

The background is a light blue technical drawing or wireframe illustration of various industrial components, including pipes, valves, flanges, and a large spherical tank, all rendered in white lines.

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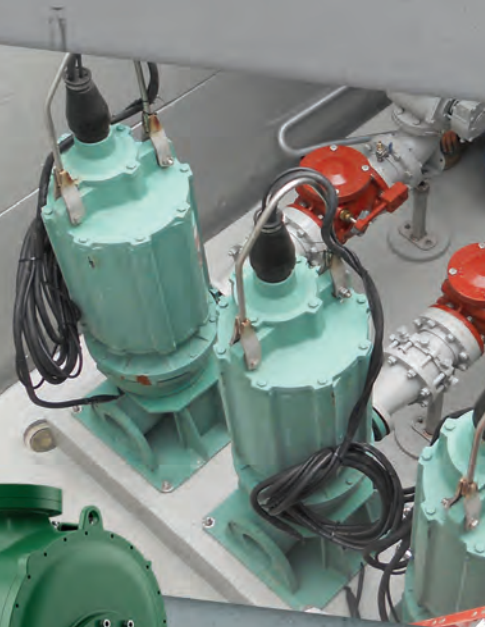


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A NOTE ON THIS ISSUE:

Welcome to February's issue of MPT, which presents an array of valuable insights for professionals across the wide spectrum of the pump industry. We take that responsibility literally in the first entry of this month's Case Studies section (pg. 14). Frequent MPT contributor Del Williams shows how advanced task lighting options significantly improve safety and efficiency in myriad applications, whether it be routine inspections and scheduled maintenance to emergency field work or on-site diagnosis.

Also, "keeping the lights on" figures prominently in our other Case Studies offering this month, where Circor's precision gear metering pump technology provides a scented plastic bag manufacturer return on investment in mere days (pg. 18). Usually, pump users expect to see upticks in their bottom line through long-term efficiency, but this article illustrates how they can see benefits in the short term as well.

Another type of illumination is discussed in this month's Water & Wastewater Focus section. Kenji Takeuchi of Mueller Water Products explains how his company is leading the charge in bringing a generational change to the water industry (pg. 22). More and more facets of the water sector are turning to digital solutions not only to monitor and track their operations but also to predict their needs in the years ahead.



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WWW.MPTMAG.COM

3100 Lorna Rd., Ste 101
Birmingham, AL 35216

J. CAMPBELL Editor

jay@mptmag.com

TONYA BROWNING Vice President

tonya@mptmag.com

JEFF FLETCHER National Sales Manager

jeff@mptmag.com

LISA AVERY Art Director

SETH SAUNDERS Digital Media Specialist

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TECH SOFT 3D NAMES NEW PRESIDENT

Tech Soft 3D announces that Tyler Barnes has been appointed president of the company. Barnes's appointment marks a strategic milestone for the company as they grow their portfolio and capabilities to address the increasing demand for their software development toolkits for building advanced engineering applications. With the rapid rise in demand for 3D developer tools driven by expansion in areas such as additive manufacturing, simulation and analysis, digital twin, BIM, AR/VR, and many others, as well as the ongoing shift to the cloud, the company is in the midst of an accelerated growth phase.

The creation of the president role will help the company manage the needs of the company's more than 700 partners today, while charting a path to address the needs of an even larger community of developers in the future. Ron Fritz will remain in his role as CEO of Tech Soft 3D.

"Since joining Tech Soft 3D, Tyler has demonstrated the kind of strategic thinking and business acumen that has helped the company become the leader that it is today, as well as a natural leadership ability," says Fritz.

ENSORCIA LAUNCHES \$350 MILLION INVESTMENT IN LITHIUM EXTRACTION

Ensorcía, a specialist in the extraction and transformation of high purity lithium, has announced the construction

of a plant in France being under study, dedicated to the transformation of “battery-grade” lithium hydroxide. Lithium is an essential mineral to produce electric batteries, key components of carbon-free vehicles. However, extraction techniques used today are extremely polluting, energy-consuming, and harmful to ecosystems.

The initial investment represents \$216 million, with the creation of over 100 direct jobs at stake. The plant should start its operations in 2025 with an installed capacity of 20,000 tons LCE per year, and a ramp up capacity of 40,000 tons.

Traveling to Davos as part of the World Economic Forum, Daniel Layton, chair of Ensorcia, took advantage of this major announcement to claim for attention of public authorities and private actors between Europe and South America—especially France and Chile.

For him, it is urgent that effective and serious cooperation emerges quickly to facilitate the production and export of Lithium if the industry seeks to achieve the carbon reduction commitments by 2035.

ABB OPENS ITS MEXICO TECHNOLOGY AND ENGINEERING CENTER

ABB has established a new regional operations center for North America, bringing technology expertise closer to customers and building on its similar resources globally.


XP2F >>>>>>>>

A detailed view of a grey industrial valve assembly. Mounted on top is a blue electronic flow meter unit with a digital display. Two circular pressure gauges are connected to the side ports of the valve via small black tubes. The valve has a large flange on one end and various smaller ports and fittings.

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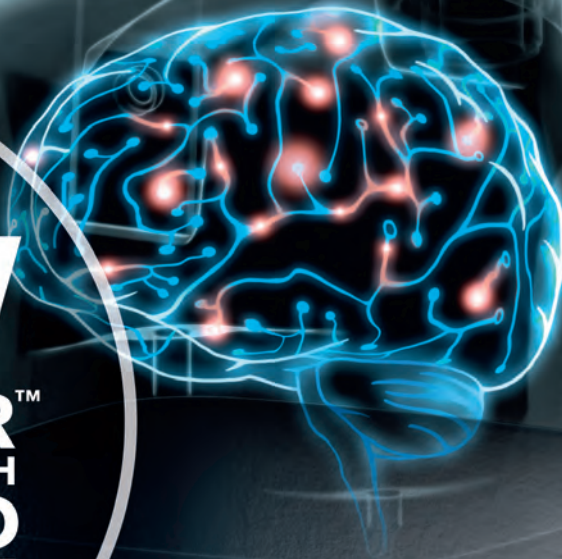
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An initial \$1 million investment has been made for the new Mexico Technology and Engineering Center (MXTEC) in the city of Merida, Yucatan, to help the technology leader to reach higher project delivery capacity and increase competitiveness.

The center, located within the modern SkyWork building alongside a community of technology and cyber security companies, will be a go-to resource for ABB engineers and covers disciplines including automation, electrical, and software engineering. It will mean an approximate 25 percent uptick in engineering capacity, with some projects involving commissioning of ABB Ability System 800xA distributed control system (DCS) at customer sites. Further competencies for supply chain, project management, and sales support may be added in the future.

ABB's move comes at a time when industrial companies are addressing their supply chains and either near shoring or near sourcing to ensure security and reliability of operations. Mexico is establishing itself as an emerging center of excellence for engineering.

GE SIGNS SERVICES ORDERS TO BOOST SERVICE FOR CHINESE POWER PLANTS

GE and Chinese state-owned power utility Guangdong Energy Group announces signature of a long-term service agreement for Dongguan Ningzhou power plant, which

is powered by three advanced GE 9HA.02 gas turbines. Additionally, GE also announced it will provide services to help ensure reliable and stable operation for a total of ten GE aeroderivative gas turbines which currently power China Huadian Corporation's Tianjin Beichen, Guangdong Foshan, Jiangsu Jinhu, Shanghai Minhang, and Fujian Xiamen power plants.

The cooperation between GE Gas Power and Guangdong Energy Group has an extensive and important history. In 2018, the two companies celebrated the start of commercial operation of Xinhui Power Plant, powered by two GE 9F.05 gas turbines. In 2020, GE announced that Guangdong Energy Group ordered three GE 9HA.02 gas turbines for Dongguan Ningzhou combined cycle power plant in Guangdong province, in the Greater Bay Area. The three units successfully arrived in Dongguan City last year, and once completed, Dongguan Ningzhou Power Plant will deliver the equivalent electricity needed to supply more than four million households in China—and be one of the largest gas-fired power plant in China.

FLEX TECHNOLOGIES EXPANDS FACILITY IN CALIFORNIA

Flex Technologies has announced that it has acquired a second California facility to continue its operations with a focus on hand fabricated and extruded parts.



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Flex Technologies is an American leader in the silicone hose industry catering to OEM level automotive and pharmaceutical industries and has recently doubled the size of their American operations while still keeping their overseas facilities intact.

"We wanted to expand to make sure we can not only fulfill the requirements of our existing and growing clientele but also to handle the growth we expect with new OEMs that have been coming to us for help due to supply chain issues that have affected them in the last few years," says Flex Technologies CEO Tim Coory. "Beyond that, we have plans to expand our production facilities throughout North America in the next twelve to eighteen months. This will allow us to continue to support the largest volume OEMs in the world and stay extremely competitive in the price points we offer. ... We must be in a position to pick up the pieces and keep those companies moving forward."

Flex Technologies is an international silicone hose manufacturer based out of Gardena, California, that recently expanded their facilities to increase their domestic production capacity. While there has been a worldwide silicone shortage that has been affecting the silicone industry, it appears that Flex Technologies has been growing and is now clearly expanding to meet the ongoing demand of original equipment manufacturers across a range of applications and projects.

ROTORK LAUNCHES NEW PROGRAM

Rotork has launched a new Reliability Services program that increases the dependability of site assets. The service offering ensures that the most appropriate response is provided based on the criticality of the customer's application.

The new three-tiered approach provides the customer with options on the level of cover required for their assets, and Rotork will work with customers to help identify their unique requirements and put together a tailored package appropriate for their site. These tiers are Basic (Health Check), Standard (Planned Maintenance), and Premium (Enhanced Maintenance).

Basic (Health Check) is a non-intrusive assessment of the condition of site assets relative to the design specification and operational use. Standard (Planned Maintenance) includes the activities within Basic and adds an intrusive inspection that provides an improved level of insight into the health of site assets. Premium (Enhanced Maintenance) encompasses everything the previous two tiers include and adds condition-based monitoring, all parts, and Rotork's Intelligent Asset Management (iAM) reporting.

Mike Pelezo, Rotork's site services director, adds, "Our new service program centers around maximizing process uptime and asset availability for our customers." ■

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what drives the need today is the solution for tomorrow.

This is also an opportunity to mix and mingle with some of the leading educators, innovators, and experts in the mining industry today. Attendees can expand their professional network and make new, lasting impressions with a variety of fun and engaging networking functions.

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A staple of the MINEXCHANGE experience, field trips to area facilities and operations help attendees see the legacy of innovations in mining. The Denver area offers a special point of interest for MINEXCHANGE attendees: the Argo Mill and Tunnel.

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the world. During the Colorado Gold Rush, the Clear Creek and Gilpin County mining districts were known as “The Richest Square Mile on Earth.” The Argo Mill was the master stroke—a state-of-the-art facility providing the latest technological advancements in milling and situated at the mouth of the mighty tunnel.

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Versatile emergency lighting is vital to utility crews during a power outage.

VERSATILE EMERGENCY LIGHTING VITAL TO UTILITY CREWS

Advanced task lighting options significantly improve safety and efficiency BY DEL WILLIAMS

When natural disasters occur, linemen and work crews must have sufficient lighting to clear debris, fix power lines, construct new towers, and restore electric service at night or in low light conditions. Other first responders may have to perform search and rescue operations under similar circumstances, or battle fires in smoke obscured settings.

To effectively make repairs after a serious disaster and outage, linemen may have to work sixteen-hour days for weeks or even months to restore high-powered electrical lines to normal capacity. Since the specific tasks, locations, and surroundings of linemen and other first responders can vary greatly, the ideal tool is a headlamp that frees the use of both hands.

"Disasters are chaotic, particularly during an outage, so a high quality, versatile headlamp can be a critical tool when linemen are trying to restore power safely and quickly," says John Luchka, director industrial sales at Princeton Tec, a Trenton, New Jersey-based producer of ETL and UL-approved lighting products.

Fortunately, a variety of advanced headlamps are available that provide versatile, long-lasting task lighting to work safely and efficiently, regardless of the environment or conditions. These headlamps offer powerful user-directed illumination combined with dimming capability, options on

battery type (rechargeable/standard), extended burn times, intrinsically safe solutions that prevent accidental ignition of gas or flammable liquids, and those that increase visibility.

HEADLAMPS WITH RECHARGEABLE BATTERIES

Inspecting and repairing miles of downed power lines after a large natural disaster often involves traveling to remote areas. The same can be true with firefighting, search and rescue operations, and other first responder actions. In all these cases, linemen and responders may be far from replacement batteries.

Even when work crews have replacement batteries in their vehicles, having a headlamp with batteries that can be easily recharged in the field and positioned as needed can be important. For example, the Apex headlamp by Princeton Tec mounts onto a hard hat and provides either a powerful spot beam or a bright flood light, utilizing a remote, rechargeable lithium-ion battery pack. The battery pack clips to the head strap or can be moved to the user's belt or pack with an extended power cable. Batteries are rechargeable through a standard USB cord adapter, so can be plugged into work vehicles during a break or at the end of a shift. Spare rechargeable batteries can also be fully charged and ready for use in advance.

"In the field, when the light dims or the low battery indicator lights up, linemen have enough warning to disconnect the waterproof connector, remove the battery pack, and replace it with a fully charged pack to stay productive," says Luchka. "Usually, they have extra charged batteries with them in their vehicle or in their bucket tool bag."

In addition, the headlamp is dimmable, which conserves battery life and extends burn time. When a lineman appropriately dims a headlamp to adjust it to the surroundings it also minimizes "blowback," which is excess light reflected from illuminated surfaces that can temporarily blind the viewer.

In the field, traditional batteries are still an acceptable solution. When standard batteries are utilized in a headlamp, it is important to purchase a headlamp designed for extended burn time and that has regulated circuitry that provides consistent power output over the entire battery lifespan.

HEADLAMPS THAT INCREASE VISIBILITY

In areas with vehicle traffic or where construction machinery is in operation, increasing the visibility of linemen, work crews, and first responders can be critical. The same is true when environmental conditions obscure visibility, such as heavy snow flurries, fog, or when fighting fires.

In addition to having personnel wear reflective clothing, work crews can utilize headlamps that increase visibility. The EOS 360 hardhat lighting system from Princeton Tec provides a hands-free task headlamp along with a helmet-mounted LED band that can be a constant on or strobe, and a reflective band for 360-degree visibility.

"The reflective band with LEDs is visible from every angle. This can improve safety when there is not enough light being reflected from a fluorescent vest," says Luchka. "It can also help when trying to locate firefighters in dark, smoke-obscured areas. A helicopter pilot or fixed-wing air tanker, for example, may be better able to see personnel on the ground when dropping fire retardant."

HEADLAMPS RATED FOR HAZARDOUS SETTINGS

After a disaster, some indoor settings can be inherently volatile due to gas leaks or the presence of

flammable materials. Intrinsically safe headlamps that are rated for use in hazardous industrial areas, which means they are designed to ensure there is nothing in the headlamp that can spark a potential fire or explosion. Since utility personnel or first responders may unwittingly end up in hazardous areas, eliminating this potential risk with a properly certified, intrinsically safe headlamp is advisable.

HANDHELD LIGHTS

A traditional handheld spotlight can also be useful. Compact, handheld models are available that can provide up to 1,200 lumens of light with several hours of runtime. To avoid an accidental battery drain while in transit or storage, some have a trigger with a locking switch that prevents accidental activation.

Since flashlights may be used in all types of weather and in remote areas, it can be desirable to have a model designed to withstand

prolonged immersion in water. In fact, some ruggedized units like the Sector 5 provide waterproof integrity for continual submersion in water at depths down to 325 feet.

With power outages and disasters seemingly increasing, tools that enhance the ability of linemen and first responders to safely do their jobs are more essential than ever. To this end, utilizing various task lighting solutions can improve operator effectiveness in the field and facilitate swift power restoration and recovery. ■

DEL WILLIAMS is a technical writer based in Torrance, California. Princeton Tec has been pioneering new technologies and building lights for four decades. For more information, call 800.257.9080, email questions@princetonotec.com, or visit www.princetonotec.com.

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Example of storage silos.



PRECISION GEAR METERING PUMP PROVIDES ACCURATE AND CONSISTENT CONTINUOUS PULSE-FREE PROCESS

Scented plastic bag manufacturer measures return on investment in days

BY MIKE LIBBEY AND BOB LIMPER, CIRCOR

A global manufacturer of scented plastic garbage bags was looking for an alternative to the use of pre-scented plastic pellets. A serendipitous encounter at a tradeshow led them to a precision gear metering pump solution that gave them accuracy and consistency at the low flow rates required, while also reducing their costs and improving worker health. Yearly savings are so high that the return on investment for the pump system can be measured in days.

SEEKING AN ALTERNATIVE FOR COSTLY PRE-SCENTED PLASTIC PELLETS

A global manufacturer of scented plastic garbage bags was looking for an alternative to the use of pre-scented plastic pellets, which required a dedicated silo for each of the twenty available fragrances. The pellets are pneumatically conveyed to each silo from either tanker trucks or rail cars and the manufacturer was experiencing logistical issues associated with keeping the silos filled. They also had to carry high costs for maintaining the inventory of the pre-scented pellets.

In addition, the heavily concentrated scents had been causing health concerns for the workers who complained of headaches. To mitigate this issue, each extruder line was fitted with a vacuum exhaust hood to expel the fumes to the outdoors. On occasion, these emissions led to complaints from neighbors and citations from the United States Environmental Protection Agency.

The company was seeking a way to use plain plastic pellets and apply scented oil directly to the plastic sheet immediately after the extrusion process to reduce costs, logistical challenges, and energy use. They had tried to build such a system in-house but had struggled to achieve accuracy and consistency at the low flow rates they required. They decided to seek a pump-based solution that could directly spray fragrance on the warm melted sheet



Circor's system solution utilizing a Zenith B-9000 Series rotary positive displacement pump specifically designed for single stream chemical duty applications.

plastic because the in-house solution could not meet rigorous quality control standards requiring the spray-on scent to exactly match that of pre-scented pellets.

FINDING A SOLUTION ON A TRADESHOW FLOOR

Design engineers from the plastic bag manufacturer attending the PackExpo show observed a working demonstration of precision gear metering pumps made by Zenith and asked application experts if the pumps might be a fit with their application. After collecting information on the application,

an area manager for the pump manufacturer with extensive experience in dosing and blending systems visited the plant to get a firsthand view of current operations and gather additional information.

Working with the pump manufacturer's design group they developed a system solution utilizing a Zenith B-9000 Series rotary positive displacement pump specifically designed for single stream chemical duty applications. The pump features an accurate, repeatable, pulse free flow in a compact design ideal for dosing additives such as colors, flavors, and fragrances.



Moveable cart utilizing a Zenith B-9000 Series rotary positive displacement pump specifically designed for single stream chemical duty applications.

This type of pump is defined as rotary because the drive shaft is rotated as compared to other types of pumps using a reciprocating motion and is also considered to be a positive displacement type because the displaced volume is constant and does not vary.

Pumping action is achieved by filling the gear teeth spaces and

transporting the fluid around the outer diameter of the gears. When the gear teeth mesh, the fluid is displaced and forced to the outlet side of the pump. The flow rate can only be adjusted by increasing or decreasing the speed at which the shaft is rotated. The pump selected offers precision grinding and lapping processes that result in a precision metering instrument,

producing precise, pulse-less, and repeatable fluid flow.

The pumps offer extremely tight operating clearances to minimize fluid slip. Manufacturing tolerances on many parts are to +/- 50 millionths of inch with surface finishes as smooth as 4 micro inches or better. The pumps are offered with an AC "closed loop" motor speed controller to maintain 0.1

percent pump speed accuracy.

The Zenith 9000 series pump is available in 11 sizes with capacities ranging from .003 to 300 GPH. Wetted parts are available in through hardened 440C series stainless steel, specialty treated 316 stainless steel, and high quality tool steels such as D2, M2, M4, and CPM-M4 to provide good corrosion and abrasion resistance.

The bag manufacturer selected a model with a magnetic drive (mag-drive) sealing option, which can eliminate shaft leakage of fluids, increasing plant safety and reducing volatile organic compound emissions. The use of a magnetic coupling also eliminates downtime due to mechanical seal failures and eliminates the need for buffer fluids.

NEW SOLUTION REDUCES COSTS AND OFFERS UNIFORM FRAGRANCE DISTRIBUTION

The new Zenith pump system gave the scented bag manufacturer a continuous, pulse free process, which guarantees equal and uniform fragrance distribution. By adding the scent directly to the bags after leaving the extruder, the plastic bag manufacturer not only eliminated the need to have separate pellet silos for each scent, but also eliminated the need to vent the fumes that come from the pellets as they travel from the silos to the extruders.

The manufacturer purchased the first system and after successful trials, ordered six additional systems. Over the past two years they have purchased more than thirty systems, with plans to order more. The manufacturer is also interested in having Zenith conduct annual field calibrations of each system.

After two years of operation, the manufacturer estimates a yearly savings of approximately \$480,000 per skid in operation. With thirty skids now running, the return on investment for each system purchase can be measured in weeks. To date, there have been no odor complaints since the customer installed the Zenith systems. ■

MIKE LIBBEY is area sales manager and **BOB LIMPER** is business development manager for Circor. Circor delivers pump and valve systems and custom engineering and design services designed to address the most mission-critical and severe-service applications. On land and sea, in air and space, and under the ocean's surface, when failure is not an option, the most trusted name in critical fluid handling is Circor. For more information, visit www.circor.com.



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ADDRESSING TODAY'S WATER CHALLENGES WITH DIGITAL SOLUTIONS

Generational change comes for the water industry

BY KENJI TAKEUCHI, MUELLER WATER PRODUCTS

In the immediate years ahead, the water sector faces a host of significant challenges. Climate change—and with it, extreme weather events, increasing water scarcity, and unpredictable water availability—are placing unprecedented demand on the reliability of water supply systems. With much of the nation's water pipelines and supporting equipment aging, investments and sustainable solutions are urgently needed to ensure our infrastructure remains strong and efficient well into the future.

At the same time, the water industry is approaching a major transformation with its workforce as many aging water professionals are set to retire in the next five to ten years. To stay competitive and fill these soon-to-be-open roles, water utilities and companies alike will need to find new ways to recruit an entirely new generation of workers, mainly composed of Millennials and Generation Z.

CRITICAL STRATEGIES FOR PROTECTING WATER SYSTEMS

Water distribution networks are becoming increasingly vulnerable

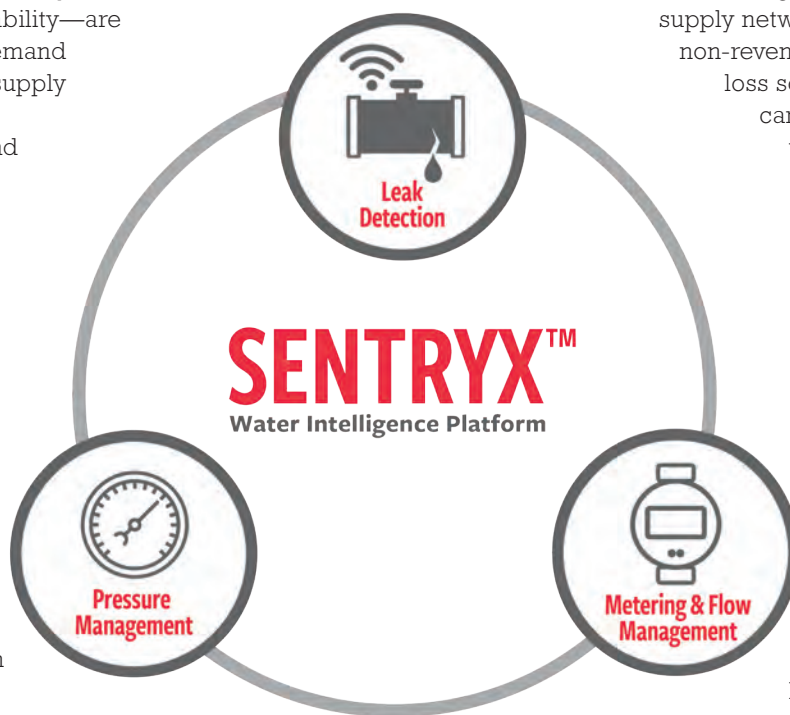
in the broader context of a changing climate, making the responsibility to deliver clean and safe drinking water to communities more important than

above-ground impacts, as well as reducing costs, water downtime, and project timelines.

One of the clearest examples of maintaining the integrity of water supply networks and minimizing non-revenue water is through water loss solutions. Municipalities can deploy intelligent technologies that not only detect leaks but can also characterize problems and help to prioritize the action they should take. As an example, acoustic detection and monitoring technologies can pinpoint where leaks occur and deliver actionable insights to optimize their repair.

Pressure management of water network can help extend the life of assets by managing flow at the lowest allowable minimal pressure. By precisely controlling critical point pressure via pressure-reducing valves, utilities can decrease real water losses and interruptions to supply by reducing leakage and bursts.

Digital transformation is changing the way the world works, and that could not be truer for the water industry. Sensors and IoT



ever. For many water utilities, this means having access to products and solutions that limit water loss, extend the life of equipment, and detect leaks sooner. It also means that when repairs need to happen, they can be completed quickly while minimizing

technologies capture large amounts of data from water systems, and by using intuitive software and analytics operators can now have real-time insights that allow them to make the most informed decisions. Like many companies, Mueller is accelerating its investments in smart water technologies to enable customers to make critical operational decisions and prioritize spending—ensuring that capital is allocated to the right assets that need it the most.

For instance, the Sentryx™ water intelligence platform provides water utilities with unique insights into the health of their distribution systems, leveraging near real-time data and analytics for better visibility into key parameters including pressure, flow, leaks, and temperature. Additionally, as a water industry leader in the use of artificial intelligence and machine learning, Mueller is constantly making efficiency gains and developing opportunities to achieve sustainable outcomes for water utilities.

Another example of technology when it comes to pipe installation and repair is the HYMAX® Asset Installer mobile application. This is a simple yet powerful asset management solution for cataloging, tracking, and proactively managing HYMAX assets with the use of QR codes. Field crew has one-click support with onsite technical product resources with specifications and installation instructions. By establishing this baseline of pipe installation and repair, utilities can better prioritize and fund necessary investments to reduce long-term costs and risks.

For the future, Mueller is developing the capacity to import data from multiple sensor points to detect anomalies and use predictive analytics to help utilities proactively manage aging infrastructure, reduce water loss, and increase the safety of drinking water.

DIGITAL ADOPTION FOR A NEW WORKFORCE

With a large segment of legacy employees preparing to retire, the water sector's transition to digital tools and smart technologies can play a very meaningful part in shaping a career in the water industry as a more appealing option among the emerging and younger demographic of professionals entering the workforce.

Compared to the people they will replace, Millennials and Gen Z have grown up using digital technologies, and the way they work, collaborate, solve problems, and communicate depends on these capabilities. The availability of digital solutions in a professional role is a high priority for them.

But this new generation is also defined by their sense of purpose. Many are entrepreneurial and creative-minded, and they want their ideas to be heard. Importantly, they are very motivated to work for companies that are both socially and environmentally responsible. This is where water organizations have a big advantage. As an industry that is dedicated to solving problems and ensuring that people have access to clean, high-quality water, the value proposition of a career in the water sector means these technology-minded professionals can have an opportunity to help make a positive impact for generations to come. ■

KENJI TAKEUCHI is senior vice president of technology solutions for Mueller. Mueller Water Products is a leading manufacturer and marketer of products and services used in the transmission, distribution, and measurement of water in North America. The company's broad product and service portfolio includes engineered valves, fire hydrants, metering products and systems, leak detection, and pipe condition assessment. It helps municipalities increase operational efficiencies, improve customer service, and prioritize capital spending, demonstrating why Mueller Water Products is "Where Intelligence Meets Infrastructure." For more information, visit www.muellerwaterproducts.com.

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SNACK ATTACK CONTINUES FOR HUNGRY CHOPPER PUMPS

Durable performance for the long haul

BY SOREN RASMUSSEN, LANDIA, INC.



Chopper pumps routinely are tasked with handling difficult media, heavy loads, and tough conditions. If you want to compete in this sector of the pump industry, your pump needs to be reliable and durable—not just after the installation but for the long haul. At a London-based snack-food manufacturer, Landia has just supplied its twenty-fifth pump in a partnership that is now celebrating its twentieth anniversary.

Supplying branded and private-label snack and chips products for both independent and major retailers within the United Kingdom and across Europe, the food manufacturer began using Landia long-shaft chopper pumps two decades ago to transfer effluent from below-ground pits to its wastewater treatment plant.

FINDING THE RIGHT MATCH

First supplied as 5.5kW units, but in more recent years as 7.5kW, some of the original smaller chopper pumps are still working, with only a bare minimum of basic wear and tear parts ever required.

Landia's MPG-I long-shaft vertical chopper pumps are designed with a fan-cooled motor that sits above the liquid surface and is therefore well protected. The pump contains no seals, which makes it extremely robust and tough.

With output rated up to 1,500 rpm, these pumps are perfect for applications in biogas plants, abattoirs, the paper industry, and the fish industry and are suitable for pumping liquid with high dry-matter content. Available with adjustable bottom flushing, the MPG-I long-shaft vertical chopper pump can perform a maximum 1,000 operational hours with a suggested maintenance schedule of only once a year.



FOR A VARIETY OF INDUSTRIES

Landia's MPG-I long shaft pumps are a range of extremely robust and tough vertical chopper pumps. They have an established history in many forms of industrial production, waste-to-energy plants, and food processing.

This latest long-term landmark for Landia follows its recent milestone with North Wales-based KK Fine Foods (manufacturers of high-quality meat, fish, and vegetarian meals), where its wastewater mixing and aeration system has completed five years of uninterrupted service. Landia has also provided numerous wastewater pumping, mixing and aeration solutions to the food and drink industry, including at Hook Norton Brewery, 2 Sisters Food Group, and Aspoll Cyder. ■

SOREN RASMUSSEN is the director of Landia, Inc.

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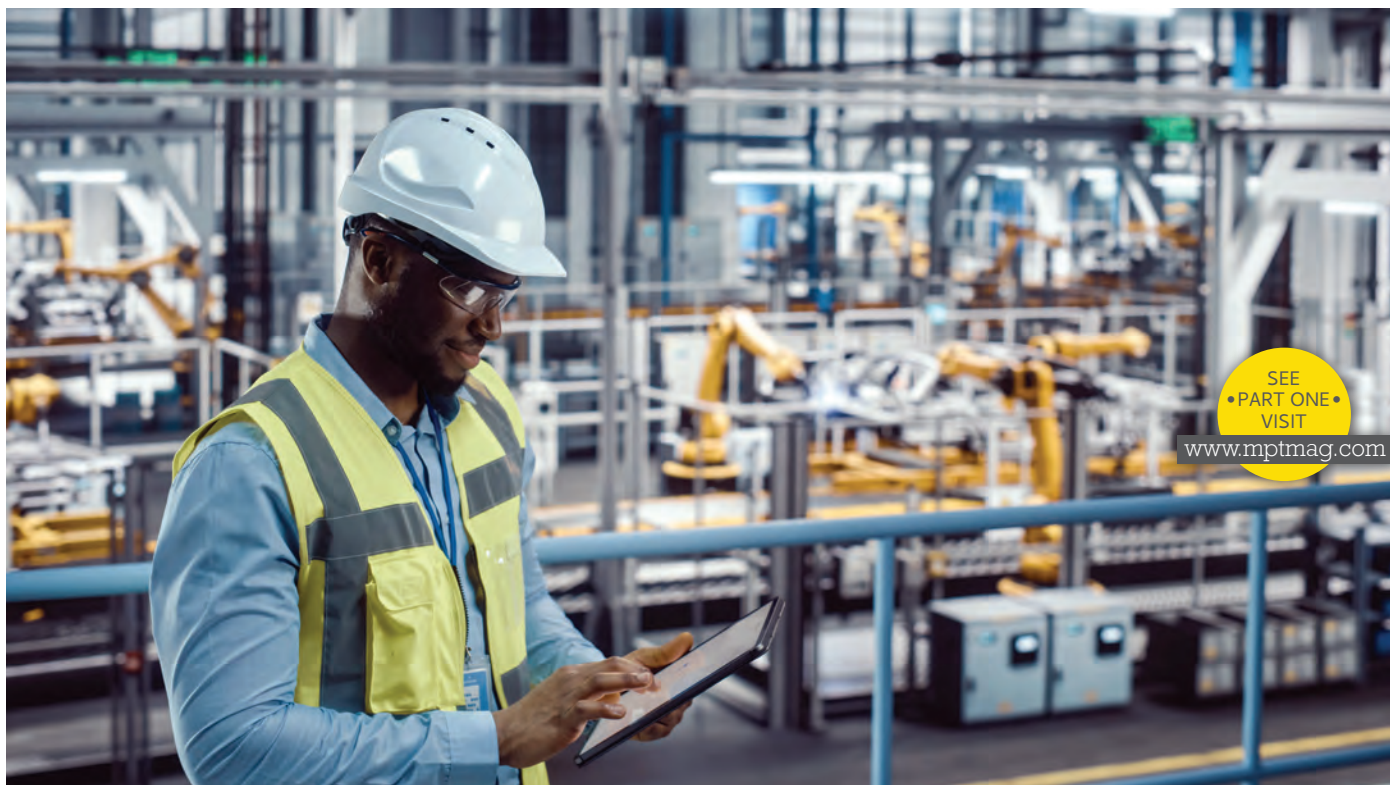
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DIGITAL TRANSFORMATION IN THE AGE OF IIoT

Key insights on integrating innovative digital solutions for industrial needs Part 2 of 2

BY TED MASTERS, FIELDCOMM GROUP

INSIGHT #5

If manufacturers can fully leverage the benefits of digitization, all the way from core manufacturing out to the end-user experience, the opportunities are exponential because they can better use all of the available data in the enterprise.

Across myriad industries, organizations are looking to transition from reactive to predictive maintenance, which will allow them to optimize asset management strategies, improve operations, and reduce costs. In the first half of this article, we laid out how the Industrial Internet of Things (IIoT) and Industry 4.0 are focused on digital transformation of the field device network with a goal of using available information from existing, installed field instruments to improve

safety, operations, and reliability. Below, we'll continue to share some valuable insight industrial leaders have discovered on this journey and examine how these innovations are being implemented today as well as where they may lead in the future.

ROLE OF COMMUNICATION PROTOCOLS

The FieldComm Group, formed in 2015 with the merger of the Fieldbus Foundation and HART Communication Foundation, is dedicated to

developing, managing, and promoting global standards for integrating digital devices into automation system architectures while protecting process automation investments in the HART and Foundation Fieldbus communication technologies.

The mission of FieldComm Group is to provide a unified vision for a smarter industry. No single automation protocol addresses all industrial use cases—particularly with wireless. Instead, today's environment requires secure plant floor to executive office data integration. FieldComm Group technologies provide the means to connect and integrate digital information. They enable a connected framework using intelligent field devices to reduce waste, improve safety and increase operational efficiency, and have for over twenty years.

INSIGHT #6

To focus on the new era of the IIoT, innovators must build systems that communicate information not just to developers or end-users, but to between the devices themselves, which can take the digital revolution to the highest of levels. For example, the FieldComm Group combines the resources of the Fieldbus Foundation and HART Communication Foundation in its systems, with plans to expand even more.

Digital down to the sensor level, Foundation Fieldbus has been at the forefront of digital transformation since its inception. The technology provides an all-digital communication infrastructure for process automation, with powerful multivariable measurement capabilities, robust

device diagnostics, and the ability to integrate wireless devices across multiple networks. Its block structure is unique, enabling true distributed functionality, improved data management, and alarm and alert management.

Foundation Fieldbus allows industrial organizations to unlock the full capabilities of their existing assets. By providing the means to leverage immense amounts of data generated by modern automation systems, the potential uses and benefits are numerous. They range from enhanced data collection and improved remote monitoring, diagnostics, and asset management, to reduced configuration and commissioning effort.

Designed for use with analog instruments, HART technology offers a proven, reliable, long-term solution for plant operators who seek the benefits of intelligent devices with digital communication, while preserving existing investments in analog instrumentation and plant wiring. Much more than a communication protocol, with HART technology process plants have access to a wealth of digital process, maintenance and diagnostic information that is valuable throughout the plant lifecycle from design, to installation and configuration, through operation, and finally maintenance.

INSIGHT #7

With so much attention focused on the digital agenda, it's easy to forget the important role that field level communication has to play. For example, HART and Foundation Fieldbus have both been proven over many years of use in the industrial sector and are the mainstay of process control today.

The bi-directional HART communication protocol provides two simultaneous communication channels—one analog, the other digital—and enables data access between intelligent field instruments and host systems. Communication occurs between two HART enabled devices, typically a smart field device and a control or monitoring system. Standard 4-20 mA wiring practices assure reliable communication.

WirelessHART and HART-IP deliver the benefits of intelligent devices with digital communications while preserving existing infrastructure, training, control system and operational investments. WirelessHART is a wireless communications protocol that uses mesh network technology for process automation applications. It adds wireless capabilities to HART technology while maintaining compatibility with existing HART devices, commands, and tools. HART-IP enables the HART protocol to run over any internet protocol (IP)-based connection, offering valuable HART data at the speed of Ethernet and supporting intelligent device management for smart process instrumentation.

OVERCOMING IMPLEMENTATION CHALLENGES

The goal with IIoT is to secure data seamlessly and improve applications, but there's a large skills gap because many process engineers can't get data from devices using their current plant network. The technology also leaves room for improvement because, while end users want a dashboard of useful information they can streamline right to the top of their organization, they don't want to be inundated with data. It is important to prioritize the information coming from programmable logic controllers (PLCs) and distributed control systems (DCSs).

In recent years, there's been plenty of talk about the wall coming down between OT and IT, but there are

still profound language and protocol differences between them. And, because IT-based protocols enable IIoT and “Big Data” applications, these language differences must be resolved for IIoT to succeed on the OT side. For example, IT staffs use high-level, data exchange formats like XML and JavaScript Object Notation (JSON) as building blocks for web applications. To bridge the OT/IT gap, JSON, and XML representations of intelligent field device data would be very valuable.

Just as most transmitters and other process control devices progressed from point-to-point, 4-20 mA hardwiring to twisted-pair fieldbuses and digital communications in recent years, IIoT is expected to further simplify and accelerate their networks and communications. However, process engineers and operators will need more IT know-how as IIoT moves down to the plant floor and out to the field to interact with so-called edge devices, which include all the usual sensors, instruments, valves, actuators, transmitters, and other equipment

In this environment, the need for a universal, standardized, and interoperable technique to comprehensively describe automation components is more important than ever. It is vital for everyday purposes like device configuration, device replacement, maintenance, diagnostics, or audit trails—all essential building blocks in

a modern field device management system. This description must be usable for all systems, independent of suppliers of devices, systems, or tools. Without it, the true potential of decentralization, transparency, integration and a central view of all data and functions cannot be fully realized.

SOLUTION FOR SYSTEM INTEGRATION

Today’s field instruments look more and more like embedded computers. Intelligent, microprocessor-based devices deployed across a wide choice of networks transmit a broad range of data that has never been available before. But increased data creates an information management dilemma. How can users take the huge volume of data created by intelligent devices and turn it into actionable information?

The first step is to simplify the procedures needed to access field device information by higher-level control or host systems. These procedures, known as integration, must be completed to assure proper device management by the host, including device configuration, replacement, maintenance, and diagnostics. They must be standardized, usable across all systems, and independent of device suppliers, system suppliers, or vendor-specific tools.

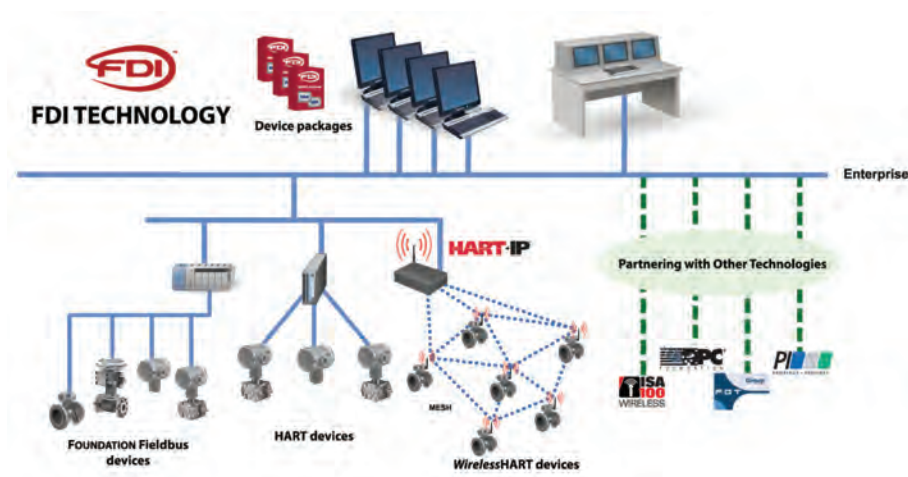
Leading process industry foundations, including FieldComm

Group, PROFIBUS International, and the OPC Foundation, jointly developed the Field Device Integration (FDI) standard to solve the problem of integrating field devices with the multitude of networks, operating systems, and control systems commonly used in process plants. FDI takes account of the various tasks over the entire lifecycle for both simple and complex devices, including configuration, commissioning, diagnosis, and calibration.

The core of FDI technology is the scalable FDI Device Package, which describes a field instrument or automation component in all aspects. No other files are needed. The FDI Device Package incorporates a device specific Electronic Device Description (EDD) based on the harmonized Electronic Device Description Language (EDDL) per IEC 61804.

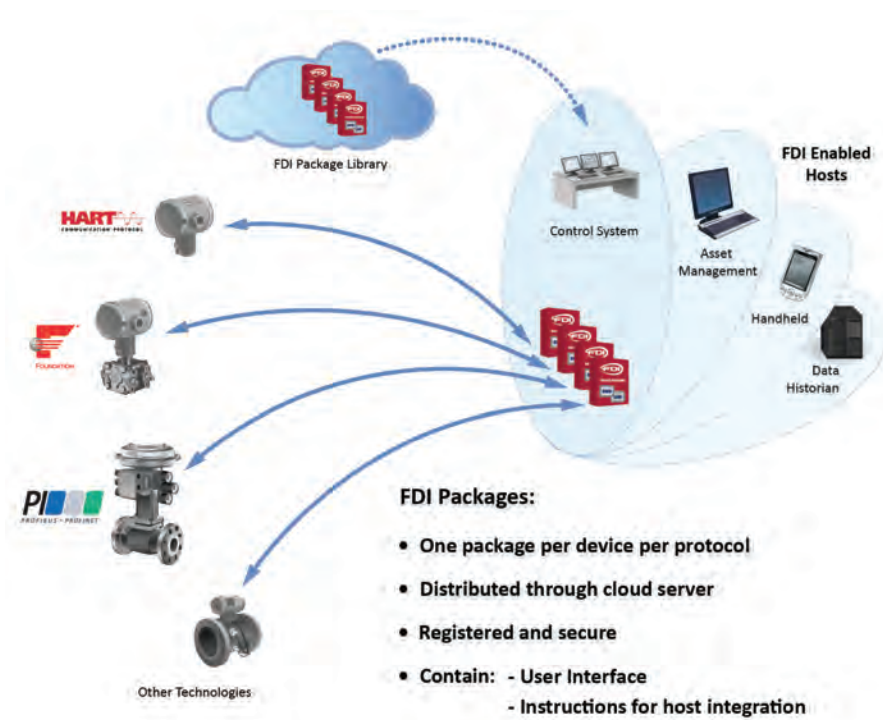
INSIGHT #8

Standards like FDI are the path to the future. It has been specified and developed by leading technology foundations and major suppliers of process control systems and field instrumentation. The specification is also based on close cooperation with respected end user organizations.



FDI Device Packages can be processed in FDI hosts as well as in an FDT2 Frame Application. This allows device suppliers to create a single FDI Device Package for their devices—instead of separate device type managers (DTMs) and device descriptions (DDs)—while still providing users the choice of either an FDI host or an FDT host environment.

By including all tools, documents, and interfaces in a single device



package, FDI improves system integration efficiency and allows easier access by IT organizations to OT information. Moreover, it unifies device drivers, configuration tools, diagnostics, and documentation regardless of operating system with an independent and downloadable software package compatible with any FDI-registered host system.

Manufacturers and other industrial firms deploying IIoT applications can connect to valuable information in intelligent field devices—regardless of protocol—by using FDI to integrate the information in a process control system, asset management tool or enterprise resource planning (ERP) system; then visualize and evaluate the data; and ultimately take action based on the information to prevent shutdowns, lower operating costs, reduce maintenance expenses, and become more predictive in how plants are run.

NEW ARCHITECTURAL MODEL

The Purdue Enterprise Reference Architecture has been a defining architecture for instrumentation, automation, manufacturing operations and business planning and logistics

systems since its introduction in the 1990s. This pyramid model describes various “levels” of applications and controls in a manufacturing enterprise. It describes components from the physical levels of the plant (Level 0) through control equipment and strategies (Level 2). Level 3

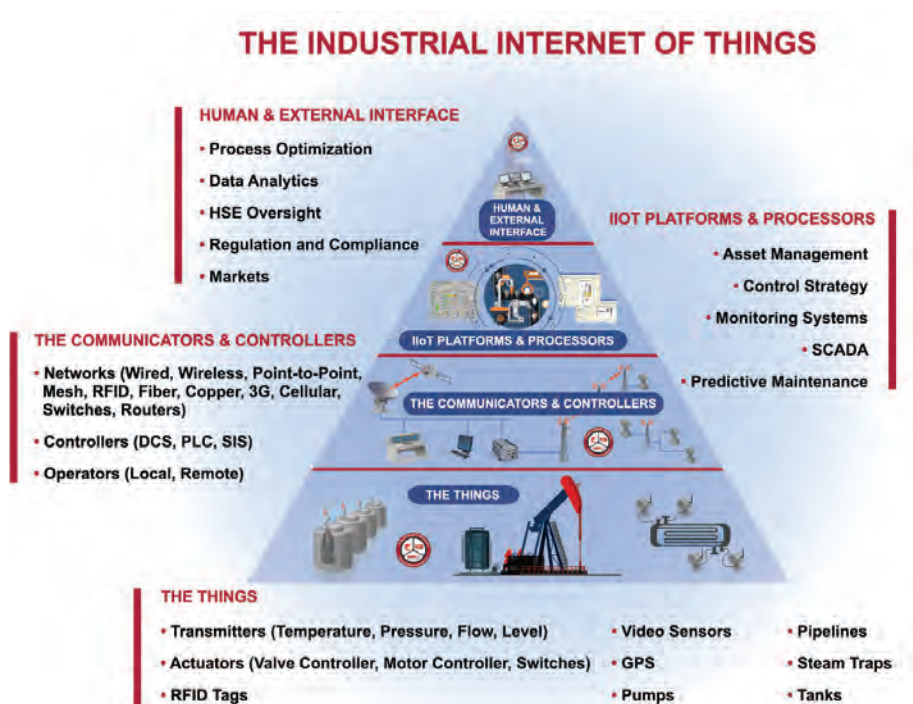
describes the manufacturing control level, and Level 4 is the domain of enterprise business planning, or enterprise resource planning (ERP) systems.

With the emergence of the IIoT, however, and rethinking of the traditional process network view, two crucial questions for the automation industry are:

1. Where will digital transformation occur?
2. Where should the internet protocol (IP) network exist?"

Some believe digital transformation is most appropriate at the field device level of sensors and actuators with digital-capable devices, while others think the IP network should reside all the way down in safety-critical systems. In either case, security is an overriding factor.

Undoubtedly, the classic automation architecture is undergoing profound changes to accommodate IIoT operational strategies. It starts with the ability to connect data and integrate it across the enterprise – only then can value be captured. FieldComm Group protocols



and technologies play a vital role at different layers of the new architectural model, and assist with a well-balanced IIoT approach that can be deployed today and effectively maintained well into the future.

INSIGHT #9

The big advantage of FDI is it replaces various platform-dependent integration solutions and makes device packages interoperable with host systems because their device descriptions (DDs) are harmonized across the communication protocols and host systems.

At the bottom of the IIoT pyramid are “things” like transmitters,

actuators, valves, controllers, monitoring systems, and other familiar equipment, as well as more recent developments such as video sensors and global positioning system (GPS) systems. Above the physical layer is a fabric of communication and control systems that manage field-level devices. This includes DCS, PLC, and safety systems utilizing wired and wireless networks, radio frequency identification (RFID) networks, fiber optics and copper wiring, and run by local or remote operators. The third layer consists of IIoT platforms and processors that take information from a plant or multiple facilities, aggregate the data, and then support tasks such as predictive maintenance, asset management, advanced control, and supervisory control and data acquisition (SCADA). While all this information is valuable, it is not really actionable without a human and external interface at the highest layer that gleams insights from the various systems in place. These insights help

decide what type of analytics to run or what processes to optimize.

INSIGHT #10

Existing standards and technology will continue to advance, and will play a crucial role for decades to come, especially when it comes to providing IIoT connectivity and interoperability for the millions of existing devices installed across industry.

Based on the IIoT architectural model, system requirements include:

- Intelligent assets, connected intelligently by the appropriate communication protocol for a given application



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- Data communications infrastructure with a span from the plant floor to the executive suite, and a scope that captures process data and intelligent asset information
- Analytics and applications to integrate asset data and deliver information

One of the core elements of the FDI specifications is an optional OPC-UA server that can be built into compliant products to seamlessly present data from field devices to higher-level systems. In the future, the FieldComm Group plans to offer a developer kit for connecting WirelessHART and HART-IP devices into cloud-based systems. This would include a server platform allowing an IIoT content delivery gateway to provide information from devices on the plant floor up into cloud computing platforms and services like Microsoft Azure.

Beyond the aforementioned system requirements, there is no substitute

for an invested and capable workforce that is trained and knowledgeable in enterprise systems. Operational executives are charged with making data-driven decisions, and Subject Matter Experts (SMEs) must interpret intelligence from all available information. These and other people make the difference for the business, whether it's business and risk analysis, or enterprise and supply chain planning.

VALUE TO INDUSTRIAL ORGANIZATIONS

As described in this whitepaper, the IIoT connects sensors to analytic and other systems to automatically improve operational and business performance. Savings from greater utilization of digital intelligence creates more capital investment. Higher field reliability helps ensure increased uptime, safer operations, and greater efficiency. Advanced automation technology also raises productivity, manages assets over

their entire lifecycle and optimizes experts' knowledge to drive profitable business results.

INSIGHT #11

Experience around the world has shown IIoT devices can improve equipment reliability, process availability and integrity, and significantly reduce maintenance costs.

There is significant value to industry as a result of a smart connected device ecosystem, which makes it possible to address performance, reliability, safety, and environmental problems that have yet to be solved by traditional approaches. It is becoming possible to securely get the right

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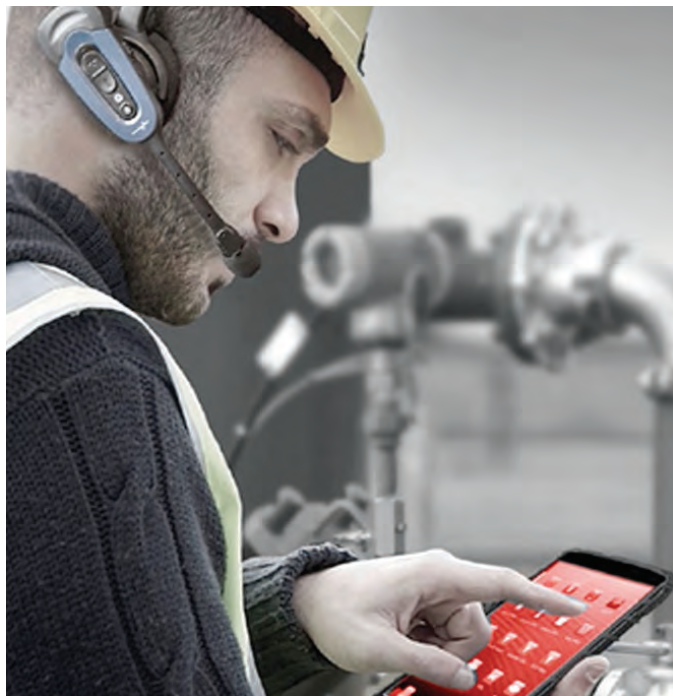
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information into the hands of problem-solvers wherever they are located, whether in a control room on-site or in a factory somewhere on the other side of the world.

One of the biggest opportunities for companies to realize IIoT benefits is to take advantage of the capabilities offered by plant floor to enterprise data management solutions. Although Foundation Fieldbus, HART, and WirelessHART technologies have been around for some time, the automation industry is still not utilizing their full capabilities, with a few notable exceptions. For instance, a 4-20 mA level transmitter simply evolved to become a fieldbus level transmitter or wireless level transmitter, whereas a digitally networked level transmitter can also provide multi-variables such as pressure and temperature measurement. Some advanced new devices like two-wire tank gauging systems, 4/8-input temperature transmitters, intelligent on-off valves, and other smart connected devices are already available, and more will be on the market soon.

Process industries and instrument manufacturers continuing to 4-20 mA and on-off signals should revisit plant automation architectures, product designs, and decide upon new business models to take advantage of the IIoT, since modern plants have already deployed it. Most new plants will be built on Foundation Fieldbus, and existing plants will be modernized using WirelessHART.

Fieldbus and industrial wireless technologies are also changing how plants are designed. Thanks to digital networking, end users can now deploy many more sensors in a plant because they pay for control loops, while the monitoring points are essentially free. This enables new business models like remote monitoring services to improve energy efficiency and reliability.

While the IIoT can utilize a vast number of connected industrial systems that communicate and coordinate their data analytics and actions to improve performance and efficiency, and minimize or eliminate downtime, there is no substitute for human experience and actions to improve operations and reduce costs.

CONCLUSION

The drive for digital transformation and smarter plant operations, as enabled by developments like the IIoT and Industry 4.0, can help manufacturing firms and other industrial enterprises leverage digital technologies to enable rapid deployment of new products, dynamic response to customer demands and real-time optimization of production and supply chain networks through interconnectivity of machinery, sensors and control systems. This approach also extends to asset management via predictive maintenance, statistical evaluation and measurements to help increase reliability.

At the heart of IIoT solutions for the process industries are FieldComm Group technologies helping automation suppliers and end users digitally connect to the data revealed by increasingly smart instrumentation, and to integrate the information with enterprise systems to advance business performance.

It's worth noting there is a global installed base of millions upon millions of Foundation Fieldbus and HART protocol-enabled instruments. Information from those devices represents robust content for IIoT systems. The FieldComm Group is committed to enhancing the ease of use of its technologies to enable people—wherever they are located—to access critical data. The good news: there's no need to reinvent existing data models, since they have been proven over more than two-and-a-half decades of use. ■

TED MASTERS is president and CEO of FieldComm Group. The FieldComm Group is a global standards-based organization consisting of leading process end users, manufacturers, universities, and research organizations that work together to direct the development, incorporation, and implementation of new and overlapping technologies and serves as the source for FDI technology. FieldComm Group's mission is to develop, manage, and promote global standards for integrating digital devices to on-site, mobile, and cloud-based systems; provide services for standards conformance and implementation of process automation devices and systems that enable and improve reliability and multi-vendor interoperability; lead the development of a unified information model of process automation field devices while building upon industry investment in the HART®, Foundation™ Fieldbus, and FDI® standards. Membership is open to anyone interested in the use of the technologies. For more information, visit www.fieldcommgroup.org.

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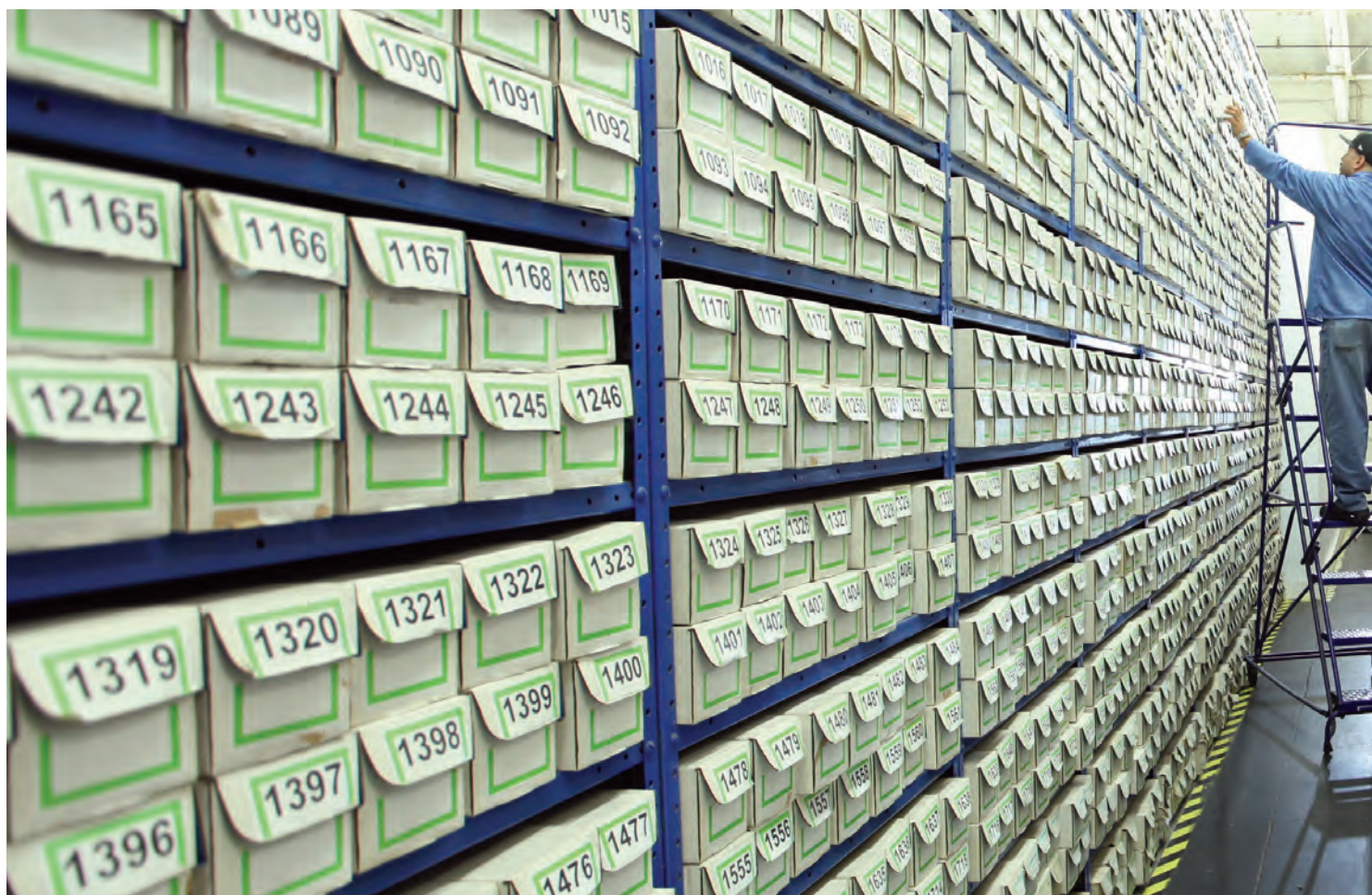
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SECURING GOLDEN SCREWS “JUST IN CASE”

Independent distributor employs a comprehensive strategy to mitigate supply chain disruption and avoid delays

BY MIKE THOMAS, CLASSIC COMPONENTS

For decades, the general wisdom in approaching manufacturing has been to rely on a “just in time” strategy to ensure component parts are available the moment they are needed rather than tying up capital to purchase and store inventory. However, with the recent supply chain disruptions that have been causing delays across industries, there is an argument to be

made for holding “just in case” (JIC) inventory as well. This is especially important for “golden screws,” the one or two critical components that are needed to finish production and start generating revenue.

SHIFTS FROM “JUST IN TIME” TO “JUST IN CASE”

While the “just in time” (JIT) philosophy has been effective for

over thirty years now, the recent disruptions that have been happening in the supply chain are unpredictable. In the past six years, these disruptions have been more severe and unanticipated, upsetting a relative stability that had existed for some time. Suddenly, parts are completely unavailable, a problem that has been increasingly troublesome over the last eighteen months.



When there is supply chain harmony, when everybody is delivering on time and there is plenty of inventory in distribution, “just in time” works really well, but that is not the current reality and as COVID taught us, you can never anticipate the next event. This makes the “just in case” inventory philosophy a crucial piece of the profitability puzzle moving forward.

JIC is not a new concept, but it is a “now” concept given the instability in the past six years. It is an inventory management strategy where companies keep inventory on hand to anticipate and prepare for unpredictability of demand or the times. The strategy is typically employed in less industrialized countries where disruptions in the supply chain are more common and maintaining more inventory in case of emergency is critical to avoid production delays and other inefficiencies.

“Just in case” means having specific critical items in stock all the time so that when a situation arises like COVID, civil unrest, countries in conflict, or whatever else you can think of that disrupts the supply chain, we still have enough critical electronic components on hand to continue to manufacture our products. Even if it is not as profitable, you remain operational.

FINDING THE GOLDEN SCREWS

Balancing “just in time” inventory, which helps businesses keep their inventory low and their capital high, with JIC, particularly of items that may be essential to the continued profitability of their business is the right path for the future. A term that is gaining traction to describe such parts is the “golden screw,” an item that at times is difficult to procure but is essential to doing business.

There are a lot of “golden screws” now that companies just couldn’t get their hands on and there were many products that couldn’t even be shipped. So, now they are meeting and shifting their strategies to ensure they always have the golden screws in the future.

Combining these two inventory strategies gives organizations the best of both worlds—the low inventory and available capital of JIT with the security of JIC—and Classic Components can offer its partners this type of balance when it comes to electronic components.

With companies like ours, we invest our own money to purchase items for customers ahead of time. We keep a certain amount in buffer stock, and we ship it out when needed and then we get paid by the customer. In doing so, the customers achieve their goal of having only what they need, when



Classic Components employs a comprehensive strategy to mitigate supply chain disruption and avoid delays.

they need it, which is basically “just in time” philosophy.

To accomplish this, the company invests its own capital to secure “golden screw” items for customers and hold them in inventory until they are needed, however long that might take. This is a unique offering within the independent channel and only the largest, most financially stable distributors are willing or able to do so.

However, customers need to be willing to shift their strategy to accommodate a JIC philosophy. Organizations must have the foresight and awareness to anticipate future orders not yet placed and be proactive about securing that inventory required to ensure there are no delays when the product is needed.

ADJUSTING YOUR SUPPLY CHAIN PHILOSOPHY

The items that have been difficult to find are not always complicated parts. OEMs require simple electronic components to make products in the same way nails and screws are required to construct a house.

It is important to adopt a “just in case” philosophy both for less sophisticated items along with higher end items as well, to cover all the bases. To extend the construction analogy, if a house is built with nails and screws, it will also require expensive fixtures to be completed.

The distributor can help secure these items for the OEM without asking for money up front and assist with the logistics of transporting the items when needed. They do this by being flexible in their approach and shipping material, whether upstream or downstream, including to contract manufacturers, sister companies, and subsidiaries.

Not many companies are offering this type of service during shortages, including traditional distributors.

Although authorized distributors provide added value such as engineering support, contractual obligations dictate all materials must come directly from the factory. This makes sense when the supply chain





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"Just in case" means having specific critical electronic components in stock all the time so that the manufacturer has enough parts on hand to continue to manufacture their products.

is operating as expected, and there are no global pandemics or other supply chain constraints. The current disruptions, however, are creating lead times in the regular distribution space of up to fifty weeks for parts that used to be available in eight to eighteen weeks, a massive disruption that independent distributors can work around more easily.

Regular authorized distributors may also struggle to get parts because the contractual agreement that these

companies sign prevents them from sourcing products in the open market. Independent distributors like Classic Components can lock in prices and delivery dates using its vast network of supply chains and partners for many months at a time. This ensures that the inventory will be there when the customer needs it and not sold to someone else.

It is a philosophical adjustment. Companies have to look in the mirror and say: we built our organization

on "just in time" and that is how our shareholders measure us, but we need to secure the "golden screws" to protect against any possible future disruptions. ■

MIKE THOMAS is vice president and global general manager at Classic Components, an independent distributor based in Torrance, California. Classic offers unrivaled flexibility and reliable material management solutions to many of the world's largest engineering companies and electronics manufacturers. Classic continues to set the industry standard through our tireless commitment to customer service, high quality standards, and industry-leading counterfeit detection methods. For more information, call 310.539.5500, email info@class-ic.com, or visit www.class-ic.com.

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CAN YOU TRUST PUSH-TO-CONNECT FITTINGS?

Next-gen push fittings are stronger and more reliable than press fittings

BY MATTHEW BOUCHER, QUICKFITTING

The plumbing profession is all about trust—using tried and true methods that have stood the test of time to ensure that pipe connections will not leak. Plumbers are understandably skeptical about adopting major changes until new techniques earn their trust.

For a century, water and HVAC systems were almost entirely constructed of copper pipes and soldered/brazed pipe joints. This all began to change in the new

millennium. PEX, originally used in radiant floor heating, started to become prevalent in plumbing applications, along with CPVC, in the late 1990s.

With these new materials came an alternative connection method that was faster, easier, and safer than soldiering. Press fittings were invented in Germany in 1989, but crimping with press fittings did not gain wide acceptance on this side of the Atlantic until years later—in

the early 2000s—after the method had proved its reliability throughout Europe for more than a decade.

NEXT-GEN PUSH FITTINGS ARE MORE DURABLE THAN PRESS FITTINGS

Now, a third connection method—next-generation push-to-connect fittings—has become increasingly prevalent in the plumbing and HVAC trades along with soldering and crimping.

These next-gen push fittings are engineered with new technology that makes them stronger and more reliable than the first-generation push fittings popular in the consumer DIY market, and even stronger and more reliable than press fittings. All these different types of fittings use O-rings for the seal, but the key difference is the strength and durability of the grip that holds the O-ring in place and preserves its integrity.

At QuickFitting, our engineers have earned over fifty U.S. patents designing the next generation of press fittings with innovations that include dual seal designs and advanced machine edge technology for superior performance and sealing characteristics.

These next-gen push fittings were subjected to extensive hydrostatic pressure and tensile strength tests performed by Roger Wakefield, “The Expert Plumber” with nearly a half million subscribers on YouTube. The next-gen press fittings held up to 2,127 psi, compared to 1,504 for press fittings and only 812 psi for first-gen push fittings. The difference in tensile strength was even more impressive: it took 1,633 pounds of force to pull apart the connection and cause a leak in with the next-gen push fitting, approximately double the force required to cause a failure with the alternatives.

Indeed, the new technology is so effective, that QuickFitting couplings and valves are backed by a seventy-five-year warranty that covers the full cost of repairs and damage—exceeding the expected lifespan of copper pipe (fifty to seventy years) and of PEX (thirty to fifty years).

WHEN ARE PUSH FITTINGS THE BEST OPTION?

The low cost per part of fittings usually makes soldering and crimping the most economical solution for new construction and projects requiring many pipe joints. But there are many applications where push connect fittings and valves are the most efficient and cost-effective method.



QuickFitting push fittings and valves provide a durable connection and a professional look and are available in brass, copper, and stainless steel, in wide variety of sizes and widths.

With push-to-connect fitting, installation is easy and requires fewer steps than other connection methods. Without any soldering, gluing, or crimping required, safety is greater, risks are lower, and installation is up to 70 percent faster.

- When you want to get in and out of a job quickly, to get on with your business and to let your

commercial customer get back to business as soon as possible.

- When transitioning between copper, PEX, PE-RT, or CPVC pipes and tubing.
- When conditions are too wet for soldering, or too cramped or hard to reach for crimping equipment.
- When you are being assisted by a helper or trainee with limited experience soldering and crimping.

Reliability

Pressure
Tensile Strength

Installation

Quick
Easy
Ease of Removal
Confined Spaces
Wet conditions
Fire Safe

Consumer Fittings	Professional Grade			
	Non-Flame		Flame	
First-Gen Push Fittings	Press Fittings	Next-Gen Push Fittings	Soldering	Brazing
✓	✓✓	✓✓	✓✓✓	✓✓✓
812 psi	1504 psi	2127 psi	High	High
806 lbs	983 lbs	1633 lbs	High	High
✓✓	✓✓	✓✓✓	✓	✓
✓✓✓	✓✓	✓✓✓	✓	✓
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Source: QuickFitting

QUICK AND EASY INSTALLATION OF SLIP REPAIR COUPLING OR SLIP T COUPLING



Make two cuts. Gap width does not need to be exact.



Slide the coupling on pipe to the right. Easily snap on the QuickFitting Slip Clip™ Release Tool.



Slide the coupling to the left to connect to the second pipe. Release SlipClip to complete the strong, permanent connection.



Push the branch pipe into the coupling.

- When you have a simple plumbing job that can be done quickly, like moving an icemaker, replacing a water heater, or repairing a toilet water supply valve.
- When you anticipate the need to remove and reposition piping in the future, for temporary installations, multi-staged renovation projects, etc.
- When you want to get a day's worth of jobs done before noon.

EXTREMELY EASY PROCESS

Installation is extremely easy, and requires only four steps:

1. Cut the copper, PEX, PE-RT, or CPVC tubing using a sharp tubing cutter.
2. Clean the connected surface making sure it is clean, burr free and free of foreign materials
3. Mark the insertion depth.
4. Push on the fitting or valve to the insertion depth mark.

A feature of next-gen push fittings is ease of removal to allow fittings to be repositioned or removed. The fittings themselves have been tested to continue to maintain gripping performance and sealing characteristics after 1,200 cycles of installation and removal. The QuickFitting patented SlipClip release tool allows for simple and quick disconnection with minimal effort by snapping the clip onto the fitting from the side with the press of a finger. This design is an important improvement over first generation press fittings which require the application of a great deal of force to the end of the fitting.

THE EASIEST WAY TO REPAIR A PIPE OR ADD A BRANCH

Let's look at a typical installation or repair using a Slip Repair Coupling to highlight some of the advantages of next-gen push fittings.

For most repairs, only a single QuickFitting Slip Repair Coupling is

needed, compared to the two sweat copper fittings that are traditionally used. And there is no need to find and prepare a length of a specific pipe type to fit in between. Slip repair couplings are also more forgiving and therefore it is not necessary for the cut distance exactly right.

The installation of a Slip Repair Coupling is facilitated by the SlipClip, which easily releases the connection on one pipe to allow the coupling to slide onto the other pipe. Once the second pipe is fully inserted into the coupling, simply remove the SlipClip, to complete the strong, permanent connection of the two pipes.

The process is the same for a Slip Branch T, with the addition of the final step of pushing the branch pipe into the coupling.

There is no faster way to repair a pipe in an emergency. And the process can be performed without any tools, flames, or chemicals, even in the wet conditions that are typical of most emergencies.

OPTIMAL SOLUTION FOR MANY PLUMBING APPLICATIONS

Now that next-gen press fittings have proven to be at least as reliable as press fittings, plumbers and HVAC contractors are increasingly turning to them as a cost-effective and time-saving option. Next-gen press-fittings are a fast, easy, safe, and professional-looking alternative that have earned their place in the tradesman's van, next to the sweat fittings and press fittings. ■

MATTHEW BOUCHER is CEO of QuickFitting. As one of the industry's leading suppliers of repairable quick connection fittings for industrial, municipal, OEM, and plumbing, electrical, and HVAC markets, QuickFitting designs and delivers proven, reliable, and innovative pipe, wire, and conduit fittings and valves for demanding conditions. For more information, visit www.quickfitting.com.

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With an expanding market worldwide for advanced polymer dosing systems, the introduction of the Qdos 60 PU peristaltic pump from Watson-Marlow Fluid Technology Solutions (WMFTS) is a timely addition to the company's range. It means operators can now deploy efficient, safe, and reliable polymer metering at any water or wastewater treatment plant.

Polymers are used mostly in coagulation and dewatering applications in the sludge treatment process. Dewatering sludge minimizes sludge bulk, which can reduce the cost associated with storage and disposal by up to 75 percent.

There are strong regulatory drivers globally for efficient sludge dewatering. Accurate and reliable metering of

polymers in the sludge dewatering process is essential to ensure it is managed properly.

The Qdos 60 PU offers precise and repeatable flows for many hard to handle fluids, including viscous flows and aliphatic hydrocarbons. The pump provides excellent compatibility for complex polymers such as polyacrylamide (PAM) and other flocculants and coagulants used in wastewater treatment.

Customers in the food and beverage industry can also benefit from the Qdos 60 PU pump as it is also compatible with fats, oils, and grease, and is Food and Drug Administration (FDA) and European Commission (EC) 1935/2004 certified. ■

For more information, visit

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THE BENEFITS OF NATURAL GAS AS A CLEAN-BURNING AND EFFICIENT FUEL SOURCE

Groebner's Carissa Skorczewski on heat, power, and the utilities of the future



Groebner, a manufacturers' representative and distribution company, partners with natural gas utility and contractor customers to enhance their success. As third-generation president of her family business, Carissa Skorczewski carries the mantle her grandfather built four decades ago. She has been a transformative figure in the energy sector, modernizing many critical systems and policies within the organization as it thrives and scales into a national brand. Below, Skorczewski shares her insights on the benefits of natural gas as a clean-burning and efficient fuel source.

MPT: *Walk us through some of the history and uses of natural gas.*

CARISSA SKORCZEWSKI: For years, natural gas has been a reliable energy source for the United States—emissions continue to decrease even as usage goes up, safety rates are 99.9 percent, natural gas is local, 92 percent is produced domestically. As utilities move toward a search for sustainable energy, great advancements and improvements have been made in the world of natural gas delivery. Natural gas is cost-effective, clean, and safe. With modernization and new technologies, natural gas continues to be an important path to green energy.

MPT: *What are some of the main benefits natural gas provides?*

CARISSA SKORCZEWSKI: Natural gas is a clean-burning and efficient fuel source that will lead us into the next era of heating and power. According to the American Gas Association, 187 million Americans use natural gas and a new residential customer signs up for natural gas service every minute. Homes using natural gas for heating, cooking, and clothes drying save an average of \$1,041 per year on power bills.

MPT: *How does natural gas use relate to carbon emission concerns?*

CARISSA SKORCZEWSKI: Natural gas has hit a thirty-year low in emissions thanks to increases in efficiency and growth of renewable sources and management. Emissions from natural gas distribution systems have declined 69 percent since 1990. Carbon dioxide released from homes that use natural gas are 22 percent lower than an all-electric home. Plus, Energy Star natural gas homes can have a carbon footprint that is 19 percent lower than those with a heat pump and 64 percent lower compared to an electrical resistance furnace.

America's natural gas utilities are working to expand low- and zero-carbon energy technologies and have invested \$125 million in development of systems and equipment to reduce

emissions. Since 1990, gas mains made of more modern materials have tripled, which means safer delivery and improved management of this vital natural resource, and utilities invest \$4.3 million a day in energy efficiency programs. As renewable natural gas (RNG) is captured, utilities are now able to offer this carbon-neutral option to customers through their current pipeline system.

MPT: *How would you describe the future of natural gas?*

CARISSA SKORCZEWSKI: The natural gas industry is constantly evolving and driving innovation. Natural gas is also abundant. There is more than 100 years of domestic supply which can be extended with exciting advancements and sustainable practices. Revolutionary developments have already been implemented or are coming soon. For example, liquid natural gas is natural gas that has been liquefied through super-cooling. LNG is safer and easier to transport and is 600 times smaller in volume than in its gaseous form. This makes it ideal for shipping and trade.

Another tactic, hydrogen-blending, produces hydrogen through clean pathways and then injects a small amount of hydrogen into the natural gas pipeline. Hydrogen blends can make natural gas more efficient, lowering emissions and generating heat and power more effectively. ■

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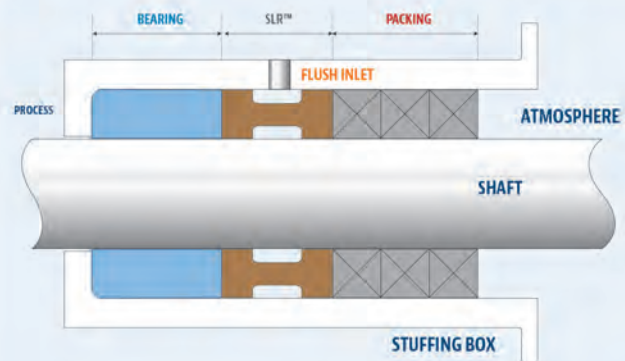
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