airborne noise levels, high operating efficiencies, and non-pulsating delivery of flow. Series 3E pumps are designed and engineered for excellent suction capability over a wide range of fluid viscosities. For more information, visit **www.circor.com**.

EMERSON

FISHER FIELDVUE DVC7K DIGITAL VALVE CONTROLLER

The DVC7K features "Advice at the Device" technology with embedded computing and analytics that convert raw data into actionable information locally with Bluetooth capability, within the device. This means maintenance personnel can receive the data via their phone, tablet, or computer wirelessly without having to be in a control room at the plant location. The new valve controller technology improves the performance, reliability, and uptime of both on-off and control valves. For more information, visit **www.emerson.com**.



LASER RESEARCH OPTICS

ZNSE PLANO-CONVEX LENSES

These ZnSe lenses are well suited for a wide range of applications requiring the precise control of light and where long-distance focusing is necessary. Applications for Laser Research ZnSe Plano-Convex Lenses include industrial inspection and measurement equipment, medical diagnostics devices, laser beam expanding, collimation systems, remote sensing and surveillance, infrared imaging and spectroscopy, and scientific research. For more information, visit **www.laserresearch.net**.

ELIMINATING INDUSTRIAL ENERGY WASTE AND UNPLANNED DOWNTIME


Jasper Hoogeweegen

Samotics' Jasper Hoogeweegen on turning insight into action

Samotics is a leading provider of real-time actionable insights to optimize performance and energy efficiency of AC motors and rotating equipment and recently launched its newest energy efficiency solution: Energy Analytics. Below, Jasper Hoogeweegen, chief executive officer at Samotics, discusses the need for this approach and the benefits his company's customers can expect.

MPT: ***When you surveyed the industrial market, what precipitated the need for a solution like Energy Analytics?***

JASPER HOOGEWEEGEN: There is a growing sense of urgency for industrial organizations to improve the efficiency of their operations and reduce energy waste. Electricity costs—which are by far the largest outlay when operating rotating equipment—continue to increase amid ongoing pressures within energy markets. Organizations are also working to realize ambitious sustainability targets as part of a global push toward net zero.

MPT: ***What is some of the background on how this product came to market?***

JASPER HOOGEWEEGEN: Energy Analytics leverages Samotics' years of experience monitoring electrical signals to provide insight into the efficiency of rotating equipment, benchmark performance against industry best practices, and deliver actionable, prioritized savings recommendations.

Energy Analytics enables organizations to act immediately with no hardware investment, transforming fragmented, granular datasets into concrete recommendations to reduce energy costs and emissions.

MPT: ***When you say no hardware investment, how does that work? Can I build on my existing systems?***

JASPER HOOGEWEEGEN: With Energy Analytics, organizations simply enable access to historic telemetry data from their existing measurement infrastructure (for example, SCADA systems), which is then mapped, cleaned, and pre-processed to enable structured analysis within the industry-leading analytics platform. Support from Samotics' expert team then enables organizations to quickly realize and report significant energy savings through continuous optimization, without the CAPEX investment and complexity associated with the installation of hardware.

Energy Analytics directly complements Samotics' widely deployed and proven SAM4 technology ecosystem which uses electrical signature analysis (ESA) to enable continuous monitoring of the assets' health, performance, and energy efficiency. Where an organization's existing monitoring data is incomplete in terms of volume or quality, for example, SAM4 Energy sensors can be quickly and easily installed. This is particularly beneficial for equipment in harsh or submerged environments, as the sensors are installed in the motor control cabinet rather than on the asset itself.

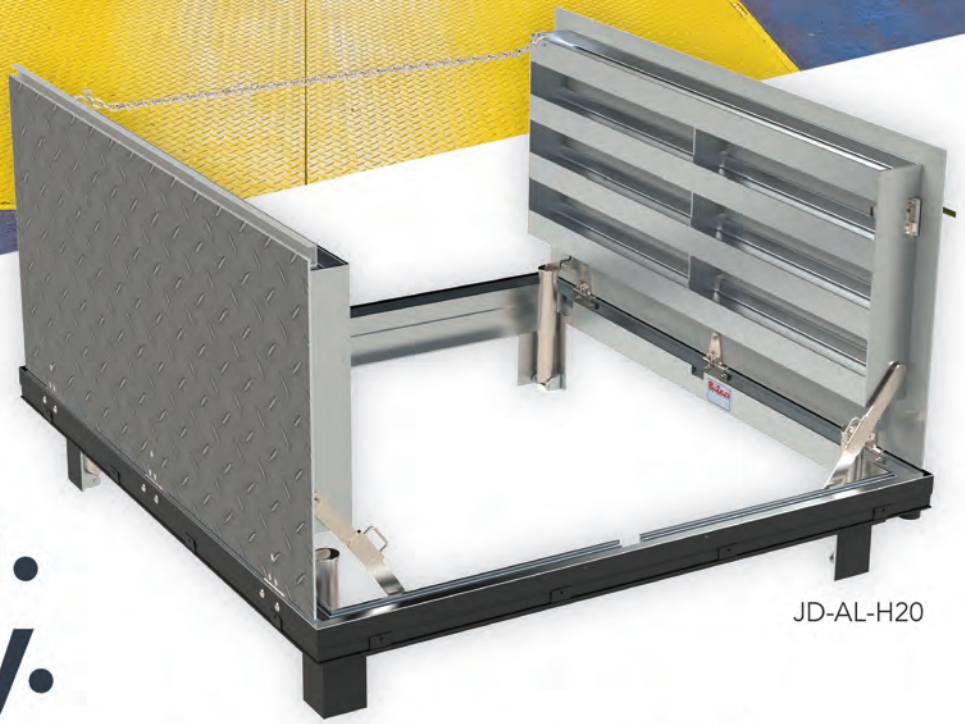
MPT: ***How would you summarize the key benefits customers should look for?***

JASPER HOOGEWEEGEN: First, Energy Analytics enables industrial organizations to leverage existing data to realize energy savings of up to 15 percent and reduce associated carbon emissions.

Second, the platform provides insight into the efficiency of rotating equipment, benchmarks performance against industry best practices, and delivers actionable, prioritized savings recommendations.

Lastly, Energy Analytics is easy to set up and compatible with existing measurement infrastructure. The existing data is then mapped, cleaned and pre-processed. ■

To listen to an extended version of this interview, be sure to subscribe to MPT's podcast, The Efficiency Point.



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