

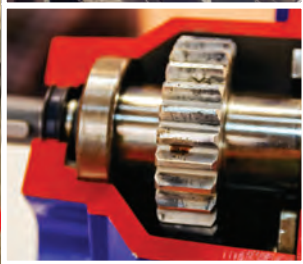
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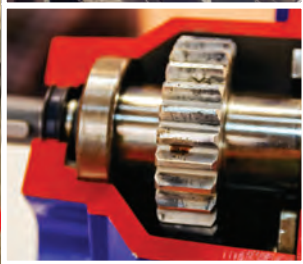
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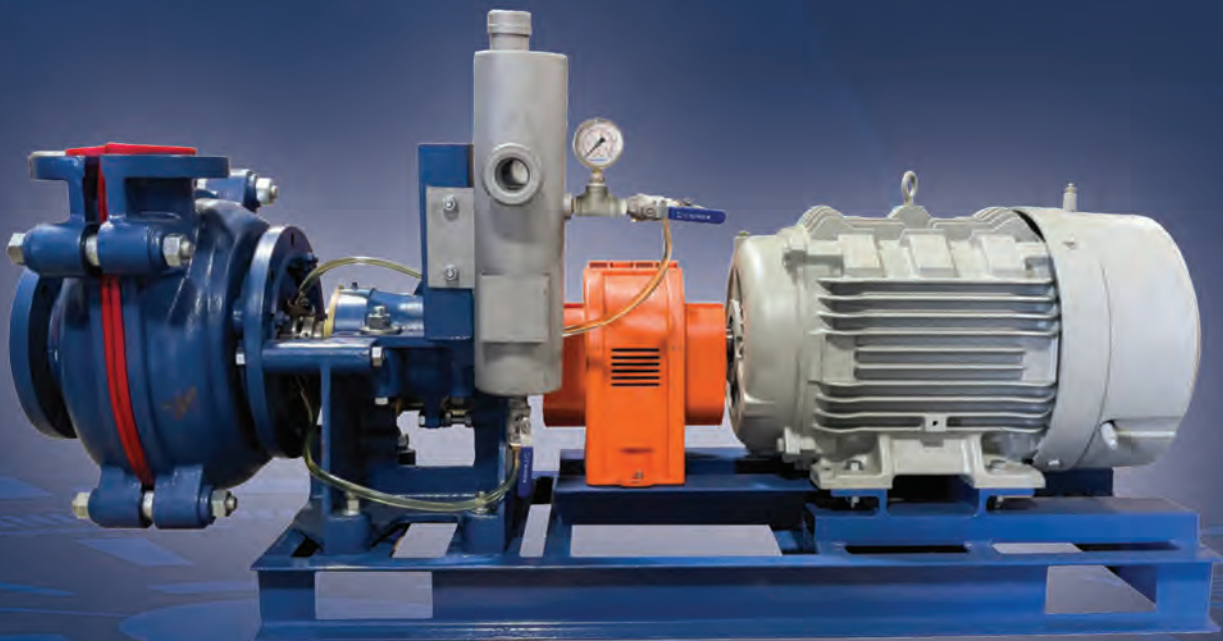
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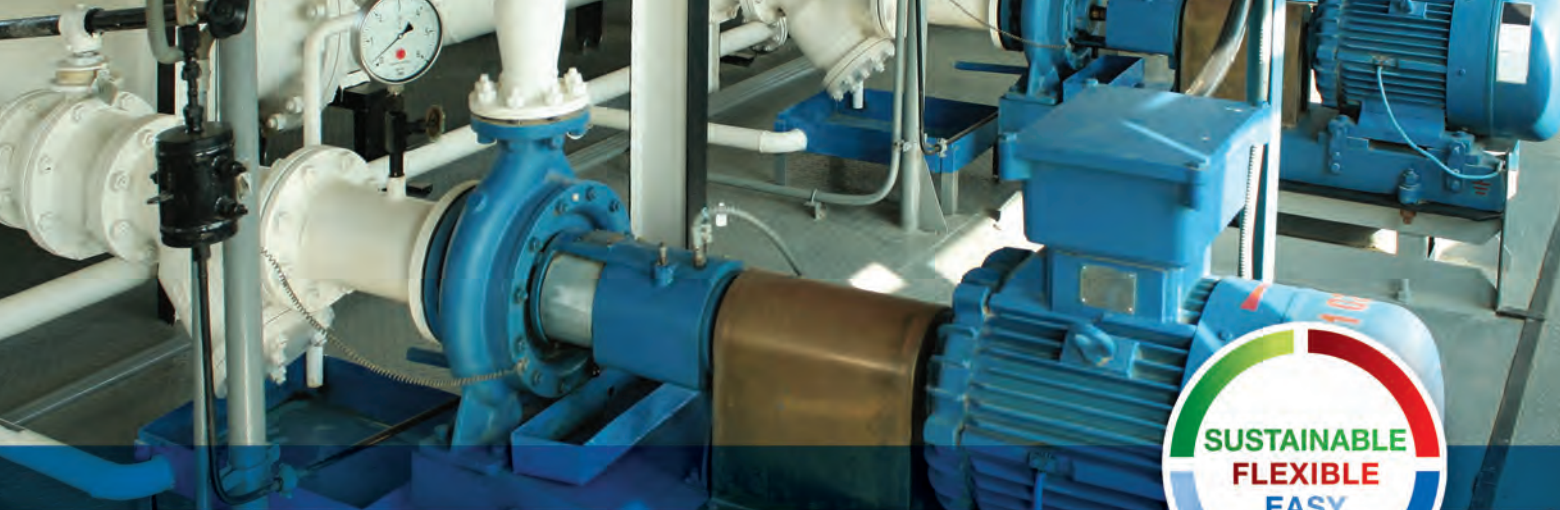
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LIQUIDPISTON RAISES \$30 MILLION IN REG A+ CROWDFUNDING

LiquidPiston, Inc., a technology startup of efficient rotary engine technology and hybrid power systems, and DealMaker, a leading cloud-based fintech platform used by growing companies to raise capital digitally, announces the successful close of LiquidPiston's second Reg A+ equity crowdfunding campaign. The raise, which was oversubscribed, brought in \$30 million in investments, bringing the total capital raised across three Regulation CF campaigns and two Regulation A campaigns to \$50 million.

The support from over 10,000 investors in this round underscores the confidence in LiquidPiston's technology and its potential to deliver power for a wide spectrum of military and commercial hybrid-electric applications. The funds will be instrumental in accelerating the company's research and development efforts, expanding its operations, and bringing its groundbreaking engine technology closer to commercialization.

"We are incredibly grateful for the tremendous support from our investors, who have shown unwavering belief in our vision and technology," adds Alec Shkolnik, CEO of LiquidPiston. "This round is a testament to the hard work of our dedicated employees, the expertise and support of the DealMaker team, and the transformative potential of our engine technology."

HUBBELL TO ACQUIRE SYSTEMS CONTROL

Hubbell Incorporated announces that it has entered into a definitive agreement to acquire Northern Star Holdings, Inc. (commercially known as Systems Control), a portfolio company of Comvest Partners, for \$1.1 billion in cash, subject to customary adjustments.

Systems Control is a leading manufacturer of substation control and relay panels, as well as turnkey substation control building solutions. These highly engineered offerings are mission-critical to grid reliability, enabling utility customers to protect and control substation infrastructure while detecting faults and controlling the flow of electricity. Systems Control estimates 2024 sales of approximately \$400 million.

Gerben Bakker, Hubbell's chairman, president and chief executive officer, says, "This acquisition enhances Hubbell Utility Solutions' industry-leading franchise across utility components, communications and controls. Systems Control has a strong track record of financial performance and is highly complementary to Hubbell's portfolio."

Greg Gumbs, president, Utility Solutions adds, "Substation automation is critical to upgrading aged infrastructure and enabling the integration of renewables and electrification on the grid. Systems Control has a proven value proposition, with leading manufacturing quality and engineering expertise driving labor savings for utility customers while enabling them to operate critical infrastructure reliably and efficiently."

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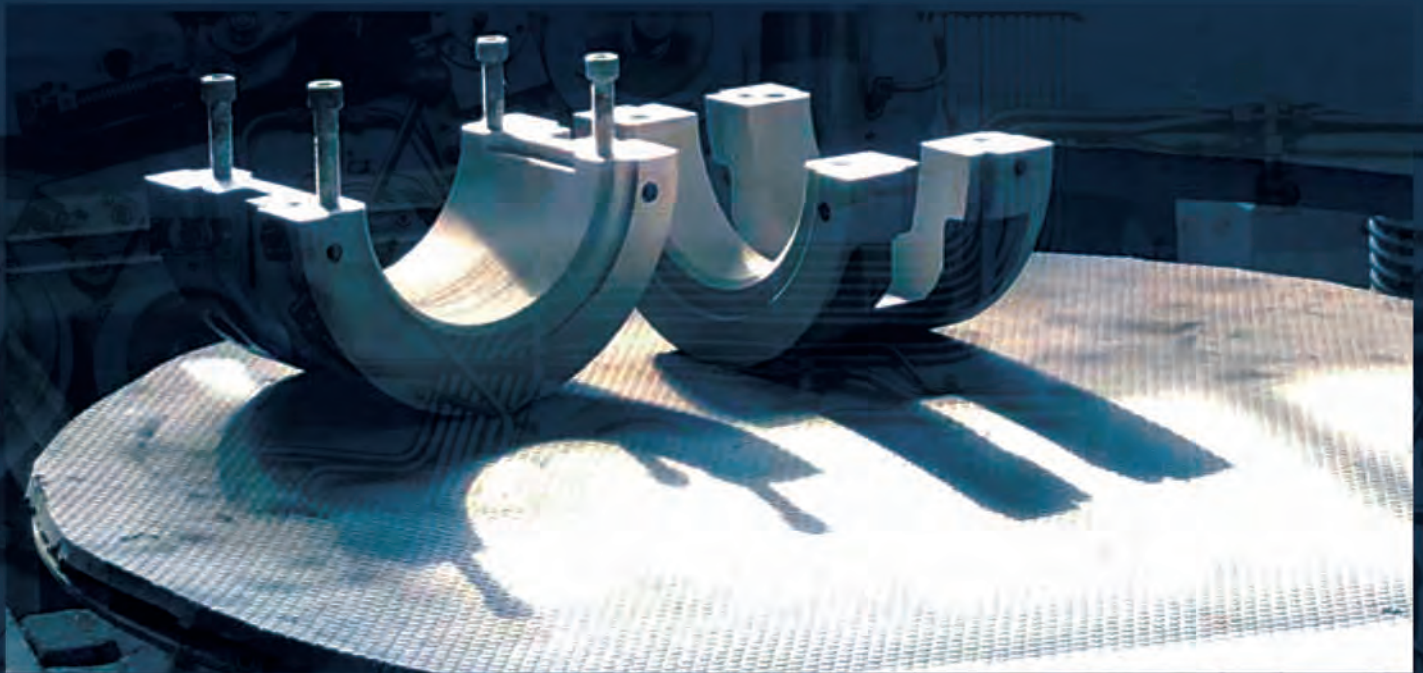
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ABB, BOLIDEN AND LKAB COMPLETE SUCCESSFUL TESTING OF INDUSTRY-FIRST ROBOT CHARGER

ABB has successfully completed testing of the industry-first automated robot charging technology for underground mines in partnership with mine operators Boliden and LKAB. The goal is to make mines safer by automating one of few manual processes left in mining: charging the blasting holes with explosives.

Blasting schedules in underground mines can vary, but the process takes place up to fifteen times per day in larger mines as miners expand the chambers to extract mineral and metal ores. ABB Robot Charger automatically detects boreholes and fills them with charges without the presence of humans, removing the need for people to be near the unsupported rock face during blasting sequences.

The completed testing phase confirms the effectiveness of integrating the robot charger with a carrier vehicle, communication with bulk emulsion and vision systems and incorporation of a second robot arm to assemble prime and detonator. It ensures full reach to all borehole levels and areas of the rock face and remote control for operators. ABB is now embarking on the final stage of development that aims to execute the full blasting sequence in the underground mine with full control of the robot handed over to the customer.

GF PIPING SYSTEMS AND XI'AN SUNRESIN NEW MATERIALS ANNOUNCE STRATEGIC COOPERATION

To foster innovation and drive advancements in the salt lake lithium extraction industry and beyond, GF Piping Systems, a leading flow solutions provider, strengthens its seven-year relationship with Xi'an Sunresin New Materials Co., Ltd., an innovation-oriented high-tech enterprise that specializes in supplying Ion exchange resins, adsorption, and separation resins, complete systems, integrated overall solutions and relevant technical services, with a strategic cooperation partnership in China.

GF Piping Systems and Sunresin announce a strategic cooperation that combines Sunresin's expertise in ion exchange adsorption technology and GF Piping Systems extensive capabilities in piping systems and related solutions. With a shared commitment to innovation and mutual success, this cooperation aims to create new opportunities, streamline processes, and foster industry-wide advancements.

"This partnership represents an exciting step forward for our Strategy 2025 and our efforts to drive innovation and technological excellence," says Joost Geginat, president of GF Piping Systems. "Combining Sunresin's expertise in adsorption technology with GF Piping Systems China's technical prowess, we are confident that we can drive meaningful progress and positively impact the salt lake lithium extraction industry. ■

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And to make it even easier, the XFP is available with a wide range of competitor retrofitting solutions for drop-in replacements, saving time and costly rehabilitation of a pump station. From retrofit brackets to controls to custom solutions, Sulzer makes it easy to get what you want. Don't you think it's time for change?



STREAMLINED PROCESS FOR FULL-SERVICE ENERGY RECOVERY

Pumping solutions at an advanced textile common effluent treatment plant pay for themselves

BY SCOTT COVELLI

In Pali, Rajasthan, India over two hundred factories in the surrounding Punayata Industrial Area provide the economic backbone for the community. Unfortunately, the nearby Bandi River is polluted due to the discharge of industrial effluents and sewage disposal. This polluted water flowing in the Bandi is a constant threat to the health of villagers and to

agriculture. The challenge, however, was that current common effluent treatment plants (CETPs) were not achieving zero liquid discharge (ZLD) and effluents were still being discharged into the river.

THE SOLUTION

All the equipment in the Pali Common Effluent Treatment Plant is supplied

by Aldee Water Pvt. Ltd. Advanced reverse osmosis water treatment was adopted to significantly reduce the stream volume being sent to the thermal system, reducing both CAPEX and OPEX of the thermal system. With added nanofiltration processes in place to separate salt, the high purity salt could then be recycled and sold.

To achieve more efficiency and cost savings, Detox Group and Pali CETP partnered with Energy Recovery, Inc. to install a suite of energy recovery devices, including both turbochargers and pressure exchangers, bringing higher uptime and availability to the whole system.

The plant now utilizes the following Energy Recovery products: AT Turbocharger, PX Q300s, PX Q220s, AquaBold high-pressure pump, and HP and VPXP circulation pumps.

The goal was to achieve high recovery rates in the membrane trains to minimize the brine flow into an evaporator to meet minimal or zero liquid discharge regulations. This required multiple reverse osmosis systems in conjunction with nanofiltration.

THE RESULT

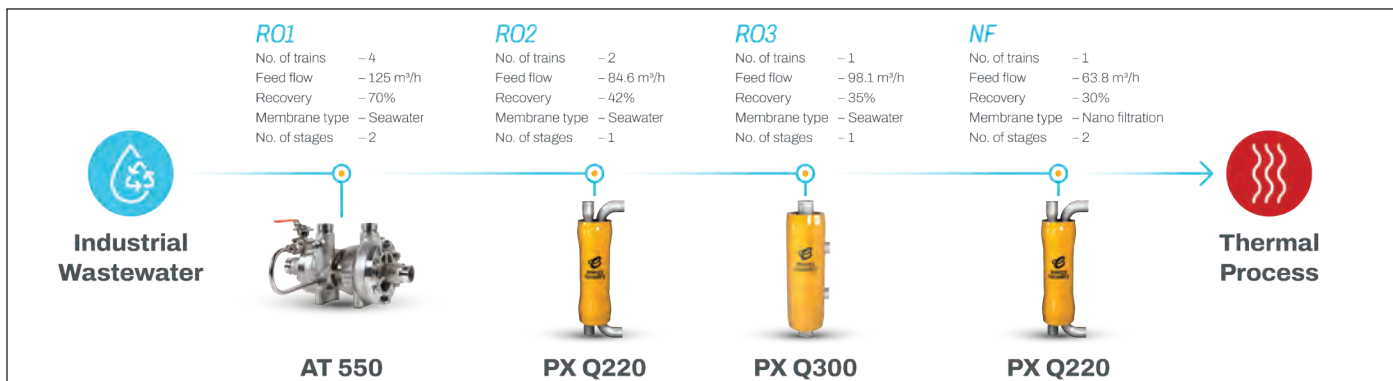
Energy Recovery engineers worked with the OEM and completed the entire commissioning process in one week.

- RO1 with four trains of AT-550 turbochargers



PROJECT UP CLOSE

LOCATION	PALI, RAJASTHAN, INDIA
PROJECT	PALI CETP (TEXTILE)
CUSTOMER	ALDEE WATER PVT. LTD.
FACILITY CAPACITY	3.17 MILLION GALLONS PER DAY
ESTIMATED ENERGY SAVINGS	13,234 KWH/DAY
ESTIMATED COST SAVINGS	\$483,000 PER YEAR
PAYBACK PERIOD	12 - 18 MONTHS



- RO2 with two trains of PX Q220 operating at an efficiency greater than 95 percent, AquaBold high-pressure multi-stage pumps, and additional booster pumps
- RO3 with one PX Q300 train operating at an efficiency greater than 95 percent, an AquaBold high-pressure multi-stage pump, and a booster pump
- The nanofiltration system with one PX Q220 operating at an efficiency greater than 95 percent

The system is expected to realize a total of 13,234 kWh in energy savings daily. The payback for the combined energy recovery equipment and pumping solution is projected to be twelve to eighteen months, even at a reduced feed of total dissolved solids (TDS). As the plant continues to increase TDS concentrations and system pressures, the efficiency of these ERDs is expected to increase, recovering even more energy and increasing savings for the plant.

SOLUTIONS THAT ACCOMMODATE WIDE FLOW AND PRESSURE OPERATING RANGES

The textile waste stream parameters from 215 textile manufacturing businesses can pose a challenge, leading to wide flow and pressure operating ranges for the RO process. The challenge was met with a full complement of Energy Recovery products proven to perform in these demanding conditions, achieving maximum plant savings and energy efficiency. The PX devices with a suite of companion pumps provided operational flexibility and was the ideal solution for the Pali CETP plant.

By utilizing Energy Recovery's various solutions in the system, the facility is achieving savings in operating expenses estimated at \$483,000 per year. The facility was also able to reduce investment in the thermal system. Additionally, the treated freshwater has been sold back to 215 plants, creating significant revenue. Finally, the efforts prevented further pollution of the

Bandi River, helping the environment by sending the undissolved solids into an evaporation pond. ■

“As the proud developer of the Pali CETP project, we are very pleased with our decision to use Energy Recovery PX Pressure Exchanger technology, turbocharger technology, and pump solutions in our water plant.”

—V. RAMI REDDY | PALI CETP PROJECT, PROJECT EXECUTION HEAD

Energy Recovery creates technologies that solve complex challenges for industrial fluid-flow markets worldwide. Building on our pressure exchanger technology platform, we design and manufacture solutions that make industrial processes more efficient and sustainable. What began as a game-changing invention for desalination has grown into a global business accelerating the environmental sustainability of customers' operations in multiple industries. Headquartered in the San Francisco Bay Area, we are a global team with sales and on-site technical support available worldwide. For more information, visit www.energyrecovery.com.

CHARGING THROUGH WITH TEMPORARY POWER SOLUTIONS

Meeting the challenges of utility demand during peak seasons and severe weather
Part 2 of 2

BY SCOTT MILLIGAN, DISTRIBUTED POWER SOLUTIONS

See
Part 1
www.mptmag.com

In the first part to this series, we laid out how extreme weather has caused increasing havoc on the nation's power grid, which has cemented the needs for utility companies to have reliable backup or standby power sources. One option that is growing in its adoption are temporary power solutions that provide robust services and benefits to the most vulnerable. These mobile power solutions and their evolving pivotal role in the utility sector are mitigating the risks imposed by extreme weather. Below, we present the goals you should look for in choosing the right partner as well as some examples where utilities met these challenges head on.

CHOOSE THE RIGHT PROVIDER

As mentioned earlier, not everyone provides the right temporary power

solution. A qualified partner must possess in-depth knowledge of utility operations, understand specific power requirements, and provide a proven track record of delivering reliable and efficient solutions. The right provider will bring expertise in generator deployment, maintenance, fuel management, and emissions control to ensure compliance with industry standards and regulations.

Our company, Distributed Power Solutions (DPS), provides turnkey engineered power generation rental solutions that utilize natural gas as its primary fuel source. DPS provides reciprocating engine generators, gas turbine generators, and electrical distribution equipment to support the utility industry.

With the highest power efficiency available, DPS saves customers money on the fuel required to

power operations. This helps reduce operations costs, so companies drive higher power outputs with less fuel. In addition, to be fuel-efficient, the startup process is fast and easy. DPS offers rapid equipment deployment, the balance of the plant, including transformers and transfer switches (when necessary), and can assist with engineering, operation, and maintenance. If customers have access to a fuel supply, DPS can set up the basic equipment and be operational immediately.

Our gas turbines are well equipped with the latest dry low emission (DLE) combustion system technology, which helps reduce the number of harmful pollutants released into the air during the combustion process. It allows your project to achieve lower emissions without reducing the combustion temperature. As a result, it performs

a cleaner and more environmentally friendly operation when compared to traditional generators.

Not every energy partner is the same. It's critical to consider the following when choosing the right power solutions partner:

- Fleet size
- Equipment (turbine or reciprocating engine)
- Technical expertise
- Mobilization speed
- Equipment availability
- Higher fuel efficiency

Look for a reputable power solutions company that is knowledgeable about the industry and has the speed and range of equipment readily available to customers. Those with the right experience and technical experience will get operations up and running quickly while ensuring reliability, availability, and lower production costs. In addition, around-the-clock support is critical so that there is no downtime.

CASE STUDY: EMERGENCY POWER IN ONE WEEK


The benefits of an experienced local power solutions provider were powerfully demonstrated when DPS responded in the wake of Hurricane Laura. When the natural disaster cut off power to half a million customers on the Gulf Coast, the entire electrical grid became unstable, and a backup power source became necessary while technicians worked on repairing the storm damage. The region's primary utility provider announced that it was the most challenging restoration they faced, and it would likely take weeks to restore power.

The next day, construction services and electrical engineering company Saber Power met with DPS to find a temporary power solution for one of their key customers, Energy Transfer. The organization needed 40MW to power their facility, but their utility provider could only temporarily allocate 8MW.

With only twenty-four-hour's notice, DPS immediately got to work. With its strong history as a first responder, the company was experienced in providing support in stressful situations. It ensured that the equipment was serviced and ready and even made the financial decision to secure trucks to ensure they could service at a moment's notice.

As soon as Energy Transfer greenlighted the plans, DPS was ready to head towards them within an hour's notice. Within twenty-four hours, more than thirty trucks were at the site and prepared to work. Working alongside Energy Transfer and Saber, DPS worked diligently to set up cables, trays, piping, and electrical interconnections. Because of their experience and preparation, the extensive team met each unforeseen challenge to finish the job as quickly as possible. DPS completed the job within six days of getting the green light.

As a power solutions provider, DPS has a long history of helping




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companies in dire situations. The team knows how to rise to the occasion and provide critical power during natural disasters and has the experience to guide companies in making plans.

REMAINING CONNECTED DURING PEAK SEASONS

The reliability of power supply is critical, especially during severe weather events and periods of peak season demand. A stable power supply is essential not only for residential comfort but maintaining vital services, such as healthcare, emergency response, and industrial operations. However, utility companies face a range of challenges in meeting these demands.

Partnering with a temporary power solutions provider like DPS can be a strategic move. DPS and similar experienced companies offer scalable and flexible solutions for managing power during peak periods and emergencies. They provide the



additional capacity utility companies need to cope with increased demand. These partnerships contribute to grid stability by providing reliable, on-demand power and filling the gap while utilities recover from severe weather events.

Planning and preparedness are crucial to ensuring a reliable power supply during severe weather and peak demand periods. Utility companies should assess their capacity and vulnerabilities, consider strategic partnerships with power rental solutions providers, and invest in infrastructure upgrades and renewable energy integration. By working with regulators, technology

providers, and customers, they can develop innovative and sustainable solutions. As we move towards a future likely to bring more extreme weather and higher power demands, these proactive steps will be more critical than ever. ■

Distributed Power Solutions (DPS) provides power generation rental solutions to meet the growing global demand for energy related products and services. DPS's turnkey rental solutions ensure you are prepared for your planned or emergency utility needs, 24/7/365. DPS is dedicated to the power generation business and has one of the largest equipment rental fleets of turbine and reciprocating engine generators available to meet demand. Our unmatched product support services include design, engineering, installation, and operation to help solve utility needs. DPS brings the expertise and focus of a specialty rental business to our customers to solve their temporary power generation needs. For more information, visit www.dpsenergy.com.

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CHOOSING THE BEST ALTERNATIVES IN INDUSTRIAL ANALYTICS

A PI Server data visualization tools buyers guide Part 2 of 2

BY KEVIN JONES, DATAPARC

See
Part 1
www.mptmag.com

We began this series reminding readers that OSIsoft would be retiring its popular data visualization tool kit, ProcessBook. Since ProcessBook's introduction thirty years ago, the industrial analytics marketplace has become quite crowded, with dozens of companies providing analytics products for everything from broad industrial applications to niche manufacturing processes. In this month's conclusion, we'll provide point-by-point comparisons of different ProcessBook alternatives already on the market: dataPARC's own PARCview; OSIsoft's ProcessBook successor, PI Vision; GE's Proficy CSense; Canary's Axiom software; TrendMiner; Seeq; and Inductive Automation's popular SCADA platform, Ignition.

Any of the applications we discuss below could be the right choice for your needs, but identifying which aspects of industrial analysis these different tools emphasize will determine which specific choice is right for you. As mentioned in the first part of this article, we'll be analyzing these software applications via five aspects: ease of integration, diagnostic analytics capabilities, operations management capabilities, advanced analytics capabilities, and cost.

OPTION 1: DATAPARC'S PARCVIEW

A real-time data analysis and visualization toolkit developed by the end user for the end user, dataPARC's PARCview application, has long co-existed with OSIsoft's PI

Server in process facilities around the world. In fact, over 50 percent of all dataPARC installations are built on top of PI historians. If you value ProcessBook primarily for its trending and interactive process graphics, dataPARC is a superb alternative, featuring diagnostic analytics and operations management capabilities that are significant upgrades from what you've been accustomed to with ProcessBook.

With native integration allowing users to connect and begin visualizing PI historian data in a matter of minutes, dataPARC integration with PI Server is extremely simple. By utilizing the latest PI SDK technology and other performance focused features, most ProcessBook users will find improved performance. Likewise, dataPARC's

ProcessBook conversion utility allows users to bulk import their existing ProcessBook displays without losing any functionality.

Widely considered the best time-series trending application available for analyzing process data, dataPARC's greatest strength is in its ability to connect and analyze data from various sources within a facility. In addition to its powerful real-time trending toolkit, dataPARC is loaded with features that support root-cause analysis and freeform process data exploration, including: Histograms, X-Y plots, Pareto charts, 5-why analysis tools, and Excel plug-in. As likely the fastest ProcessBook alternative you'll find on this list, dataPARC's Performance Data Engine (PDE) provides access to both aggregated and lossless datasets, allowing the best of both worlds—super fast access to long-term datasets and extremely high-resolution short-term data.

dataPARC offers a complete set of tools for operations management. dataPARC's display design tool offers the ability to create custom KPI dashboards and real-time process displays using pre-built pumps, tanks, and other industry standard objects. dataPARC even allows you to import existing graphics or entire ProcessBook displays.

All the standard reporting features are included here, along with smart notifications that can be configured to trigger email or text alerts for downtime events or other process excursions. dataPARC's Centerline tool is one of the platform's most powerful features, providing operators with an intuitive multivariate control chart with early fault detection and process deviation warnings, so operators can eliminate quality or equipment issues before they occur. Additional operations management capabilities offered by dataPARC include a robust module for data entry (manual or electronic),

notifications, advanced calculation engine, and a task scheduling engine.

dataPARC doesn't make claims to artificial intelligence or machine learning, but the platform provides a solid interface for advanced analytics, offering a data modeling module that uses PLS & PCA to power predictive analytics for maintenance, operations & quality applications. Lastly, dataPARC provides an unlimited user license for PARCview, which makes it a good fit for organizations wishing to get production data in front of decision-makers at every level of the plant.

OPTION 2: PI VISION

OSIsoft's ProcessBook successor, PI Vision is branded as being the "fastest, easiest way to visualize PI Server data." PI Vision is a web-based application that runs in the browser, which can be a significant change for ProcessBook users used to a locally-installed desktop app. PI Vision likely offers the most straightforward



The advertisement features a black and white photograph of a man in a workshop, wearing a work apron and using a measuring tape on a large industrial component. In the top left corner, there is a blue square with the Atlas Copco logo. Overlaid on the right side of the image is a large blue graphic containing text and a circular emblem. The emblem is a gold-colored seal with the text 'HOME OF INDUSTRIAL IDEAS' at the top, '150 YEARS' in the center, and '1873-2023' and 'ATLAS COPCO GROUP' at the bottom. The main text in the blue graphic reads 'Thank You' in a large, bold font, followed by a paragraph of text. At the bottom of the graphic, there is a phone icon, the number '866-472-1013', a globe icon, and the website 'www.atlascopco.com/thetimeisnow'.

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In 2023, Atlas Copco celebrates our 150th anniversary. From the compressed air and gas team, we want to say a heartfelt 'thank you' to all our employees, customers, and suppliers who have been part of our journey. We could not have achieved it without you! As we pass this milestone, our unwavering commitment is to continue to provide innovation which empowers our customers to grow and drive society forward.

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integration with PI Server, as it's part of OSIsoft's PI System. Migration of existing ProcessBook screens to PI Vision is supported by OSIsoft's PI ProcessBook to Pi Vision Migration utility, however many users have reported difficulty retaining the full functionality of custom displays and graphics after moving them into PI Vision.

Many users report that PI Vision's trending tools provide less firepower than ProcessBook and competitors for root cause analysis and ad-hoc diagnostics, but it is perfectly capable of performing the basic trending functions of plotting time-series and other data against time on a graph. OSIsoft also offers their PI DataLink Excel plugin, which is often used for more advanced diagnostic analytics efforts.

Process Displays are the heart and soul of the PI System and, if you're moving from ProcessBook, you'll likely feel at home working in PI Vision. Although it's not a 100 percent feature-for-feature replacement of ProcessBook (the SQC module, for instance, isn't available in Vision), some of the ProcessBook features lacking in early versions of PI Vision are being added via periodic updates. In addition, there are some

new capabilities in PI Vision that don't exist in ProcessBook. The PI Vision displays use HTML5 and are integrated into PI's Asset Framework (AF), which results in pretty intuitive display building. Basic reporting is available as well, but like much of the PI system, the data must be extracted to Excel via PI DataLink.

PI Vision doesn't include any built-in data modeling tools or other advanced analytics components. PI Server data can be brought into 3rd party analytics apps via PI Integrator for advanced analysis. PI Vision uses a per-user pricing model, which is great for small organizations with only a few people accessing the platform. For larger manufacturers, or enterprise implementations with teams of operators, process engineers, and data scientists accessing the product, PI Vision can become quite expensive.

OPTION 3: PROFICY CSENSE

GE acquired CSense back in 2011 to provide better data visualization and analytics tools for use with their own Proficy Historian. CSense is billed as industrial analytics software that improves asset and process performance. Trending and diagnostic analytics is the focus here, with less emphasis on robust process displays. CSense is optimized for integration with Proficy, GE's own time-series data historian. An OSIsoft PI OLEDB provider is required to integrate with OSIsoft's PI Server. This interface may affect performance for users familiar with native PI integration.

CSense's trending and diagnostic capabilities likely exceed what you've experienced with ProcessBook. Dedicated modules for troubleshooting (CSense Troubleshooter) and process optimization (CSense Architect) provide modern trends, charts, and other visualization tools to analyze continuous, discrete, or batch process performance. Regarding operations management, GE takes a modular approach to their data visualization

products. Much of the operations management functionality provided in a single product like ProcessBook is spread over many separate products within the Proficy suite. There's a fair amount of overlap in these products, but somewhere among GE's iFIX, CIMPLICITY, Proficy Operations Hub, Proficy Plant Applications, and Proficy Workflow products you'll find operations management capabilities that greatly exceed those of ProcessBook.

CSense marketing materials are filled with mentions of industrial advanced analytics, digital twins, machine learning, and predictive analytics. Like PARCview's approach, this advanced functionality is enabled by the insights mined from the powerful data visualization tools of the core platform, though models can be developed in CSense to help predict product quality and asset failure. Finally, CSense licensing is offered in three editions: Runtime, Developer, and Troubleshooter, all which come with different component combinations and data connectors.

OPTION 4: CANARY AXIOM

Like CSense and PI Vision, Canary's Axiom was designed as the visualization component of a larger system. Axiom was built to support analysis of data stored in Canary Historian. Canary's Data Collectors can connect to process data sources via OPC DA and OPC UA, but they don't have a dedicated module to connect to PI Server like some of the other options on this list. Axiom is browser-based trending application that, while not as powerful as some other ProcessBook replacements, is easy to use and capably performs basic diagnostic analysis. It lacks the more powerful features of products like dataPARC and CSense, but Canary does provide an Excel Add-in for performing more advanced analysis. If you were perfectly fine with the trending and diagnostic capabilities of ProcessBook, you'll likely be satisfied with what Axiom provides.

Axiom offers dashboarding and reporting capabilities alongside their trending tools, but ProcessBook users may notice the lack of emphasis on display building provided here. Canary also lacks support for migrating existing ProcessBook displays, which is a feature that both dataPARC and PI Vision have. Canary avoids making flimsy claims to current buzzwords like Industrial AI or machine learning. Axiom's focus is on nuts-and-bolts trending and analysis of time-series data, though their Excel Add-in does certainly open the door to more advanced analytics applications.

Canary helpfully posts their pricing on their website, with Axiom fetching a per-client fee in the form of both a one-time and monthly charge. This pricing assumes you'll be using the Canary Historian, so the info on the website won't be much help if you're looking to connect Axiom to PI Server data only.

OPTION 5: TRENDMINER

Offering "self-service industrial analytics," TrendMiner provides a complete suite of web-based time-series data analysis tools. Like dataPARC, TrendMiner offers native integration with PI Server. You can expect connecting to your PI historian to be very easy, although TrendMiner doesn't appear to support the transfer of existing ProcessBook displays. With a name like TrendMiner, you'd

assume that trending and diagnostic analysis is key for the Software AG brand. And you'd be correct—tag browsing, trend overlays, and data filtering are all favorite features of TrendMiner customers. Root Cause Analysis is a core use case for TrendMiner, but some users have mentioned difficulty learning to use the system to identify process issues.

Monitoring is at the core of TrendMiner's operations management



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capabilities. The platform provides a number of tools that support smart alarming and notifications of process excursions, but visualization of processes seems limited to trends. ProcessBook users who depend on interactive process displays to manage and monitor plant performance will need to look to other options on this list to replace that functionality.

TrendMiner's monitoring features extend the platform into "predictive" analytics territory. Like dataPARC and some of the other ProcessBook alternatives on this list, predictive performance is enabled via models based on historical data. TrendMiner pricing is dependent on your particular use case and they don't list pricing on their website, however you can expect them to be on the higher end of the ProcessBook alternatives listed here.

OPTION 6: SEEQ

Founded in 2012, Seeq offers advanced analytics for process manufacturing Data. Analysis is the focus with Seeq, and their products are heavy on diagnostic and predictive analytics, without as much support for operations management as some of the other ProcessBook alternatives on this list. Like dataPARC, Seeq is optimized to connect to various different data sources within a plant, including OSIsoft's PI Server. You should expect a pretty seamless integration with your PI historian data.

Seeq's browser-based Workbench application powers the platform's diagnostic analytics, offering a powerful set of trending and visualization tools. Advanced trending, bar charts, tables, scatterplots, and treemaps can all be employed to perform rapid root-cause analysis, and represent a significant upgrade in diagnostic capabilities from ProcessBook. Also, Seeq offers the ability to configure alarms for process monitoring, and their Seeq Organizer application allows users to build

scorecards and dashboards for KPI monitoring, but they don't provide anything approaching the display-building capabilities that ProcessBook provides. Therefore, engineers looking for a ProcessBook replacement, and an option for migrating or even replicating their existing displays, will likely want to look at other alternatives.

However, advanced analytics is an area where Seeq shines. Claiming predictive analytics, machine learning, pattern recognition, and scalable calculation capabilities, it's clear that Seeq intends to be your solution for sophisticated process data analysis. Most of Seeq's advanced analytics capabilities come from their Seeq Data Lab application, which provides access to Python libraries for custom data processing. Seeq's pricing isn't listed on their website, but they reportedly use a per-user pricing model which starts at \$1,000 per year per user.

OPTION 7: IGNITION

Inductive Automation's Ignition application is a popular SCADA platform with a broad set of tools for building industrial analytics solutions. Ignition offers the ability connect to virtually any data in your plant. While it lacks the easy native integration capabilities of some of the other ProcessBook alternatives on this list, Ignition supports various methods of connecting to your PI historian, including JDBC and OPC.

While Ignition shines as an HMI designer or MES, it ranks quite a bit lower than others on this list in its diagnostic analytics capabilities. But, to be fair, it wasn't designed for root cause investigations and ad-hoc data analysis. Trending in Ignition is basic and integrated into displays, similar to what users may be familiar with in ProcessBook. Ignition's Designer, on the other hand, is an extremely capable application for building process graphics and HMIs for real-time process monitoring and KPI tracking. While perhaps lacking the interactivity that ProcessBook users

are familiar with, Ignition modules are available to help manage SPC, OEE, material tracking, batch processing, and more.

Inductive Automation offers unlimited users for a single server license of Ignition, with pricing based per-feature, starting at around \$12,500 and going up from there. Ignition's price very much reflects its standing as one of the industry's most popular SCADA platforms.

CONCLUSION

We know you have a lot to consider and want to avoid the headache of making a less than ideal decision. Presented with the prospect of discontinued support for ProcessBook, your challenge is twofold: First, you must figure out how to replace the displays, trends, and other features that made ProcessBook valuable. Second, you should evaluate potential replacement candidates for capabilities like predictive and prescriptive analytics that didn't exist when you got started with ProcessBook.

All ProcessBook replacement options we listed above feature different tool sets. Now is the time to identify priorities and determine which solution is the right one for your organization. ■

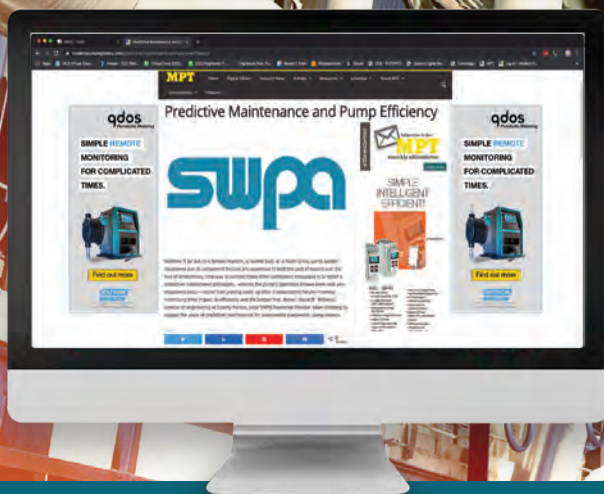
KEVIN JONES serves as the director of sales and marketing for Capstone Technology's dataPARC division. Founded in 1997, dataPARC is a leading provider of industrial analytics and data visualization tools for process optimization and decision support. With a focus on serving the process industry, dataPARC offers historian and real-time analytics software for vertical markets such as oil and gas, pulp and paper, mining and minerals, food, chemicals and refining, and power and utilities around the globe. For more information, visit www.dataparc.com.

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NEW DOSING SOLUTION OFFERS EXTRA SAFETY

Best-in-class user experience reaches chemical and water treatment

BY MATT KRAVITZ, ALBIN PUMP

The KB Series is a versatile and economical peristaltic metering pump for high-precision dosing in water treatment or wastewater treatment applications.



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When addressing the features of precision metering pumps, one of the most underrated safety aspects is the pump's ease of use. Whether preventing user oversight or providing ready-to-use measuring information, the simpler a pump is to use, the safer. With this in mind, Albin Pump, an Ingersoll Rand business and a leading global provider of metering solutions for numerous industries, has launched its newly developed KB and KM Series cased-drive benchtop peristaltic pumps.

By virtue of their innovative, patent pending design, these pumps offer excellent dosing characteristics as well as ensure maximum safety and unprecedented ease of use. Targeting the industrial and municipal markets,

respectively, the new pump range can support a wide variety of chemical and water treatment processes.

HIGH-PRECISION PERFORMANCE, SMOOTH OPERATION

Pump models are offered with a maximum pressure level of 110 psi (7.6 bar) and flow rates up to 160 gallons per hour. They provide a suction lift of up to 30 feet and turndowns of 200:1 (for the KB Series) and 10,000:1 (for the KM Series). Both of the newly introduced peristaltic metering pump ranges, which feature self-priming capabilities, are defined by their high-precision flow performance, with each rotation translating into

KM Series pumps feature 10,000:1 turndown and best-in-class user experience featuring one-button switching between local and remote operation.



SPECIFIC TO OPERATOR NEEDS

The KB and KM Series pumps are equipped with a color LCD display, and available with multiple analogue and digital inputs and outputs for full control. Users can easily switch between local and remote operation with the help of a single button, without any need for complex multistep menu navigation.

Standard pump models can be field-upgraded to include industrial protocols, so customers can buy a

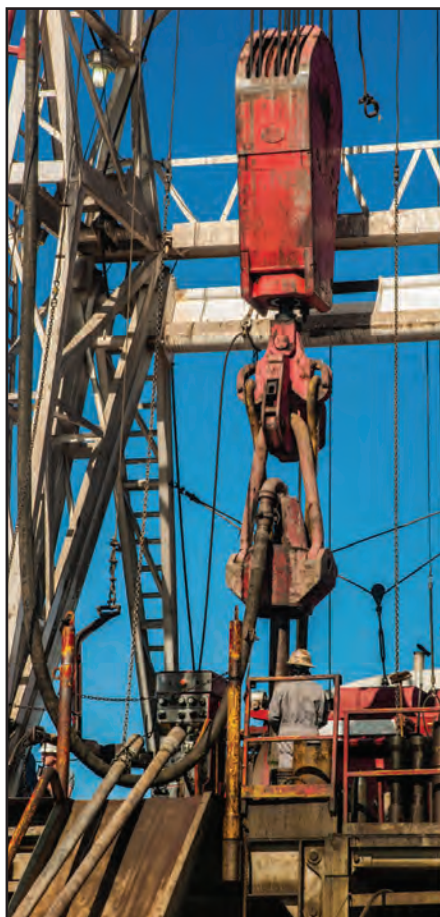
pump that meets their current needs at a lower price with the option of upgrading it in the future and include a USB-C port for upgrading software features and downloading pump data. ■

Established in 1928, Albin Pump is a leading manufacturer of peristaltic pumps for industrial and municipal applications. We develop, manufacture and sell best-in-class products that optimize processes through the use of innovative technologies. Our pump portfolio includes a broad range of configurations and tailored solutions to meet all of our customers' unique process requirements. Our pumps are designed and produced in our own facilities in France and the United States. For more information, visit www.albinpump.com.

exactly the same displacement and resulting in the delivery of a smooth and consistent chemical feed.

SIMPLE DESIGN, SAFER USE

Albin Pump has put every effort into maximizing the safety and reliability of its newest peristaltic metering pumps, ensuring that they are easy to use and maintain. The pumps do not use any check valves or moving parts in the liquid path, with the tubing being the only wetted element and an integrated leak detection sensor in the pump housing. Their patent-pending offset rotor assembly releases tube compression during maintenance, which means that a tube change does not require the user to manipulate the tube while the rotor is turning. In addition, the tube can be drained and flushed prior to its removal.



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GROWTH NEEDED IN THE POWER SECTOR

To meet net zero targets, the energy market must expand not shrink

BY MARTIN O'NEIL, GE VERNOVA

CHALLENGES IN THE ELECTRICITY MARKET: KEY TAKEAWAYS

- Additional 250 GW of renewable and decarbonized generation, approximately 2.5 times that of existing capacity, will need to be added to the power system.
- More than \$60 billion of investment, twice as much as that of the past five years, is required in power generation and storage capacity alone this decade.
- 80 GW additional transmission line capacity is required to optimize use of renewable electricity.

When you hear of industries pledging to meet “net zero” guidelines with regard to emissions output, you’d be forgiven for interpreting that as a reducing the size of the power sector. However, through innovation and investment, reshaping our energy grids to achieve net zero targets should be a boom time for the industry as a whole—but time is of the essence.

For example, GE Vernova’s recent study, “Challenges in the Electricity Market: 2025-50: Reaching Net Zero Carbon in Great Britain,” reveals that if urgent action is not taken within the next three years to accelerate investment, additional build-out of renewable, decarbonized generation, and electrical grid, transmission,

and distribution infrastructure, Great Britain would be at risk of falling short on its target to supply decarbonized electricity by 2035. And think of Great Britain as just a sample for the energy economy as a whole.

EXPLORING THE TEST CASE

The study examines alternative energy generation and transmission investment scenario pathways considering the economic build-out of renewables, nuclear, storage, and lower carbon thermal generation across Great Britain.

The analysis shows that:

- an additional 250GW of renewable and decarbonized generation will need to be added to the system.



- nuclear and gas power continuing to play an important role due to their reliability and grid congestion management characteristics.
- significant upgrade of grid infrastructure and operations will be required in addition to what is currently envisioned.

With the expectation that electricity demand will double (300-600 terawatt-hour) by 2050, including electrification of heating, transportation, and industry to meet the decarbonization goals, the study shows that an additional 250 GW of renewable and decarbonized generation, approximately 2.5 times that of existing capacity, will need to be added to the power system by 2050 across Great Britain.

About two-thirds of the new capacity is expected to be wind and solar, with nuclear, abated gas, and battery storage all playing an important role to accommodate for the intermittency of renewables and grid congestion.

MEETING THE TARGET

To meet the 2035 target and ensure secure, zero-carbon and affordable energy, Great Britain urgently needs an electricity market design that allows early-stage investment into renewable, lower carbon technologies, and the expansion of the electrical grid system. It is incumbent on policymakers to incentivize private capital providers with clear investment signals through net zero legislation and regulation as there is no silver bullet that will fast forward Great Britain's electricity system to 2035 and deliver the net zero target. Forming private-public funding partnerships will be the cornerstone of adding additional capacity and expanding the grid at speed.

It is critical to enable and accelerate investments in a combination of electricity generation, transmission, and system control or management technologies with supportive policy and regulatory measures, such as rapid permitting.

ABOUT THE STUDY'S RESEARCH METHODOLOGY

Credible least cost pathways of future generation and transmission investment in Great Britain were developed utilizing assumptions of the United Kingdom electricity system from prominent public sources and an industry accepted modelling platform. The scenarios serve to illustrate how power plants under each pathway would operate to meet demand in the future and the implication on the system as a whole, in particular in relation to the transmission network. The model captures all existing and future power plant on the Great Britain system along with a simplified representation of the interconnection with neighboring countries.

The study estimates that more than \$60 billion of investment, twice as much as invested the past five years, is required in generation and storage capacity alone by 2030. Furthermore, the study suggests accelerating build out of committed capacity for this decade and additional capacity of new generation earmarked for the next decade to be delivered by 2030.

POWERING THE FUTURE

Significant upgrade and expansion of the transmission capability will be inevitable to securely deliver energy from various generation sources to consumers from across Great Britain. In total, around 80GW of additional transmission line capacity across the Scottish and English boundaries will be required to alleviate congestion, avoid curtailment of renewable electricity, and save circa \$97 billion in cost to generate electricity by 2050.

This needs to happen along with expediting market reforms that are technology agnostic. Progress on the key recommendations need to happen within the next three years to mitigate the risk of Great Britain falling short of achieving a decarbonized power system by 2035 and the 2050 net zero target.

RESEARCH METHODOLOGY

Credible least cost pathways of future generation and transmission investment in Great Britain were developed utilizing assumptions of the UK electricity system from

prominent public sources and an industry accepted modelling platform. The scenarios serve to illustrate how power plants under each pathway would operate to meet demand in the future and the implication on the system as a whole, in particular in relation to the transmission network. The model captures all existing and future power plant on the Great Britain system along with a simplified representation of the interconnection with neighboring countries. ■

MARTIN O'NEIL is vice president of strategy at GE Vernova's Gas Power business. GE Gas Power, an integral part of GE Vernova, is a world leader in natural gas power technology, services, and solutions. Through relentless innovation and continuous collaboration with customers, GE Gas Power is providing more advanced, cleaner, and efficient power that people depend on today and building the energy technologies of the future. With the world's largest installed base of gas turbines and more than 670 million operating hours across GE's installed fleet, the company offers advanced technology and a level of experience that's unmatched in the industry to build, operate, and maintain leading gas power plants. For more information, visit www.gepower.com.

FROM DESIGN TO DELIVERY

*New methanator pressure vessel for
U.S. fertilizer plant meets high standards*

BY DEAN CAREY, LOGAN INDUSTRIES





Today, industries are exploring more and more avenues of renewable energy and seeking transitions away from fossil fuels—sometimes for sustainability concerns, other times to meet regulatory guidelines, and even, as this example shows, for improved efficiency.

One of the common problems in traditional fertilizer production processes is the loss and inefficiencies of natural gas transfer. These emissions can be costly for producers—not only because of potential fines from government bodies but also the day-to-day cost of production needing more fuel to make up for the wasted input. One solution to both these concerns is transitioning to synthetic methane production.

DIFFERENCE IN THE DESIGN

Logan Industries has successfully designed, manufactured, and delivered a new methanator pressure vessel to produce synthetic methane for a fertilizer plant in the mid-western United States. The methanator uses methanation, a process that combines carbon dioxide with hydrogen, to produce synthetic methane. The new vessel is fabricated from chromium and molybdenum and complies with the American Petroleum Institute's (API) Recommended Practice 934C, placing Logan in the top 10 percent of all pressure vessel manufacturers in the United States.

MEETING THE STANDARD

Logan is extremely pleased to participate in this effort and deliver the equipment on time to our customer. This was our first foray into API 934C specifications and we managed complex timelines, acquiring materials from both domestic and international resources and successfully mitigated a range of HSE concerns as our team completed their work within an extremely hot and challenging environment.

PASSING THE TEST

Logan created the drawings, sourced materials, qualified the weld procedures and fabricated the vessel in less than seven months. The project required each heat to be qualified by weld procedure, which included very high interpass temperatures and welding performed in extreme heat.

This project tested our capacity physically and mentally. We are stronger now and ready to do more. We appreciate a challenge and our team was able to deliver the vessel to our customer with great pride. ■

DEAN CAREY, technical director at Logan Industries, can be reached at dean.carey@loganindustries.net or 713.849.2979. Headquartered northwest of Houston in Hempstead, Texas, we provide precision hydraulic energy and control management system solutions within a range of industries, including oil and gas, lumber, steel, industrial, dredging, mining, and marine. Logan Industries designs, engineers and manufactures fit-for-purpose equipment. We provide field commissioning and field service. We perform machine refurbishments and provide rental equipment. We back all of this up with strong engineering and corporate support for challenging projects. Logan Industries holds several manufacturing certificates (API Q1, 6A, 8C, ASME U & R, ISO 9001:2015), and we are qualified to work under API 16AR. For more information, visit www.loganindustries.net.

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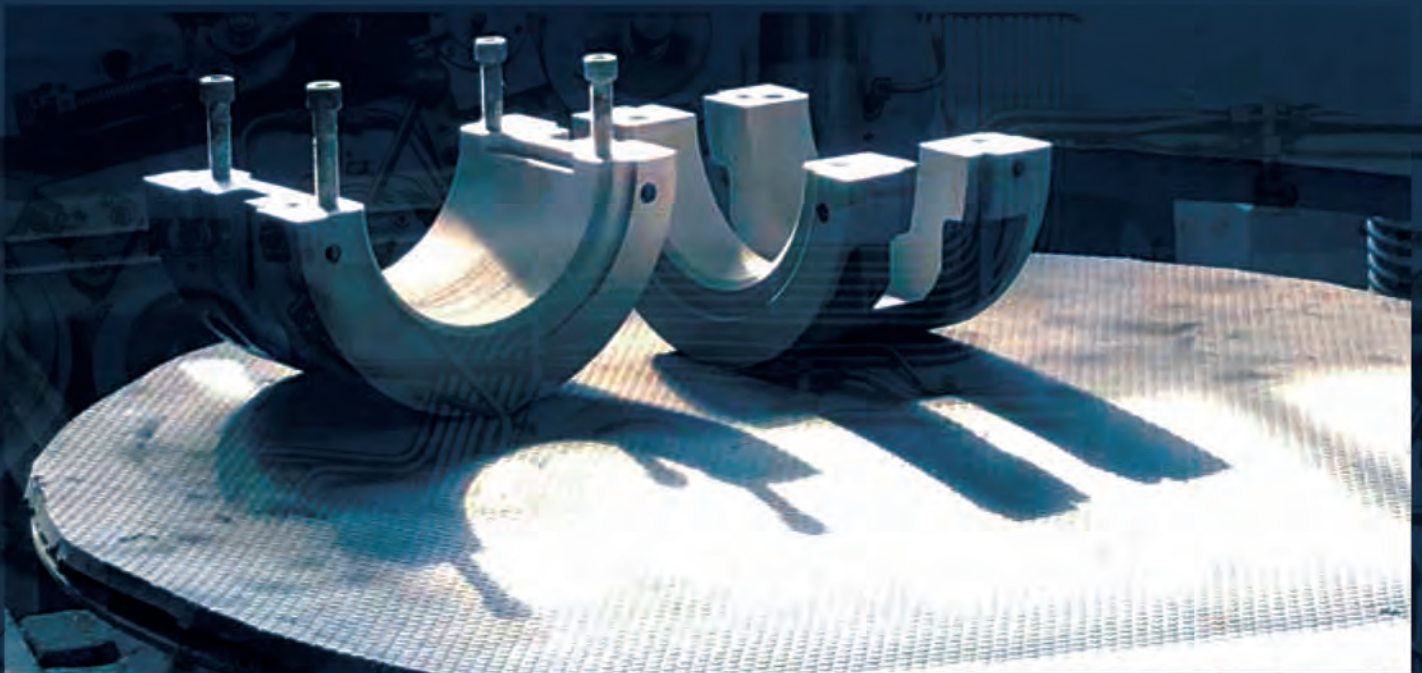





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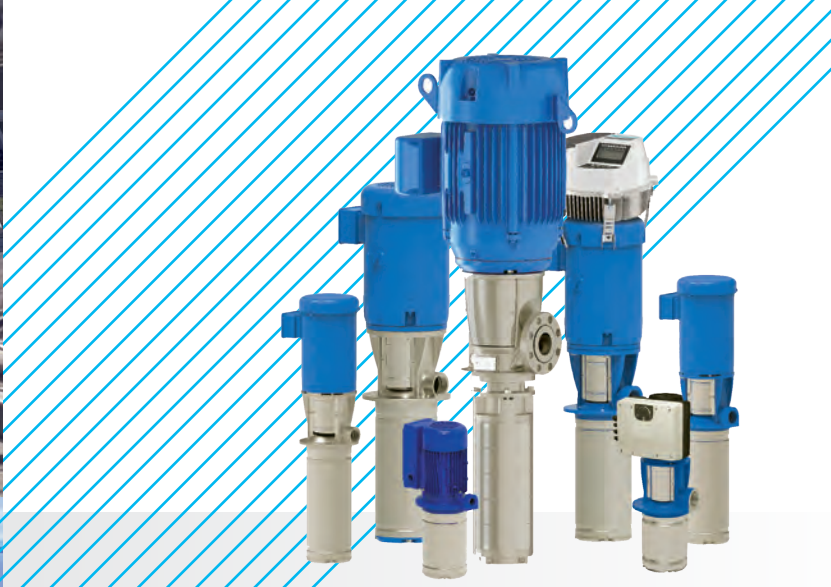
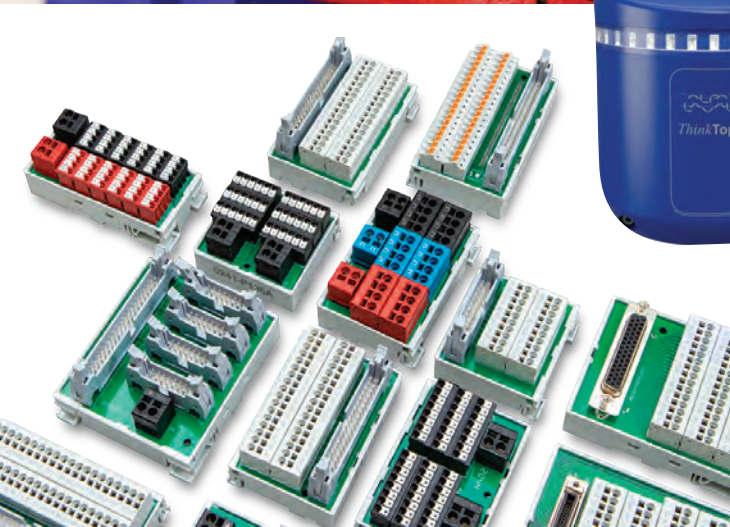
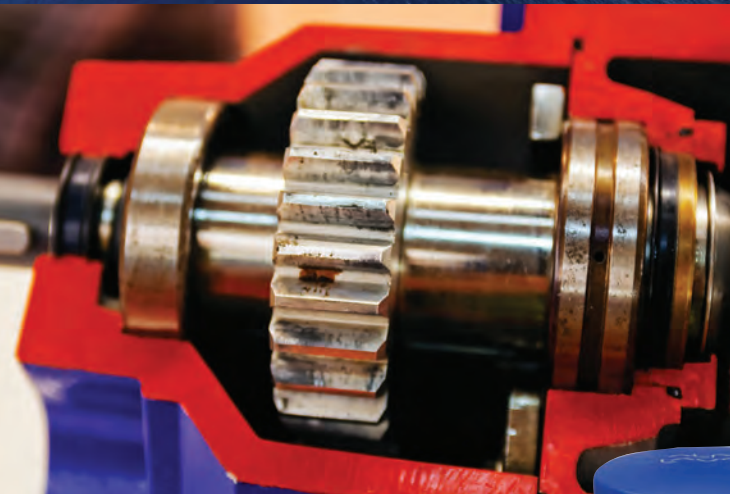
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2024 BUYERS GUIDE



Crane Pumps & Systems

The Barnes family of pump products from Crane Pumps & Systems provides versatility, high performance, and unequalled 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.

BARNES SH NON-CLOG AND SITHE CHOPPER PRODUCTS

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-n-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.

RAZOR GRINDER PUMPS

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.

SEWAGE EJECTORS AND SUMP PUMPS

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.

YOUR TRUSTED PARTNER IN INNOVATION

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. From larger applications that require chopper pumps down to residential sumps, the customer's needs are always at the forefront. Barnes is dedicated to solving the problems of the modern waste stream and will continue to be a leader in the development of new technologies. ■



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Gorman-Rupp Pumps

Gorman-Rupp has been revolutionizing the pumping industry since 1933. Many of the innovations introduced by Gorman-Rupp over the past ninety years have become industry standards.

We continue to update our machinery, processes, research and development, and engineering to ensure that our pumps and systems are among the most reliable and efficient on the market. With nearly one million square feet under roof, our facilities house some of the most modern manufacturing, testing, and warehousing facilities in the world. Our experienced engineers take advantage of the latest technologies and innovations to custom-design, manufacture, and assemble our products.

With over one million Gorman-Rupp pumps installed to date, we have the knowledge and experience understand your specific application. We provide solids- and clean-fluid handling pumping solutions for municipalities, industrial plants, construction and rental businesses, refineries and petroleum plants, mining sites, agricultural operations, and a variety of original equipment manufacturers.

One of our most successful and innovative lines of pumps has been our self-priming models. Gorman-Rupp also manufactures complete lines of submersible, priming-assisted (dry-prime), standard centrifugal, horizontal end suction centrifugal, and rotary gear products built for the most aggressive pumping applications. In addition, our ReliaSource® pump packages that incorporate these

products are designed, manufactured, and tested and include pumps, motors, piping, and controls to ensure superior operation and easy installation.

We perform rigorous testing based on Hydraulic Institute Standards and test to customers' actual operating conditions in our one-of-a-kind testing facility guaranteeing innovative, superior-quality products that are ready to tackle your toughest jobs. To ensure you get the right equipment for your requirements,



Gorman-Rupp partners with a worldwide network of distribution and provides them with the most extensive training. Gorman-Rupp distributors will work hand-in-hand with you to recommend, customize, and specify equipment. And Gorman-Rupp is always available should you ever require any assistance.

PHILOSOPHY

Gorman-Rupp stands behind the quality of our pumps to ensure they meet your requirements for the long haul. To maintain industry-leading client satisfaction well beyond product installation, we offer a variety of services to meet your needs, including world-class training, service, and industry-leading warranty.

INDUSTRY-LEADING SUPPORT AND WARRANTY

Gorman-Rupp stands behind the quality of our pumps to ensure they meet your requirements for the long haul. To maintain industry-leading client satisfaction well beyond product installation, we offer a variety of services to meet your needs, including:

INDUSTRIAL

If your application deals with abrasive, corrosive fluids, or liquids containing large solids, we have the right pump for the job. Gorman-Rupp pumps are constructed in a variety of materials to move fluids in steel mills, paper mills, underground mines, food processing, automotive and chemical plants, canneries, power plants, tanneries, glue and resin plants, and any other facility where dependability and ease of service are essential.

MUNICIPAL

When you choose Gorman-Rupp, you benefit from one of the largest and highest quality lines of municipal pumps, engine-driven pumps, sewage lift stations and water booster/reuse stations available on the market. Our ReliaSource® packaged lift and booster stations ship complete from the factory with pumps, motors, and controls and are 100 percent tested before they leave the facility to ensure product efficiency and operation. ■

GORMAN-RUPP PUMPS

P.O. Box 1217
Mansfield, Ohio 44901



ERADICATE CLOGGING

CLOG-PRONE SOLIDS ARE NO MATCH FOR GORMAN-RUPP SUPER T SERIES® PUMPS EQUIPPED WITH THE ERADICATOR® SOLIDS MANAGEMENT SYSTEM RETROFIT KIT.



ERADICATOR
Solids Management System



The Pump People®

New sewage, poultry waste, plastic bags, hair, stringy material and other clog-prone materials can wreak havoc on pumps. That's why you need a dependable solution for handling solid waste. Gorman-Rupp's innovative Eradicator® Solids Management System upgrade kit for Super T Series® pumps offers just that. The aggressive self-cleaning wearplate and back cover assembly, incorporating an obstruction-free flow path, are designed to handle clog-prone material, keeping your pump operating at peak efficiency. A lightweight inspection cover allows for easy access to the inside of the pump without affecting wearplate-to-impeller clearance. And, the Eradicator can be easily installed into existing Super T Series pumps in the field. Trust Gorman-Rupp pumps to keep your operation running smoothly month after month, year after year.

Industrial Flow Solutions

CHANGING THE WORLD ONE WET WELL AT A TIME

Industrial Flow Solutions™ (IFS) headquartered in New Haven, Connecticut, and is focused on changing the world one wet well at a time. IFS specializes in the design, manufacturing, sales, and service of wastewater pumps and controls including OverWatch® Direct In-Line Pump Systems, BJM Pumps®, Stancor®, and DERAGGER® products ideal for the municipal, industrial, commercial, and residential applications.



With over 200 years' technical and application experience, IFS supports partners through the design, build, test, install, and post-install processes. In the New Haven location, a state-of-the-art, in-house testing facility that is built to Hydraulic Institute standards enables comprehensive testing with rapid results. With a focus on turning customers' flow problems into flow solutions, IFS products lower costs, increase efficiencies, and minimize the environmental impact. IFS is committed to offering industry leading response times with a high human touch from initial inquiry to post-installation support.



OVERWATCH® DIRECT IN-LINE PUMP SYSTEM

The OverWatch® Direct In-Line Pump System is a breakthrough

technology designed to lift influent the point of entry, eliminating the wet well. Influent is contained, eliminating odors, and reducing maintenance. The stainless-steel body is designed to withstand the

effects of corrosion from harsh materials and solutions, making OverWatch® an ideal solution for the municipal, industrial, and commercial industries.

- Save time and money with smart sensing systems that adjust in real time to manage flow and avoid clogs
- Create safer working environments for maintenance crews by eliminating hazards associated with a wet well
- Eliminate downtime resulting from clogged pumps
- Increase operational efficiencies with reduced maintenance
- Improve environmental impact with less evasive ground construction



DERAGGER® INTELLIGENT CONTROL SYSTEMS & ADVANCED NETWORK MONITORING TECHNOLOGY

The DERAGGER® award winning, smart technology detects rags early and eliminates wastewater pump blockages in real time. DERAGGER is a cost saving solution for the municipal, industrial, and commercial industries. Available in a range of models, the DERAGGER offering provides intelligent data monitoring and analytics designed to meet specific application needs.

- Eliminate pump ragging by monitoring the dynamic torque waveform in real-time
- Increase pumping efficiency and reduce operational costs
- Premium solution offers a high-resolution power analyzer that provides essential data for remote insight into the pump station

- Modular solution may be added to new or existing control panel



BJM PUMPS® AND STANCOR® SUBMERSIBLE PUMPS

BJM Pumps® and Stancor® submersible pump products are designed for harsh environments to save money by minimizing downtime and increasing efficiency. This results in improved total cost of ownership over the service life of our pumps.

BJM Pumps offers tailored solutions for heavy solids-laden liquids, abrasive slurries, acidic or caustic fluids, and fluid temperatures up to 200 degrees Fahrenheit. Our industry leading Fahrenheit® series high-temperature pumps are capable of continuously handling 200-degree-Fahrenheit-solutions.

Stancor® offers dewatering and solids handling submersible pumps that operate in challenging, harsh environments, including utilities, mining and oil, and gas industries.

Part of the Stancor product family, the Oil Minder® solution-based system integrates submersible pumps and oil-sensing controls to deliver code compliance while reducing environmental risks.

CONTACT IFS TODAY

Changing the world one wet well at a time.

IFS offers industry leading lead times and unsurpassed responsiveness with a personal touch. For more information on the pumping and control solutions IFS offers, visit www.flowsolutions.com and connect with the IFS team. ■



INDUSTRIAL
FLOW
SOLUTIONS™

CHANGING THE WORLD ONE WET WELL AT A TIME

Industrial Flow Solutions™ (IFS) headquartered in New Haven, Connecticut, USA specializes in the design, manufacturing, sales, & service of wastewater pumps, controls, and systems including OverWatch®, BJM Pumps®, Stancor®, & DERAGGER® products ideal for the municipal, industrial, commercial, and residential applications.



www.flowsolutions.com

Mod-Tronic Instruments

YOUR ONE-STOP SOLUTION FOR PUMP AND MOTOR TEMPERATURE SENSORS. RTDS, THERMISTORS, THERMOCOUPLES, THERMOSTATS

Since 1972, we have been proudly supplying the pump, electric motor, generator, gearbox and bearing industries with the high-quality temperature sensors. Both at the OEM (manufacturer) and MRO (maintenance, repair, overhaul) levels. Whether for bearings or windings we offer every type of temperature sensor technology available including: RTDs (resistance temperature detectors), Thermocouples, Thermistors, and Thermostats (Klixons).

Our main company website is mod-tronic.com but we also have our market specific website RewindSensors.com that displays only the sensors (RTD, thermocouple, current, vibration), anti-condensation heaters, controls, and monitors applicable to the rotating machinery OEM and MRO market.

WHY BUY FROM US?

1

HUGE INVENTORY

For the MRO portion of the rotating machinery market, we understand just how crucial it is to carry a large inventory of products that can ship immediately. Currently, we have over 500 different part numbers in stock for a total of over 10,000 parts and \$2,000,000 of inventory. We assemble and modify our MINCO stock so that we can quickly ship many more part numbers than what is on our stock list. By modifying and assembling our stock, we can ship thousands of different sensor and assemblies within a few days. We modify MINCO parts for quick shipment of stock parts including:

- Cutting RTD or thermocouple probes to the exact length you require for your application
- Cutting Teflon leads to length or stainless-steel braid over Teflon lead wires to length

- Adding stainless steel armor over leads
- Removing stainless braid
- Adding bayonet mount hardware
- Adding PSA adhesive to surface mount sensors or heaters
- Assembling stock sensors, fittings, connection heads, and thermowells into complete assemblies
- Programming transmitters to your sensor input type and temperature range

We replenish our stock weekly so if the parts you need are not in our stock, we can still provide them quickly for you. Don't see the exact product you require? Tell us what you need, most of our manufacturers offer custom-built solutions to meet your exact requirements or we can modify stock parts.

2

TECHNICAL SUPPORT

The Mod-Tronic team's technical knowledge is unparalleled. Our sales force has over 114 years of combined experience solving our customers unique and diverse application challenges. We have earned a valued reputation in our industry for working with our customers. We take the time necessary to fully understand your application, analyze your requirements, and offer you the correct products at competitive prices. Not sure what type of temperature sensor you just pulled out of that old motor? Just ask! We have seen almost everything and can help you figure it out.

3

CUSTOMER SERVICE

One of the secrets to Mod-Tronic's success is our people. Customer service is our #1 priority. All of our sales people are friendly, conscientious, and motivated to get answers to customers as

quickly as possible. They recognize the inherent urgency of the rotating machinery repair industry and the need to respond to inquiries promptly with stock part solutions whenever possible. Every week, we hear from customers calling us, "I can't believe I found someone who will talk to me that actually knows their products!"

4

QUALITY

Our emphasis on quality extends to our manufacturers. All of our manufacturers were carefully chosen for the high-quality products they produce. Especially MINCO, whom we have had a business partner relationship with since 1972. Mod-Tronic is the largest Minco distributor in Canada or the United States for the rotating machinery market.

Our reputation in the market is that we only sell top quality products. Our customers know that their initial cost from us may not be the lowest but their long-term cost (Total Cost of Ownership) and headaches from failures is the absolute lowest. We are so confident in the quality of all of our suppliers that we provide a five-year limited warranty on every product we sell.

5

WE'RE EASY TO BUY FROM

We are located in Brampton, Ontario, Canada, just outside of Toronto, occupying 6,600 square feet of office and warehouse space with an additional warehouse and freight forwarding location in Warren, Michigan. We have a low \$100 minimum order and we can ship parts the same day from stock to anywhere in Canada, the United States, or around the world. And we ship to Canada and the United States with no cross-border fees!

We look forward to working with you! ■

MOD-TRONIC

Stocking distributor of **MINCO**
Sensors, Heaters and Controls

MOTOR TEMPERATURE SENSORS

RTDs Thermocouples Thermistors Thermostats

FOR STATORS

FOR BEARINGS



**ANTI-CONDENSATION
SPACE HEATERS**

**TEMPERATURE
MONITORS**



MOD-TRONIC

www.RewindSensors.com

1-800-794-5883



Leading through innovation



**SAMOA Industrial
Headquarters**



SAMOA Industrial is an industrial company that **manufactures pumps, systems, and solution for complex fluid handling.**

Founded in 1958 with its Headquarters located in northern Spain, SAMOA Industrial **designs, develops, manufactures, and distributes its products to more than 1150 countries worldwide** through its specialized distribution network. Moreover, SAMOA owns satellite manufacturing plants in USA, Italy, and Germany; and distribution centers in England, France, Sweden, and Belgium.

SAMOA Industrial offers lubrication and vehicle service equipment, piston and diaphragm process pumps, spray painting equipment, and high-viscosity fluid application pumps & systems.

Committed to designing and manufacturing first-class, reliable products that exceed industry standards, we take pride in our manufacturing facilities, which have earned ISO 9001, ISO 14001, and ISO 45001 certifications. This recognition is a testament to our unwavering commitment to environmental sustainability, quality, and safety practices.

The company targets the international market offering innovative, efficient, and high-quality products around the world. This, together with its know-how, makes SAMOA a highly competitive company, leading through innovation, with strong international presence.

Global Presence with Local Support

More info:



Contact us:

USA: process_na@samoaindustrial.com
Otr: info@samoaindustrial.com



Headquarters



Subsidiary

Authorized Distributors

You've tried the rest, now get the best!

CHOOSE SAMOA

AIR OPERATED DIAPHRAGM PUMPS, PIVOT SERIES

Air motor reliability

No stall, no icing, no sliding spool O-rings to wear, low vibration and pulsations, low startup pressure due to Pivot air valve. Patented cartridge design with reduced air consumption compared to competitive pumps.

Abrasion resistance

Optimized manifold design and fluid paths reduce fluid speed and minimize wear caused by abrasion.

Universal pump:

Matching port to port and mounting feet dimensions of main competitive brands to allow for direct replacement for existing installed pumps.

Easy servicing

- Reduced number of parts.
- Easy-to-replace air valve cartridge design.
- Bolted construction with same size bolts.



AIR OPERATED DIAPHRAGM PUMPS, DIRECTFLO SERIES

Compact Design

30% - 50% smaller than traditional design pumps.

Overmolded Diaphragms Standard

Extremely reliable, with no exposed piston to entrap particles that wear diaphragms.

Easily Repaired, with less parts

Diaphragms slide onto the shaft. Pump can be repaired inline.

Reduced air consumption

30-60% less at same flow rate, than all other manufacturers.

Minimal vibrations & pulsations

Could eliminate the need for dampeners.



AIR OPERATED PISTON PUMPS

Non-freezing air motor and intrinsically safe

ATEX certified pump design

Ensuring suitability for hazardous zones.

Excellent performance control

Adjustable flow rates, speed, and fluid discharge pressure.



Vaughan Chopper Pumps

THE VALUE OF MADE IN AMERICA

Established in 1960, Vaughan Company® is the industry leader in reliable chopper pumps and mechanical hydraulic mixing systems. With more than sixty-two years of experience and four generations of expertise, Vaughan Company remains committed to giving customers around the world outstanding service and the most dependable pumping solutions.

American-made and built to last, our pumps and systems are available in a variety of sizes and configurations to meet the unique needs of any operation. We have your back with a range of durable pumping solutions to eliminate lift station clogging and handle the toughest solids. Vaughan promises you the best in product design, reliability, dependability, and availability—plus, superior service and support to bring life cycle costs to the lowest they can be.

To maintain our position as the industry leader, Vaughan Company takes full advantage of cutting-edge technology. We incorporate in-house 3D computer modeling, which allows us to create exact fits and precision castings for all components.

All of this leads to one simple point: when you buy Vaughan, you get the best.



WORLDWIDE LIFT STATION SOLUTIONS THAT GO BEYOND THE BARN

Since the late 1950s, "What could make this better?" was the unwavering motivation Jim Vaughan used to invent the world's first chopper pump. After countless hours of repairing clogged

manure pumps for local dairy farmers, he knew there had to be a solution. Jim officially introduced the world's first chopper pump in 1960, and Vaughan Company was born. His brilliant idea met a genuine need that had applications far surpassing the dairy farm.

In the decades since, our operations expanded significantly, providing high-performing and exceptionally reliable pumps across the globe. With over forty worldwide issued or pending patents, Vaughan company has your back anywhere—from prisons to dairy farms to wastewater treatment plants and more.

We're still motivated by Jim's initial question: "What could make this better?" In the most extreme environments where standard non-clog pumps fail, our lift station solutions provide dependable, clog-free chopping and mixing.

BENEFITS OF BUYING AMERICAN MADE

For federally funded projects, Vaughan pumps and pumping equipment meet all requirements to receive federal aid under the Build America, Buy America (BABA) act. Nearly all Vaughan Company materials are produced in the United States and constructed in Vaughan's 140,000-square-foot Washington state-based manufacturing facility. With an extensive \$10M inventory and strong relationships with domestic suppliers and foundries, Vaughan ensures reliable quality and fast lead times.

Not to mention, each chopper pump or mixing system is custom-built to meet the end user's specific needs. Even without current supply chain disruptions, global sourcing would not allow for this level of customization within a feasible timeline. In addition to fast builds, our manufacturing facility holds a large surplus of spare parts, so Vaughan products are easily maintained.

Knowing that every pump user faces a unique situation, Vaughan Company also has local sales representatives across the country to provide exceptional customer service when it is needed most—whether that is working closely with customers to tailor pump solutions for an exact situation or providing post-installation support.



PRODUCTS THAT SUPPORT AMERICA

Today, we're still passionate about that original question: "What could make this better?" While Vaughan's locally sourced and American-made chopper pumps keep projects moving, their benefits don't stop there.

The answer to Jim Vaughan's question extends beyond the walls of the manufacturing facility. As a major local employer, we strive to strengthen our community by giving to charities and community organizations. Our scholarship program supports graduates of the Elma and Montesano school districts who are planning to pursue a post-secondary degree or technical certificate in the water and wastewater sector.

Vaughan products are not just made in America, they also support the future of America. ■

VAUGHAN CHOPPER PUMPS

888.249.CHOP [2467]

info@chopperpumps.com

www.chopperpumps.com



18" ANSI CLASS 125 FT.
DISCHARGE FLANGE.

1/2" NPT. DISCHARGE
PRESSURE GAUGE TAP

ELEVATE YOUR LIFT STATION PERFORMANCE

LIFT STATION SOLUTIONS

Elevate your lift station performance with reliable solutions from Vaughan. Our industry-leading pumps and alternative mixing options eliminate lift station clogging and handle the toughest solids to create a homogeneous slurry which becomes easy to pump through stations at:

- Prisons
- Housing Developments
- Pulp and Paper Mills
- Hospitals
- Municipalities
- And more

*Choose the unmatched reliability of Vaughan.
Ask about our free trial program and on-site demos.*

**FIND THE
RIGHT PUMP
FOR YOU**



GUARANTEED PERFORMANCE | EXPEDITED DELIVERY | ADAPTABLE OPTIONS
888-249-CHOP | CHOPPERPUMPS.COM

Vaughan
Unmatched Reliability

Check-All Valve Mfg. Co.

Since 1958, Check-All Valve Mfg. Co. has manufactured a complete line of in-line spring-loaded piston-type check valves. With worldwide service, Check-All Valve serves a wide range of industries including the chemical, petrochemical, pharmaceutical, food and beverage, water treatment, OEM, MRO, and many others. Lightweight, efficient, and rugged, every Check-All valve is designed and built to perform to exact needs and specifications. The company is ISO 9001 certified and manufactures product lines compliant with CE/PED requirements, Canadian Registration Number guidelines, 3A Sanitary Standards, and others.

Check-All valves are engineered for silent operation. They close quickly and smoothly to eliminate hammer noise. They are designed

to function equally well in either a vertical or horizontal position, with proper spring selection. They are also designed to reduce installation costs. The insert series check valves easily fit into existing line components, which reduces initial cost and installation time. The seating surfaces are parallel to each other thereby eliminating the excessive wear occurring in plug, cone and ball seats. Check-All valves can also be used as low-pressure relief valves and vacuum breakers.

With many styles available, Check-All Valve provides check valves for practically every service application. Valves are offered with metal-to-metal or soft seats in sizes ranging from 1/8-inch NPT to 20-inch flange connections. Pressure ratings are available from

full vacuum to 10,000 PSI. Standard or exotic materials are available and you can choose from a wide variety of spring settings and seat materials for any valve. Most options are available with fast delivery. Specially designed valves are another option that Check-All Valve performs on a regular basis. Check-All Valve Mfg. Co. is staffed to supply you with a quality product as well as personal technical services. ■

CHECK-ALL VALVE MFG. CO.

Contact us for a complete
catalog or see us at
www.checkall.com.

Check All your valve needs at **Check-All®**

✓ SILENT OPERATION!
Our check valves close quickly and smoothly to avoid water hammer noise and vibration.

✓ SPRING-LOADED!
Multiple spring settings as well as seat and body materials available to meet your application needs.




✓ UPSTREAM TRIM!
The upstream trim is protected from corrosive media mixing; thereby, extending valve service life.

And most lead times are less than one week. That's what makes our check valves Check-All®.



Order online at : www.checkall.com
Call us at: 515-224-2301 or
email us at: sales@checkall.com



Proudly manufactured in the USA

CURFLO

MANUFACTURER OF AFTERMARKET ANSI B73.1 PUMPS AND PARTS

CURFLO, headquartered in Houston, Texas, is a premier manufacturer of aftermarket ANSI B73.1 pumps and parts. We also offer self-priming pumps, gear pumps, and XL blender pumps. CURFLO, with years of experience in the industrial pump industry, maintains an expansive, multi-million-dollar inventory in our 32,000 square foot facility.

We're an all-American company based out of Texas. All pumps are assembled, tested and shipped out of our main Houston office. Furthermore, with a full inventory of all products assembled and stored in-house, we are able to ship most parts within twenty-four hours. Pumps can be assembled within a one-week turnaround time.

TESTED AND CERTIFIED

We hydrotest all of the wet end components in-house. In addition, all components are dimensionally checked prior to the assembly process. The majority of our models are available in CD4 duplex stainless steel for extremely corrosive applications. Our products are built to last in high stress environments.

All of our components are designed to work with existing OEM pump models and are fully rebuildable into existing OEM pumps, as well as complete pump packages.

WE'RE HERE TO HELP

Not sure what size pumps you'll need? Let our in-house engineers work with you to determine sizing

for your specific applications. Many parts orders can ship within twenty-four hours. Assembled pumps can be expedited in many cases. Complete skid packages can be assembled and shipped within days. Through our network of local distributors, on-site service and repair is available to meet your specific needs. Have a question? Give us a call.

TRUSTED PARTNERS

CURFLO is a part of the Curry Supply Company, a third generation, family-owned business that began in 1932. The Curry Supply Company, along with our other divisions—Curry Rail and Curry Fluid Power—have been serving a growing number of industries for nearly 100 years. ■



sales@curflo.com
281-479-5000
curflo.com



SOLUTIONS UNIQUELY ENGINEERED FOR YOU

■ ANSI PUMPS

■ SELF-PRIMING PUMPS

■ GEAR PUMPS

■ BLENDER PUMPS

QUICK-SHIPPING OUR ENTIRE RANGE

Electro Static Technology

Electro Static Technology, an ITW Company, is a global manufacturer and the inventor of AEGIS® Shaft Grounding Rings used in electric motors and other rotating equipment to safely discharge stray voltage from variable frequency drives (VFDs) to ground. AEGIS® Shaft Grounding Rings are installed in all ranges of motors from fractional horsepower to large medium-voltage motors.

Our dedication to providing an effective and lasting solution that prevents electrical bearing damage, motor failure, and expensive downtime has led to our adoption by electric motor users in manufacturing, HVAC, energy, water treatment, electric vehicles, and other commercial and industrial applications.

The AEGIS® Shaft Grounding Ring is the standard for protection against VFD-sourced shaft voltage and bearing current. Each ring employs 360 degrees of specially engineered conductive microfibers that surround the motor shaft in a multiple-row design to provide incomparable shaft grounding that keeps motor bearings safe and working.

The AEGIS® SGR product family includes several ring and mounting options to ensure reliable bearing protection no matter the details of your motor system. We have solid and split grounding rings, rings with a clamp-on design or bolt-through mounting, press-fit rings, and the ability to customize a ring for your specific needs.

AEGIS® Shaft Grounding Rings can be specified at the time of motor purchase or installed in the field. Several motor manufacturers include them as standard components on many models. Millions of motors around the world depend on AEGIS® rings because keeping motors running keeps business running. Companies use Shaft Grounding Rings more than any other electrical bearing protection.

The AEGIS® Bearing Protection Handbook details best practices for protecting VFD-driven motors from electrical bearing damage and

preventing costly repairs, downtime, and lost production. The Handbook can be downloaded for free at www.est-aegis.com/handbook. ■

VFD-Induced Shaft Voltages Destroy Bearings!



Electrical bearing damage causes unplanned downtime

Variable frequency drives (VFDs) are used to control pumping systems. But VFDs create a motor shaft voltage that discharges through the bearings, blasting millions of pits in bearing surfaces. Both motor and pump bearings are at risk. These discharges oxidize the bearing grease and cause bearing fluting, premature failure, and costly downtime.

Protect motor bearings with AEGIS® Shaft Grounding Rings

By channeling VFD-induced discharges safely to ground, AEGIS® Shaft Grounding Rings prevent electrical bearing damage. Proven in millions of installations worldwide, AEGIS® Rings provide unmatched protection of motors against electrical bearing damage, motor failure, and unplanned downtime.



Fluting Damage

See our shaft grounding case studies and resources for pump users, contractors, and manufacturers at: est-aegis.com/pump



1-866-738-1857 | sales@est-aegis.com

Electro Static Technology™
An ITW Company

FELUWA Pumpen GMBH

FELUWA Pumpen GmbH is a 122-year-old worldwide manufacturer of double hose-diaphragm and smaller high pressure flat diaphragm pumps with sales offices around the world and now in the United States. We were established in Neuwerk/Mönchengladbach, Germany, as a foundry and later moved to Cologne, Germany, where we expanded to machining factory and then to pumps in 1931. At that time, the company focused on the production of equipment of fire, air, and water technology, such as burner equipment, compressors, fans, and pumps. After a relatively short period of time, the company started concentrating on pump technology. Our name—FE LU WA—was created from the German words:

FE: Feuer, meaning fire

LU: Luft, meaning air

WA: Wasser, meaning water

In 1934, FELUWA moved to its current location in a sleepy small hunting village of Murlenbach, in the mountains of the Eifel region of Western Germany and further expanded its operations. Years later, we began the manufacture of round piston actuated diaphragm pumps and flat diaphragm pumps that were later further engineered into the next generation of heavy-duty slurry and viscous pumping. This would eventually evolve into what we know now as the hose-diaphragm pump.

In 1970, we created the hose-diaphragm pump which later turned into the current double hose style of hose-diaphragm pumps. In 2000 we became a member of the Arca Flow Group and further developed our new hose-diaphragm pump into the double hose MULTISAFE product line that we sell today. With the creation of this product line and the new engineering of the product, we grew exponentially and in 2012, we manufactured the

world's biggest hose-diaphragm pump, a 150 metric ton Quintuplex double hose-diaphragm pump. This led to an impressive offering of larger pumps for the worldwide market. In 2017 we expanded the line with a smaller offering of the same style of double hose-diaphragm pumps to create the EcoSafe line for lower pressures and flows, but with the same design features as the MULTISAFE.

FELUWA Pumpen has remained in private hands and continues to grow and remain financially stable and profitable through many years of adversity. In 2023, we created the new U.S. Division for the sales and field service support of our U.S. pump base with a President, Chuck Martin, and a new warehouse capability for stocking of spare parts that will soon grow into field service and additional

sales and personnel throughout the Americas eventually.

The U.S. Division will continue to sell into the oil and gas, municipal, chemical, petro-chemical, mining, coal gasification, and other vital severe duty markets where heavy duty pumping of slurries and thicker fluids require a robust, long-term solution to processes that most other pumps could not handle effectively. As the division grows, we will be able to offer improved delivery times and quicker responsiveness to the needs of our customers as well as expand with as little interruption as possible. The goal and focus of the new U.S. Division will be quick response, immediate service, and faster delivery times as we grow into a truly global pump presence in our many business sectors. ■

A BRIGHT IDEA IN HIGH EFFICIENCY DIAPHRAGM PUMPING





Chuck Martin, President • 832-853-4862 • Martin@feluwa.com

Greasezilla FOG Separation Systems

BY DOWNEY RIDGE ENVIRONMENTAL COMPANY

Greasezilla'sSM patented separation technology solves fats, oils and grease (FOG) treatment and disposal challenges worldwide. Developed by Downey Ridge Environmental Company, the turnkey system repurposes FOG to produce a high-quality, low-moisture advanced biofuel (ABF) commodity, offering an eco-friendly and profitable alternative to chemically treating, lagooning, landfilling, incinerating, or dumping FOG waste.

GreasezillaSM leaves almost nothing to be landfilled and has a total operating cost of 1 to 2 cents per gallon, making it the ideal front-end pretreatment system for FOG waste. GreasezillaSM eases the financial sting of ever-increasing disposal fees and labor costs while generating revenue.

SIMPLE TO INTEGRATE

- Allen Bradley® Programmable Logic Controller with SCADA integration for remote monitoring
- Scalable to meet changing needs
- Available in modular or cylindrical formats to accommodate interior or exterior placement

ECO-FRIENDLY

- Diverts the FOG waste stream from landfills
- No chemicals, polymers, or additives
- Recovers a low carbon intensity (CI), brown grease ABF feedstock

COST-EFFECTIVE

- Reduces costs associated with FOG treatment and disposal



- High EBITA / Quick ROI
- Assured revenue from sale of brown grease ABF commodity
- Promotes best practices that protect sewer infrastructures

By recovering and repurposing fuel resources from a nuisance waste, GreasezillaSM is helping the industry transform a negative value waste stream into a useful biofuel commodity for a more sustainable world. To learn more about Greasezilla, contact us at 304.658.4778 or visit www.greasezilla.com.

GreasezillaSM fats, oil and grease (FOG) separation systems

STAGES OF FOG SEPARATION

- 5 - 15% Rich Brown Grease**
Low-moisture Advanced Biofuel commodity
- 3 - 5% Batter**
Ideal for anaerobic digesters or composting
- 80 - 85% Pasteurized Water**
Ready for wastewater treatment plants

Percentages vary based upon input material

- Simple to Integrate
- Ecological
- Cost-Effective

Refine. Reduce. Reuse.

www.greasezilla.com

Helwig Carbon

BPK: ULTIMATE SOLUTION TO SHAFT GROUNDING

Bearing failure is the number one cause of electric motor failure and it can be avoided. Many pumps utilize a variable frequency drive (VFD) to increase pump motor efficiency. While VFDs lower power consumption, they also induce currents onto the motor shaft. These shaft currents will often discharge through the motor bearings causing fluting, burnt grease, and eventual bearing failure. Downtime, repairs, and warranty claims can be the result of bearing failure and can be extremely costly to any company.

Helwig's BPKs (Bearing Protection Kits) have been leading the industry in shaft grounding solutions for years. Our proven silver graphite brush technology, K007, is unlike other shaft grounding systems because it eliminates the need for maintenance

and will keep bearings protected, year after year. Helwig BPKs effectively divert induced electrical currents away from the bearings. The result is the lowest shaft voltage and maximum discharge to ground through the kit rather than through the bearings, protecting them from damage and failure.

Additionally, our EZ MultiFit Bracket mounting system allows for a BPK to be attached to multiple bolt designs while keeping constant contact on the motor shaft. The MultiFit Bracket system can be used with existing bolts which eliminates the need for drilling and tapping. The universal design of the bracket is compatible with over 80 percent of motor designs.

Helwig Carbon is the world's leading expert on shaft grounding.

Helwig Carbon Products, Inc. has been producing a full-line of precision-machined carbon brushes, brush holders, and mechanical carbons since 1928. Headquartered in Milwaukee, Wisconsin, Helwig Carbon is the largest American-owned carbon brush manufacturer. Helwig maintains a strong presence in Australia, Canada, and Mexico. Helwig Carbon is vertically integrated and produces a large portion of their carbon plate material at Speer Carbon in St. Mary's, Pennsylvania.

Helwig's customer service team, engineering group, and field service representatives lead customers to effective solutions that maximize product performance and minimize maintenance and downtime. Call us for a quote today! 800.962.4851 ■

STOP BEARING FAILURE

CAUSED BY VFD-INDUCED CURRENTS

WITH HELWIG'S
INDUSTRY LEADING
SHAFT GROUNDING SOLUTION



BPK

Premature bearing failure is a major cause of motor downtime and costly repairs. Helwig Carbon uses proven silver graphite technology in a variety of bearing protection kits (BPK) for motor shaft grounding. They effectively divert electrical currents away from the bearings, protecting them from damage.

For more info, visit
www.helwigcarbon.com



Hoosier Pattern

EXCEEDING EXPECTATIONS WITH COMMITMENT TO INNOVATION

Hoosier Pattern is dedicated to the belief that innovation is the key to enhancing productivity. In an ever-evolving industrial landscape, staying at the forefront of technological advancements remains our top priority. Established in 1997, Hoosier Pattern began its journey in a modest 3,500-square-foot space with just a few machining centers.

Fast forward to today, and Hoosier Pattern operates from a sprawling 90,000-square-foot facility equipped with state-of-the-art technology. Our cutting-edge CNC manufacturing and rapid prototyping practices offer comprehensive manufacturing solutions to businesses across the Midwest, the United States, and beyond. We take pride in delivering the highest-quality foundry tooling,

3D-printed sand molds, and cores that our industry demands.

As of 2023, we stand out as one of the few service providers with the capability to own and operate multiple in-house 3D sand printers. Our impressive equipment includes over twenty-five machining centers, encompassing various vertical and horizontal machining centers, a five-axis mill, and CNC lathes.

Recognizing our customers' demand for swift delivery times and unwavering product excellence, we have made these expectations the cornerstone of our daily operations. We remain steadfast in our commitment to "On-Time Delivery," consistently meeting our customers' stringent deadlines.

Furthermore, our foundry tooling and 3D-printed sand molds and cores

adhere to Hoosier Pattern's rigorous quality control protocols at every stage, ensuring we meet the industry's highest standards. To gain a deeper understanding of the technology employed at Hoosier Pattern, we invite you to visit our website and take a virtual tour, accessible at the top of the page.

No matter your tooling or 3D printing requirements, you can trust Hoosier Pattern to deliver the utmost quality and the extensive expertise you expect. Should you have a project related to foundry tooling on your horizon, please don't hesitate to contact Keith Gerber, president of Hoosier Pattern. For our additive manufacturing manager, reach out to Todd Yoder for any inquiries or assistance. ■

Visit www.hoosierpattern.com for more information.

WE DELIVER A PATTERN OF EXCELLENCE



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Hoosier Pattern continues to be an industry leader by setting the bar high to exceed our customer's expectations. With our state-of-the-art technologies along with our highly-experienced team members, Hoosier Pattern continues to deliver the industry's best additive manufacturing molds and cores on time and every time.

WE EXCEED EXPECTATIONS

- » On Time Delivery
- » Quality Products
- » Experienced Team

Call Us Today at 260.724.9430



Hydro-Thermal

Hydro-Thermal is a third-generation company dating back to 1934 with the creation of the Hydroheater®, also known as the Jetcooker™, which was first introduced in pulp and paper mills in Wisconsin and is the foundation of our technology—making Hydro-Thermal a global leader of on-demand steam injection fluid heating and processing systems.

WHAT SETS US APART

We understand the importance of precise temperature control in the manufacturing process. Our commitment to delivering tailored solutions based on specific needs, applications, and desired results sets us apart.

DEDICATED SERVICE TEAM

Behind every installation is our dedicated Service Team for support, showcasing our reliability and

quality. Our advanced manufacturing capabilities manufacture all products in the USA within an ISO-certified facility, offering an extra layer of peace of mind.

EFFICIENCY AND INNOVATION

Our innovative technology, Direct Steam Injection (DSI), offers a range of benefits that outperform traditional heat exchangers. DSI heaters modulate the steam at the injection point, providing exceptional heat transfer efficiency. This results in energy cost savings, efficient control of process fluids, and the ability to handle high-viscosity slurries without any burn-on.

SPACE-SAVING SOLUTIONS

DSI technology occupies less space than traditional heat exchangers, allowing easy installation into existing piping systems and eliminating the need for a separate condensate

return system. This makes installation significantly more cost-effective than other heating methods.

EXCEPTIONAL PRODUCT RANGE

Hydro-Thermal offers an exceptional product range, including the original Jetcooker, designed for top-tier performance, and the rugged NOH (Non-Obstructing Heater™), capable of handling even the most abrasive or viscous materials, like sludge heating.

Hydro-Thermal is deeply committed to providing efficient and innovative solutions for precise temperature control. With our extensive experience, dedication to customer support, and global presence, Hydro-Thermal is a trusted partner for businesses looking to optimize their heating and processing systems while saving time, energy, and money. ■

A Better Alternative to Sludge Heating

Direct Steam Injection Non-Obstructing Heating (NOH) System by **Hydro-Thermal**



No Clogs: Straight flow through design wipes or rags won't get stuck in the heating system.



Temperature Control: Increased Biogas generation & reduced hydraulic retention time.



Simplify Your Equipment: Installed directly into existing system piping with minimal maintenance requirements.



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KROHNE

KROHNE offers a complete measurement instrumentation product portfolio including industry specific system solutions and complementary services for projects of any size, anywhere in the world. Since starting in 1921, we have amassed an enormous amount of application knowledge that is integrated into our products, solutions, and services.

The resulting innovative technologies are based on our extensive R&D with 10 percent of the work force dedicated that area. While sensor development for flow, level and other variables is the primary focus, we are also very active in advancing device communication and the Internet of Things (IoT) for the process industries including device diagnostics for analysis and process optimization.

If you buy a KROHNE product, you will get a measuring device that performs most accurate with low uncertainty under real process conditions. To achieve this, we operate more than 120 calibration facilities for volume flow, mass flow, level, temperature, density, and pressure for every device we manufacture. For example, every flowmeter is wet calibrated using water or air as standard before leaving our facilities. We can also provide customer specific calibration such as:

- Multipoint calibrations
- Varying temperatures, viscosities, or pressures
- Specific fluids
- Specific pipe geometries or piping provided by the customer

For calibration we only use direct comparison. For example, we calibrate our Coriolis mass flowmeters with a gravimetric weighing system. Our calibration rigs are the most accurate for measuring device production with reference accuracies 5 to 10 times better than that of the meter under test.

This goes for small (1 millimeter) or very large meter sizes since Krohne operates precise volumetric calibration rigs up to 120 inches with a certified accuracy of 0.013 percent based on a 144-foot-tall tank containing almost 132,000 gallons of water allowing for a maximum flow rate of 7,925,000 gallons per hour.

In North America, we have a brand-new manufacturing and calibration facility in Beverly, Massachusetts. We serve our markets through a network of representatives, distributors, and direct sales personnel.

Our mission is to provide unparalleled application expertise, on-time delivery, and cost-effective quality products so that we can exceed our valued customers' expectations. We offer a technically

proficient, KROHNE-trained sales force that gets involved in all aspects of technical sales and applications support.

Our dedicated technical support, field application, start-up and repair teams are located throughout the regions to provide timely and effective services at your site or at our factory. Our TASC (Technical Application Support Center) is the heart of KROHNE's technical support capability and is available by phone or email every day, at any time, day or night. This group of trained engineers and technicians is at your disposal for product application, installation, operation, or troubleshooting questions. You can reach our support team by calling our toll-free number 800.FLOWING (356.9464) or by email at tasc@krohne.com. ■



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Landia

Inventors of the chopper pump back in 1950, Landia is firmly established in North America, continuing to grow year-on-year as word spreads about the effectiveness and reliability of its products—backed by a company that goes the extra mile to find the best possible solution.

A VARIETY OF APPLICATIONS

Established in 1933, Landia's pumps and mixers provide long-term service for numerous applications, including sludge, aeration, eliminating FOG in lift stations, biogas—as well as working with the dairy, food, agriculture, and fish processing industries.

CUSTOM SOLUTIONS

Landia doesn't try to find an off-the-shelf pump or mixer that is roughly the "closest match" to solve your problem. We dig deep to work with you on finding and then fine-tuning the right product with the right set up to match your specific needs – from reducing troublesome odours at a wastewater treatment plant, increasing methane production in biogas plants, dealing with by-products from food production, or dealing with troublesome dry matter in biomasses.

DECADES OF DURABILITY

The durability of our equipment is second to none. Landia supplied the first mixers for sewage treatment plants in the late 1980s. Many of these have passed the age of twenty-five—some even thirty—are still in operation today.

THE ORIGINAL IS STILL THE BEST

It was Landia's very own Christian Oelgaard (our founder), who invented the chopper pump over seventy years ago. Unlike other "*chopper pumps*" that have appeared much later, the Landia chopper pump is uniquely designed with a cutting system at the pump inlet to prevent clogging. It does not use the impeller as part of the chopping action. This significantly reduces wear, maintenance, and replacement budgets for the best possible total cost of ownership.

Even such a great designer as Christian might have been pleasantly surprised to think that his chopper pump invention would go on to play such a pivotal role in the creation of renewable energy.

Tried and tested, the Landia chopper pump is today an integral part of the Landia GasMix system, which is proving increasingly sought after for AD/biogas plants across North America. From municipal sludge to food and farm waste, the Landia chopper pump keeps on going, reducing particle sizes to help maximize biogas yields. ■



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Pfannenber

Pfannenber is recognized as a leading global manufacturer of thermal management, liquid cooling, and audible and visual signaling technologies. Thermal management products keep electronics cool and safe, protecting critical industrial and manufacturing process. Visual and audible signaling devices are used to protect personnel and equipment across multiple event types.

DEDICATED SOLUTIONS

Pfannenber's experts understand the water industry specific requirements and safety protocols to help you find the best solution for your needs. From wastewater treatment facilities to lift stations and pumping systems, Pfannenber's innovative thermal management and signaling solutions provide critical protection for manufacturing processes and

personnel, ensuring a cost-effective approach, longer service life, and energy savings. Solutions include cooling systems that can withstand extreme conditions like corrosion due to hydrogen sulfide gas and signaling systems that notify employees of life-threatening situations like toxic gas leaks, as well as other solutions essential to protecting the safety of employees and the efficient operation and long service life of equipment.

RELIABLE THERMAL MANAGEMENT

Pfannenber's thermal management solutions for enclosure electronics range from the highly energy efficient Original Filterfan® to the PWS Air/Water Heat Exchangers that can remove a considerable amount of heat while isolating sensitive electronics from a corrosive atmosphere outside of the

enclosure. For example, the air/water heat exchangers are widely deployed to protect variable frequency drives located in pump control panels from the harmful effects of H₂S sour gas.

SAFETY GUARANTEED

Signaling systems are also critically important to keeping employees safe and systems running smoothly in wastewater treatment facilities. Pfannenber has developed a broad range of audible and visual signaling technologies to provide:

- An Indication of the status of a machine, process or test procedure
- A Warning of a dangerous situation or required corrective action
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Schenck USA Corp.

SCHENCK USA CORP. consists of the following business units: Test Devices, Agramkow, and Benz Tooling. Our U.S. headquarters is located in Deer Park, New York, with branches in Southfield, Michigan; Hudson, Massachusetts; and Conover, North Carolina. Its parent company is Carl Schenck AG of Darmstadt, Germany; whose shares are ultimately held by Dürr, AG of Bietigheim, Germany.

SCHENCK USA CORP. is on four acres in Deer Park, New York, that includes a 22,800-square-foot manufacturing and assembly plant and 17,000 square feet of office space for sales, service, administration, and engineering personnel. The company's Southfield, Michigan, location is also a manufacturing and assembly plant serving the automotive customer base with a local engineering and service support staff.

SCHENCK USA CORP. provides a range of balancing and vibration analysis equipment for the production, maintenance and repair of rotating components, and recent integration of BENZ Tooling, metal division, expands its capacities. The company's engineering staff offers a range of experience for any balancing application and maintains a close presence on the balancing committees of the International Organization for Standardization (ISO) and the Society of Automotive Engineers (SAE), to ensure the latest practices and procedures are applied. The company is ISO 9001:2015 accredited.

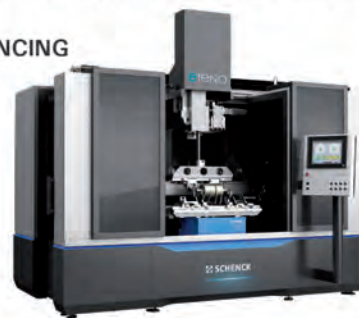
The service team is available for the commissioning and calibration of balancing equipment from multiple North American service points, in addition to leveraging a global service support structure.

With the company's acquisition and merger of the legal entity TEST DEVICES INC. (TDI) of Hudson, Massachusetts, into SCHENCK USA CORP. of Deer Park, New York, it expanded its capacities in the spin testing and balancing services areas and streamlined and strengthened its presence in the North American market.

SCHENCK USA CORP. today has further expanded its footprint in the aerospace industry with the acquisition of the building and property site of SCHENCK's business unit Test Devices, situated on 6.8 acres, in Hudson, Massachusetts, operating a state-of-the-art 57,000 square-foot facility with 5,500 square feet of office space, strengthening its trajectory for growth in support of increased activities with local and global markets in the e-mobility and aerospace industries. The successful business unit is an integral part of SCHENCK's business. ■

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- **SPIN TESTING**



- **APPLIANCE FLUID FILL**



- **CNC TOOLING TECHNOLOGY**



- **AUTOMOTIVE FLUID FILL**



- **TESTING - END OF LINE**



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Our wide range of application support includes precision mixing of flavorings and colorants into specialty food products to gently handling life-saving stem cells for cellular therapies. Tacmina pumps are at the forefront of advanced material development. Our participation in this field has led to the formulation of environmentally friendly EV batteries and hydrogen fuel cells, new developments in agriscience and highly functional materials to name a few.

We have provided our solutions to almost every industry and in many cases when all other solutions have failed to perform. Challenge us with your most demanding fluid transfer application.

Tacmina USA offers a FREE fifteen-day pump trial to prove it. The process is simple. Tell us about your application, we'll recommend a solution based upon our experience and you can take a demo pump for a free fifteen-day test drive. It's the most definitive way to determine if our technology solves your fluid delivery problem. You'll receive full factory support including on-site training and demo pump integration assistance if requested.

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Trillium Flow Technologies

Trillium Flow Technologies™ is a global designer, manufacturer, and service provider of engineered pumps and valves for critical infrastructure, energy, and industrial applications. Our product portfolio serves our customers in the water and wastewater, power generation, oil and gas, mining, and general process industries.

In the United States, our pumps business boasts more than 220 years of combined experience providing reliable and efficient solutions that perform in the most demanding environments. We design, manufacture, and test our entire U.S. pump brand portfolio from our state-of-the-art facility in Fresno, California.

Floway® Pumps are an industry-leading vertical turbine pump in the water and wastewater, oil and gas, mining, energy, and industrial markets.

Floway® pumps can be manufactured to API, HI, and NSF requirements, using the most durable wear and corrosion-resistant materials.

Our Roto-Jet® brand encompasses high-pressure, single-stage centrifugal pumps with Pitot tube technology for low-flow, high-head applications and can be manufactured to API requirements. The Pitot tube's simple design and performance have earned the Roto-Jet® brand a reputation as the reliable and robust "go-to" solution for low-flow, high-pressure challenges.

WEMCO® is known for reliable centrifugal screw and vortex pumps with an international distribution network. WEMCO® pumps have served municipal and industrial customers in markets as diverse as water and wastewater, agri-food, solid bulk and sand applications, chemicals, and general industry for over fifty years.

The WSP® brand serves the global food and beverage processing, waste management, and material processing industries, and are designed to be rugged and dependable while simplifying maintenance and reducing life cycle costs. Our WSP® line can be manufactured according to strict API, HI, and NSF requirements.

Also included in our global pump portfolio are Begemann®, Gabbioneta Pumps®, and Termomeccanica Pompe, manufactured at our facilities in Italy. Trillium Flow Technologies™ provides complete international support, starting with highly engineered, reliable products for your industry and continuing with a unique level of support and service. Learn more about the performance engineered difference at www.trilliumflow.com.

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Sun-Star Electric, Inc. is a Texas corporation established in 1977 and is the principal worldwide distributor for Hitachi submersible motors.

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Sun-Star Electric is an expert for rapid service and repair of the power generation industry's critical, high-pressure water-filled boiler water circulating pump motors.

Sun-Star Electric, Inc. maintains a 75,000-square-foot manufacturing facility, which is fully equipped for the manufacture and repair of submersible electric motors and includes full fabrication, machining, winding, and in-house testing capabilities. In 2011, SunStar Electric, Inc. transitioned to an employee-owned company (ESOP). ■



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Our polymer bearings can also be used in aerators, flocculators, screens, butterfly valves, or virtually all applications where greased bronze bearings are currently installed. ThorPlas-White is the newest material in the Thordon bearing family, specifically developed to operate as a drinking water system component used in the treatment and distribution of potable water. It has international certification for NSF/ANSI 61 Drinking Water System Components and NSF/ANSI 51 Food Equipment Materials, as well as WRAS.

By delivering tailored, adaptable solutions, these bearings enhance efficiency, offering cost and time savings through the elimination of grease, reduced life-cycle costs, decreased equipment downtime, and increased mean time between failure (MTBF). Thordon bearing are available and supported globally by its worldwide network of factory trained authorized distributors. ■

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