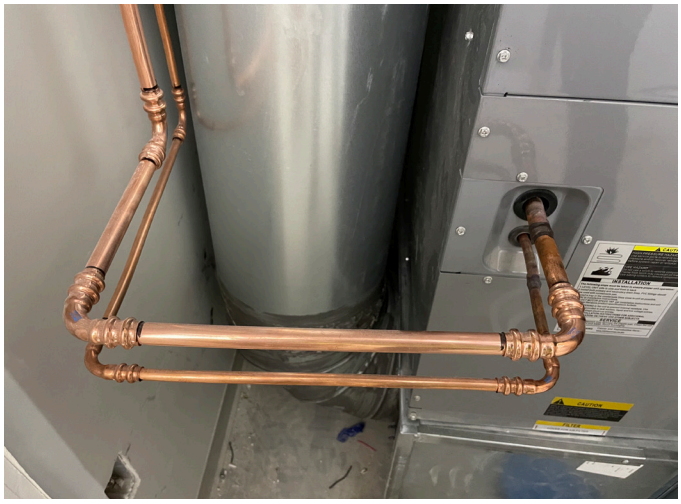
SMART SOLUTIONS

Helping contractors save money and enhance productivity

SUMMER 2023

Grodsky Tackles Tight Timelines and Tight Spaces With Easy-to-Use Press Fittings From Mueller Industries

To expedite construction of a new university housing project designed as a hybrid of wood and steel, Harry Grodsky & Co., Inc. turned to Mueller Industries and its Mueller Streamline Co. products and piping systems specialists "We were able to save an incredible amount of time on the project thanks to Mueller" and its Streamline® ACR Press Fittings in particular, said Ross Halket, superintendent at Grodsky. Mueller's products gave Grodsky "the ability to get stuff into tight spaces, [and with] no fear of burning the building down, the ability to run piping in areas where brazing would have been hazardous," Halket noted.



Grodsky team members found working with Mueller's Streamline ACR Press Fittings to be fast, reliable, and intuitive, and credited Mueller's products and support with saving them substantial time on a new housing project at the University of Massachusetts Amherst.

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Strategic Mechanical Expands Prefab Capacity Using PypeServer Technology

With PypeServer technology, Strategic Mechanical, Inc., has sped up its fabrication processes and opened up new avenues for prefabrication. Strategic Mechanical serves clients throughout California; its 70,000-square-foot shop in Fresno, CA, includes an HVAC sheet metal shop, pipe fabrication shop, industrial metals fabrication shop, and electrical prefabrication. In this Q&A, Miro Telesmanic, vice president of operations, describes how Strategic Mechanical put PypeServer to work.

Until they started using PypeServer software, Strategic Mechanical fabricated any copper less than 2" in the field because it was faster than the setup required for prefabrication. Now, with just a few clicks, all the information gets to the saw and label printer for prefab—and the field teams love it.

What did your typical workflow look like before you brought in PypeServer's workflow tools?

In our geographic area, the use of building information modeling (BIM) is still fairly new, so our projects often vary greatly. At any given time we have a mixture of projects ranging from fully modeled and coordinated to those that are 100-percent field layout with minimal design drawings. Many projects fall somewhere in between, depending on time constraints, manpower availability, and personnel skill

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WHAT'S INSIDE

SMART SOLUTIONS

Helping contractors save money and enhance productivity

Smart Solutions showcases new technologies and promotes cost-saving and productivity-enhancing applications available from members of MCAA's Manufacturer/Supplier Council. *Smart Solutions* is published biannually for contractor members of MCAA and its subsidiaries.

All information in this newsletter was supplied by members of MCAA's Manufacturer/Supplier Council. MCAA is not responsible for any claims made regarding products or services mentioned.

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MANUFACTURER / SUPPLIER COUNCIL
MCAA
Adding Value to Your Supply Chain

Keeping a Competitive Edge

MCAA's manufacturer and supplier partners share their expertise on staying competitive in this issue of Smart Solutions. Jomar Valve explains how thermostatic hot water balancing can cut down on callbacks, while Xylem Inc. – Bell & Gossett illustrates how smart technologies can streamline preventive maintenance needs, and Reliance Worldwide Corporation demonstrates the advantages of outlet boxes in new plumbing systems. Tyfoom describes how to create a learning culture to reduce human error, and ClickSafety summarizes employers' responsibility to protect workers from extreme heat.

Others are anticipating future directions in the field, including FARO Technologies, Inc., which is forecasting the role of artificial intelligence in contracting, and SLOAN, which is driving a movement to increase hygiene through easily accessible handwashing stations.

Also in this issue, MCAA members show how they save time and money in the field. Using NIBCO Inc.'s new PressACR™ system saved Starco, Inc. at least 100 hours while installing a jail's new HVAC system. Fresh Meadow Mechanical Corp. selected Victaulic products to replace a residential tower's riser system, shaving days off a tight schedule. Harry Grodsky & Co., Inc. saved time and overcame space constraints using Mueller Industries' Streamline® ACR Press Fittings.

Harris immediately improved efficiency in cutting and handling with its new Watts Specialties automated pipe cutter. With Novarc Technologies Inc.'s spool welding robot, Western Allied Mechanical increased their productivity and capacity to take on bigger jobs. Strategic Mechanical, Inc. sped up its fabrication processes and opened up new avenues for prefabrication by using PypeServer, Inc. technology. Atomatic Mechanical Services, Inc. and J.C. Cannistraro both keep their costs down with Wheatland Tube's SureThread™ pipe, which minimizes wear on tools.

Join me in welcoming our newest supplier partners:

- **Kojo Technologies, Inc.**
- **Merit Brass Company**
- **Sunbelt Rentals**
- **T&S Brass and Bronze Works, Inc.**

Also in this issue, our partners demonstrate their role in providing solutions. For example, F.W. Webb Company rapidly supplied thousands of feet of HDPE pipe to a small city that suffered a rash of residential water main breaks, providing the material for a long-term solution. Renovating an historic building, Holaday-Parks earned accolades for sustainability with a water-saving vacuum plumbing system from AcornVac, a division of Morris Group International.

Many members are reaping the benefits of new software. Andy J. Egan Co., Inc., credits MSUITE software with helping shave three weeks off a major power utility upgrade. Northwest Mechanical Group switched to BuildOps and rapidly saw quicker turnaround times. Since A&R Mechanical Contractors adopted Procore Technologies, Inc.'s workforce management software, timelines are down and profits are up. Althoff Industries switched to ServiceTitan software, improved customer service, and increased revenues dramatically. With ServiceTrade software, Western Allied Mechanical cut their quote delivery time in half and sped up their invoices. Read on to find the smart solution for you.

Parthiv Amin
Chair, MCAA Manufacturer/Supplier Council Executive Committee

Fresh Meadow Slashes Days Off Residential Riser Replacement Using Victaulic Couplings

With only three weeks to fully replace the riser system at a high-profile residential building, New York-based Fresh Meadow Mechanical Corp. selected Victaulic to win the race against time. Ultimately, they remained ahead of schedule, completing the entire project in only 15 days. Despite spatial constraints at various stages of the project, Fresh Meadow navigated each challenge with reliable engineered solutions that will benefit the building's tenants and management for years to come.

The existing riser system, original to the decades-old residential building, had degraded over time. A new system needed to be installed before New York's cold weather kicked in and tenants were left with inadequate temperature control. To accomplish the job, Fresh Meadow needed to first extract the riser that ran from the first-floor ceiling up to the 18th-floor mechanical room. The return riser design also had to accommodate for thermal movement in the existing space. The final and most critical challenge was that the building would remain fully occupied, meaning Fresh Meadow needed to minimize disruptions and maintain occupants' safety during installation.

Putting People First

During planning of the riser replacement project, Fresh Meadow evaluated the impact of the work on occupants and chose a grooved system over welding. The hot works and fumes generated during welding require a hot work safety program, including restricted work areas, permits, and fire watch. To building residents, welding would raise safety concerns, divert traffic patterns on every floor, and cause a noticeable, unpleasant smell. To mitigate the effect on occupants, Fresh Meadow worked with the Victaulic Piping Movement Design group to execute a grooved system while staying within budget and on schedule.

"We didn't have to shut down anything and didn't interrupt the tenants at all. We also knew we wanted to cut down on the noise and could do that using Victaulic," said Keith McKee, Fresh Meadow's superintendent for the project. "The only noise was tightening the couplings with an impact gun, which made the building managers happy."

Tackling a Strict Schedule

Going floor to floor, Fresh Meadow cut the riser out of the wall, rigged it down a 17-story shaft, and then removed the obsolete pieces from the lobby level. The removal used up four days of the three-week timeline, but Fresh Meadow and Victaulic were confident the team would still deliver ahead of schedule.

The Victaulic-patented QuickVic™ Installation-Ready™ couplings installed throughout the riser system are designed to expedite pipe-joining. The two-piece housing design features shift-limiting slant pads that allow for one-touch tightening

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Fresh Meadow removed and replaced a New York highrise's original riser system using Victaulic Style 155 expansion joints and Style A10 riser anchors to accommodate thermal expansion and contraction. The self-contained joint assembly allowed them to work within the existing shaft, avoiding extra steps that would have affected the budget and schedule.

SLOAN Demonstrates How Handwashing Is Moving Beyond the Restroom

By Kim Darke-Miller, Senior Manager for Strategic Accounts, SLOAN

Up until now, handwashing has always taken place within the confines of the restroom. But what if hand sanitation and where it takes place were reimagined?

With the pandemic bringing added attention to the importance of hand hygiene and inspiring new handwashing innovation, that's exactly what is underway right now. Commercial restroom manufacturers and architectural firms are partnering together to begin integrating handwashing into our existing environment. Places such as hospitality venues, restaurants, public transportation, sports stadiums, and schools are ideal for this endeavor.

For example, imagine going to a professional sporting event and having a quick and easy way to wash your hands without waiting in long lines at halftime or during breaks before getting food? Similarly, double-sided wash stations in restaurants can help bridge the space between the entry and lounge areas. Guests who check in with the host can then wash their hands while waiting for their table.

This new concept, known as "Sinks Beyond the Restroom," is integrating handwashing with the public spaces that we engage with in our daily routines to promote hand hygiene outside the restroom. But what does this mean for contractors, and how do these installations impact their work with connecting to water and drain lines, complying with plumbing codes, and more?

Installation Elements to Consider

Sink stations outside the restroom require necessary components that may be a no-brainer when it comes to restroom infrastructure but might not be as readily available in traditional public spaces. Contractors and installers need to ensure that a drain is located nearby for wastewater to flow into, without impeding the rest of the public space. Typically, drainage and water-source locations dictate the area where sinks can be located.

Take airports, for example. Most airports already have drains integrated into areas prior to walking through security for people to dispose of liquids, making them an ideal location for handwashing stations. In areas with existing plumbing, placing handwashing stations near restrooms or restaurants makes installation even easier to accomplish.

However, installing handwashing stations against an outside wall or other areas could involve more extensive renovations. Integrating handwashing into the infrastructure of the concourse during new construction allows the architect/MEP to easily account for water lines, etc., making new installations ideal.

When it comes to new construction, architects and engineers can account for all water lines when designing floors to avoid slip and fall potential. In this instance, perforated nonslip flooring is an ideal specification to let water fall into a drain and then reclaim the water, while integrated hand dryers help keep water off the floor. While local codes vary by state, the future of handwashing is changing, and codes will certainly evolve with it.

However, there might be certain instances where a permanent installation just isn't the right fit. That's where new mobile handwashing stations come into play. Equipped with hands-free, sensor-operated technology, mobile handwashing stations are designed to enable more convenient handwashing options placed anywhere inside or outside a building where hygiene is essential.

Additional Applications

This Sinks Beyond the Restroom concept can be practiced even further. Office buildings present three critical opportunities where guests can benefit from a range of handwashing options as they enter and exit the building.

The first location is directly adjacent to the entry and takes the form of an individual vessel. The second stop integrates with the reception desk and combines handwashing with opportunities to engage with informational and educational content like building and tenant information. Lastly, the area adjacent to the elevators is important, as highly visible sinks are especially important near high-touch surfaces, such as elevator buttons.

Office buildings present three critical moments where guests can benefit from a range of handwashing options as they enter and exit the building: directly adjacent to the entry, the reception desk, and the area adjacent to the elevators.

Airport concourses also present opportunities for handwashing in the midst of a bustling environment to help travelers feel safe and confident while staying on schedule. Public handwashing stations can integrate useful travel information on monitors above the sink listing flight departure and arrival information, digital airport maps, city highlights, and more.

Handwashing stations throughout a stadium's concourse deliver convenient and easily accessible moments for fans to wash their hands without having to wait in long lines between innings.

Lastly, implementing handwashing outlets throughout school corridors presents an opportunity to reinforce learnings in the classroom thanks to a series of fun and teachable moments that develop healthy lifelong habits. This will help reinforce proper handwashing for students coming to and from their lockers in between class or before lunch.

SLOAN and a leading architectural firm are teaming up to accomplish this handwashing beyond the restroom innovation. The two organizations began this journey by gathering dozens of market and industry experts across the country to form focus groups to determine how to best achieve this goal. SLOAN's touch-free technology, together with its architectural prowess, now has the capability to deliver hands-free handwashing in environments where we engage in everyday activities.

For more information, visit www.sloan.com.

Starco Overcomes Confines of Jail Project Using NIBCO's Innovative PressACR System

To update the HVAC system at the Montgomery County Jail in Dayton, OH, Starco, Inc. relied on NIBCO's new PressACR™ system to save at least 100 hours in installation time. Initially, press systems were not approved on the specs for the project, but Starco convinced the building owner and the project's engineering firm, HEAPY, that PressACR would save time and money.

Also located in Dayton, Starco specializes in commercial plumbing, heating, air conditioning, piping systems for steam and medical gas, and sheet metal ductwork. "NIBCO is our 'go-to' brand," said Jonathan Stumpf, project manager at Starco, who led the $2.2 million project. "It's been that way ever since I've been at Starco, and I've been here for 11 years!"

Improving Life on the Inside

Originally constructed in 1965, Montgomery County Jail was expanded in 1993 to become a minimal-security county jail complex, which now has a 900 prisoner-bed capacity. The older, original portion of the building required an HVAC system upgrade to improve the efficiency and performance of the system, which consisted of an older chilled heating combination system with unit ventilators servicing areas in the cells where the prisoners reside.

The facility wanted to remove the outdated system and replace it with eight variable refrigerant flow (VRF) systems to serve the same areas. The replacement system consisted of eight condensing units, 46 indoor units, and three make-up air units. Starco, the prime contractor for the renovation, also had to do some rework to an existing air handler to change it from a single heating/cooling coil to have separate heating and cooling coils, enabling two separate systems throughout the building.

"The project was certainly a bit unusual due to it being a jail," commented Stumpf. "We worked in narrow, three-foot-wide catwalks with the prisoners in close proximity of our installers. Security guards had to be with us at all times, which presented some logistical challenges for scheduling."

Beginning in fall of 2022, Starco worked in approximately 32,000 square feet of the five-story building, but also had considerable work on the exterior of the building, where all the refrigerant pipe and ductwork was run. The pipe and ductwork ran down the exterior sides of the building due to the narrow catwalks on the interior. Piping ran from the individual indoor units through holes in the wall to the exterior. To access the exterior piping, Starco had to work with scaffolding on one side of the building because it was too narrow for lifts. On the other side of the building, the installers worked off vertical lifts.

Pressing in Prison

To expedite the installation, Stumpf chose NIBCO's PressACR system, a joining method designed for use in copper tube

systems for air conditioning and refrigeration applications. PressACR fittings are approved for use with a wide range of refrigerants and lubricants and create a safer installation, as there is no flame or fire hazard with press technology.

Starco installer Dave Hirby uses a NIBCO PCR-20M Press System® battery-operated, mini pressing tool to install PressACR® fittings for joining copper tube systems in air conditioning and refrigeration applications.

"This Montgomery County Jail project was our first experience with PressACR," said Stumpf. "I had wanted to try it out for a couple of years, and I thought this would be a great project to try it out on because there was a substantial amount of refrigerant pipe—about 2,800 linear feet."

Stumpf explained that the estimated time savings with PressACR were key to getting approval for its use. He also noted that "getting copper fittings to 1,100° F to braze in the middle of winter outside on a rooftop is not an easy process. I did a cost analysis comparing my bid actual costs and calculated that it took approximately 100 hours less time to install. It was about $2,500 more for the materials, but we saved about $7,500. Plus, the aggravation!"

Because the bid did not take into consideration that the actual installation would have required extra time for the outdoor winter brazing, the savings were likely underestimated. Also, without brazing, there were additional cost savings from reduced brazing rods, fuel gas, and nitrogen purges.

According to Dave Hirby, Starco's foreman on the project, "PressACR saved us a lot of grief. It was most definitely easier to slide fittings together, press a button and crimp, versus brazing, in the winter, on a roof. And I appreciate the consistency and reliability of the joints."

Due to logistics, each VRF system required short pieces to be brazed into the wye fittings before using a press coupling to join them as they were installed down the wall. The only two leaks in the entire system of the eight VRF systems installed occurred in the brazed joints. To install the PressACR fittings, Starco used a NIBCO PCR-20M Press System® battery-operated, mini pressing tool designed to create a leakproof connection with the correct pressure. Starco conducted its main pressure test of the system at 550 psi (the fittings are rated for 700 psi), after the installation was completed.

Starco began using pressing soon after it was introduced to the United States 20 years ago. "We press any time we can on a project, if it is allowed for," said Stumpf. "If it's not specified, we even push for it after the fact, using RFIs [requests for information] to see if we can obtain acceptance to use pressing for domestic water and hydronic piping."

NIBCO is Starco's preferred brand for solder fittings, press fittings, and valves for all its projects. On the Montgomery County Jail project, for the chilled piping, heating piping, and condensate drains, Starco used a variety of NIBCO press fittings, including more than 100 90-degree elbows, more than 90 flare adapters, and 60 couplings, in sizes ranging from ¼" all the way up to 1 3/8". Starco also used NIBCO ball valves in the heating and chilling system.

For more information, visit www.nibco.com.

Holaday-Parks Achieves Award-Winning Sustainable Plumbing Design With Morris Group's AcornVac System

To renovate an historic building while simultaneously seeking to reach new heights in sustainability, Holaday-Parks installed a water-saving vacuum plumbing system from AcornVac, a division of Morris Group International. The AcornVac system was among the solutions that earned the building recognition as one of the most environmentally friendly office spaces of its size worldwide. It also eliminates the need for costly trenching or core drilling.

Once a two-story building, 400 Westlake now stands tall as a 15-story office building, encompassing 180,000 square feet of office space and ground-floor retail. Situated in the vibrant South Lake Union district of Seattle, WA, it has the distinction of being part of Seattle's Living Building Pilot Program, earning the esteemed Living Building Challenge's Petal Certifications in the areas of energy, beauty, and place.

Revolutionary Renovation

When Holaday-Parks assumed the role of mechanical and plumbing engineer-of-record for the 400 Westlake project in Seattle, WA, they anticipated the inevitable challenges that lay ahead. For Jennifer Schneider, the Holaday-Parks project manager for 400 Westlake, the magnitude of the project truly hit home when their team, in collaboration with project partners, received the prestigious 2023 Energy Vision Award. "This project is a groundbreaking endeavor that has the power to

revolutionize the world and our industry," said Schneider.

The transformative office renovation meticulously preserved the Art Deco-style auto garage initially constructed in 1929 for the Firestone Tire & Rubber Co. The result is a testament to sustainability.

A Water-Saving Solution

The decision to use vacuum plumbing was primarily driven by its water-saving capabilities, as AcornVac's toilets require less than .5 gallons of water per flush. Compared with other low-volume flush systems, the AcornVac system significantly conserves water use.

Laura Marshall, AcornVac vice president, emphasized the importance of the vacuum plumbing system's water and waste treatment savings. The vacuum flush water savings can amount to thousands of dollars and millions of gallons per year in larger applications. For instance, a commercial office building with 500 occupants, equipped with a single vacuum center and .5-gallon-per-flush vacuum toilets, can save over 265,000 gallons per year compared with other low-flush toilets. In addition, the vacuum system also provides drainage for lavatories, urinals, and other plumbing fixtures.

Vacuum plumbing is a straightforward and viable alternative to below-floor waste drainage. By using a combination of vacuum pressure and gravity, reduced volumes of water are required for toilet flushing, and waste piping can be routed through the ceiling in the same floor on which the plumbing fixtures are installed, so installers do not need to dig trenches or use core drilling. Vacuum drainage systems are widely accepted and recognized by many code authorities and are included in the latest editions of the International Plumbing Code (IPC) and the Uniform Plumbing Code (UPC).

Schneider had experience with the AcornVac system for condensate drainage at major retail stores. The scale of the 400 Westlake project posed new opportunities, and AcornVac provided active support throughout the installation process, conducting inspections and offering guidance on layout, installation, and commissioning.

"I would recommend working with AcornVac because they were helpful and engaged in the design and all the way through startup and commissioning," Schneider added. "We had excellent support."

Before beginning the installation, Holaday-Parks opted for an onsite mockup in the first restroom. This allowed them to meticulously plan and arrange all components, including piping and fixtures, ensuring proper layout to suit both installation requirements and future maintenance access.

The vacuum plumbing project has been a learning experience for Holaday-Parks, enabling the company to propose and execute large-scale sustainable projects confidently. "While we added some complexity, our crew now possesses a specialized skill set that sets them apart from their peers. It's not something that is taught when learning the trade," said Schneider.

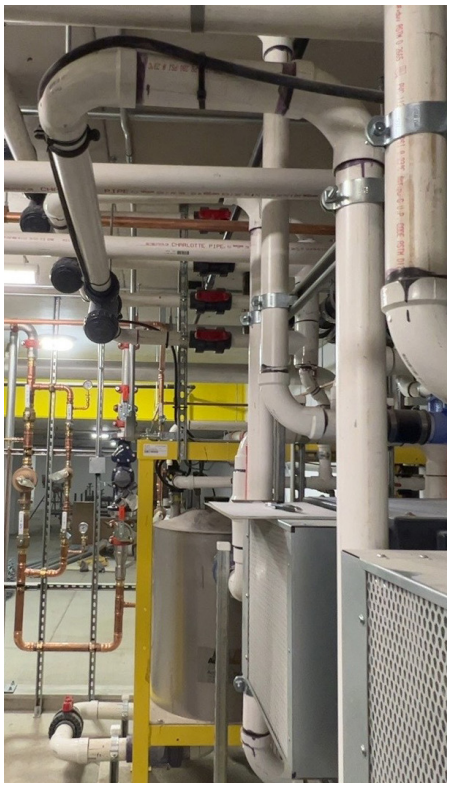
Setting a New Standard

400 Westlake also stands out because of Holaday-Parks' innovative incorporation of a greywater/rainwater harvesting and management system that provides toilet flush water for the AcornVac system. The roof collects rainwater, filling a 100,000-gallon vault that supplies the rainwater/greywater management system. If the system lacks sufficient rainwater/greywater, it automatically switches to the domestic water supply.

Marshall said of the rainwater/greywater system, "We have encountered many unique requirements and applications on other projects, but this was a very clever and creative addition to the system, and its benefits will extend to future building owners."

400 Westlake was recently commissioned, and Schneider is confident that the system will perform flawlessly once the building is fully occupied. Water savings will be quantified and documented over time through water metering, and water savings certifications are anticipated in approximately 18 months. It is anticipated that 400 Westlake will generate 105 percent of its energy needs and consume 35 percent less energy than a typical office building.

Marshall expressed



By installing AcornVac's water-saving vacuum plumbing system in its renovation of an historic office building, Holaday-Parks earned the building recognition for environmental sustainability. The building's AcornVac mid-level waste collection tank captures waste from upper-floor fixtures; here, it is supported by a framework (see the yellow bar).

pride in Holaday-Parks' accomplishments, commending their willingness to embrace creative planning and use of vacuum plumbing and rainwater/greywater harvesting for water savings. "Their achievements have not only benefited their clients, but the community and the environment," Marshall remarked. "They have set a new industry standard."

For more information, visit www.morrisgroup.co.

Sidebar: Keys to Success

The renovation of 400 Westlake in Seattle represents a collaboration of the following key individuals:

- For Holaday-Parks: Jennifer Schneider, Project Manager; Michael Cook, Engineering Manager; Blake Hallauer, Engineer; and Tony Bandli, Plumbing Foreman
- For Crutcher Lewis: Ashley Frederick, Project Executive

MUELLER INDUSTRIES

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High-Quality Housing

In October 2022, University of Massachusetts Amherst moved forward with plans to build new undergraduate, graduate, and student family housing on campus. The project calls for 150 two-bedroom units and another 824 new beds in total and is poised to address the university's strategic housing needs. UMass Amherst approached Grodsky, a fourth-generation family-owned mechanical contracting business with offices in Massachusetts and Connecticut. Adding Grodsky to the project gave UMass Amherst more than a century of contracting experience with a local touch, and the Grodsky team quickly took to the unique project.

"It's a large housing project that is 100-percent electric heat, using Lennox VRF systems," said Halket. "It's a hybrid structure, as it is wood framed. It was challenging to get lines to fit in places where they need to go, as you're dealing with all the nuances that come with a wood structure, such as trusses. Spaces for large mechanical systems are limited. And no pre-fab was used, as everything was fitted on the job in real-time."

In addition to housing, the $274-million project includes retail spaces for the school, dining spaces, and student social areas. It brings UMass Amherst's total undergraduate rooming capacity to 14,700 beds, the sixth-largest on-campus residential program in the country. With an extremely tight local housing market, the university knew it had to provide high-quality living spaces with modern amenities in a central campus location.

Productive Partnership

Brian Caufield, vice president of Mueller Streamline Co., described meeting Dave Streeter, vice president of Design Build at Grodsky, at an industry event, where they discussed upcoming projects. "We agreed that there was an opportunity to provide Grodsky assistance and value with our new Streamline ACR Press Fittings. That conversation led to the UMass Amherst project," said Caulfield.

In particular, Grodsky recognized the value of using Mueller's Streamline ACR Press Fittings. "We saw benefits of the double O-ring design," said Halket. "Mueller is heavy into the air conditioning and refrigeration space with their ancillary products. And they have a good support system, whether it be tech support or on-site training."

The partnership with Mueller provided Grodsky with substantial and crucial time savings during the project. Mueller provided complete onsite installation training to get installers ready quickly, and the intuitive and flameless process eliminated the need for brazing. "That eliminated the concern of bringing an open flame to the wood structure, and we weren't required to have a fire watch either," said Halket.

Halket added that Mueller's overall onsite support came with everything Grodsky needed for the project, whether it was tech support, tooling, or expediting necessary products.

Looking Ahead

So far, the first phase of student-family housing is complete. Seventy two-bedroom units and a multipurpose community center will soon be joined by 80 additional two-bedroom units. The next phase includes construction of apartment-style housing that will provide 623 beds for upper-level undergraduates and 201 beds for graduate students, scheduled to be completed in fall 2023.

Throughout the process, Grodsky team members cited the quality and reliability of the Streamline ACR Press Fitting's dual O-ring design and the full 360-degree press contour. "I found it all to be very intuitive," said one Grodsky team member. "The way the fitting and the jaws work together is very self-explanatory. The foolproof design led to no phone calls or installation issues."

"We really found it very beneficial to partner with a company

that is heavily involved in the HVAC and refrigeration space to provide support for the job," added another team member.

Mueller Streamline Co.'s Caufield added, "We appreciate the opportunity to work with the Grodsky team on this project and look forward to many more collaborations in the future." Halket anticipated Grodsky partnering with Mueller on future projects. "I really enjoyed working with the Mueller team," he said. "I like the fitting. It provides a fast, quick, and reliable connection."

For more information, visit www.muellerstreamline.com.

PYPESERVER

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sets. Regardless, our go-to method has been to generate spool drawings and push as much fabrication as possible to the shop, so we started 3D modeling as a way to generate the necessary drawings for prefabrication.

For both piping and sheet metal fabrication, we typically relied on paper to get the job done. Our virtual design and construction (VDC) department created drawings from a model, while our field foreman might send in hand sketches or isometric line drawings along with a bill of materials. When going through our VDC department, the completed model would get signed off, and the spools would be broken down by system, area, floor, etc. Then the detailers would create stacks of 11" by 17" paper spool sheets and send them to the shop for dimension verification and fabrication. Our pipe shop crew would then cut the piping and gather the fittings to create the assemblies.

One of our first automation efforts was for hanger fabrication. We had a cold saw collecting dust in the corner, so we purchased a TigerStop to feed it. The VDC department would pull hanger spools from our modeled work and then create the spreadsheets that the TigerStop needed to cut and label effectively. After cutting, fabrication tracking was done using more spreadsheets. It all worked, and it was a great first step, but it took hours to create and manage all the spreadsheets, so it was still a labor-intensive and error-prone process.

What is the workflow like now that you are using PypeServer's Connect add-on for Revit, Cloud service, and Lyte software for three different TigerSaws?

We're starting to prefabricate a lot more small-bore pipe using PypeServer. PypeServer Connect, Cloud, and Lyte have increased the pace at which we can go from a fab-ready model to fabrication, and we've been able to eliminate the need for any hand takeoff.

Until recently, we would only prefabricate a small percentage of copper, because we spent most of our resources on the larger, welded hydronic piping systems. Copper and cast iron would be considered a field responsibility to fabricate and assemble. Now, Revit provides the total required length of pipe we'll need, and, with a few clicks, PypeServer Connect sends our cut lists via Cloud directly to PypeServer Lyte on our TigerSaws, no spreadsheets necessary. This has allowed us to spool and prefab 2" and smaller piping that we would have fabricated in the field before, because the time required to annotate and dimension 11" by 17" spool sheets for the shop outweighed the time to build it in the field.

Sending the cut lists through Cloud also makes it easy to keep track of progress. As Lyte sends work through the TigerSaw, it automatically updates Cloud on a cut-by-cut basis. Now, we can easily monitor every step of the fabrication process without having to manage spreadsheets.

Feedback from the field running jobs this way has been overwhelmingly positive, and PypeServer will be used on all our fully modeled jobs moving forward.

Are you using PypeServer to prefabricate other components?

PypeServer has completely changed the way we export hangers to the fab shop. In the past, we spent a lot of time in Revit to ensure that data exported to spreadsheets were in the exact order and with the exact column titles needed to ensure that each hanger tag was populated with the correct values. PypeServer has completely eliminated the need to build a spreadsheet in Revit. The Connect plug-in pulls the assigned data out of Revit, and Lyte puts it where it needs to go using a label template.

In addition to streamlining the workflow, PypeServer Cloud has also prevented us from accidentally fabricating the same hangers twice by flagging duplicate assemblies and keeping them off the cut lists. On a recent job we fabricated roughly 5,000 hangers using PypeServer's workflow and achieved 95-percent accuracy on hangers showing up correctly in the field—not duplicated or missing. And the missing ones were most likely user or modelling errors. This has helped us make adjustments to how we draw hangers in Revit to better match our fabrication process, and we expect that accuracy percentage to climb on future jobs.

We've also found that we can easily send multiple types of hangers to the shop, including single clevis hangers on all-thread rod and trapezes with strut and all-thread, without having to worry about the correct lengths getting cut in the wrong material. PypeServer has really streamlined how we send hangers to the shop for fabrication, and we'll be using their tools on many jobs in the future.

Have you realized any savings in time, labor, or materials? What kind of payback period do you expect for your PypeServer tools?

We are not great at tracking metrics, but there is no doubt that our process of going from BIM model to cut pieces has improved drastically. Between not having to maintain spreadsheets and sending cut lists directly to the machines via the cloud, the VDC department's time spent has gone down dramatically.

Moving all jobs and orders to the PypeServer Cloud is also a great improvement. Now we can see job status at a glance, and there's no more accidental double cutting.

As a company that isn't 100-percent focused on BIM work, we couldn't justify expensive, BIM-centric fabrication software. At times, we may have less than 20 percent of our work in BIM, but even then, PypeServer's price point is easily justifiable in terms of return on investment.

Do you have any further improvements planned for your fabrication processes?

We're constantly optimizing our fabrication processes in order to stay competitive and maximize efficiencies. We started with PypeServer Lyte for our TigerSaws because that's where most of our work was being done at the time and the payback would be fast.

Our next step will be to get PypeServer Enterprise for our Vernon pipe cutter so we can improve its nesting and tracking capabilities using the same Connect and Cloud integrations that we use with Lyte for our TigerSaws.

We're also looking closely at welding cobots, like the Novarc system, to help address future skilled welder shortages. The PypeServer workflow already integrates with them, and I'll be diving further into this technology in the upcoming year.

Do you have any advice for other organizations looking to improve their fab shop productivity?

I have really enjoyed the Fab Conferences that MCAA hosts. It is a phenomenal opportunity to meet folks from all over the nation, outside of your competition area, with whom you can share ideas and concepts. It always surprises me how many little things you will pick up when touring other mechanical contractors' fabrication facilities. It's not just the big-ticket machinery that improves productivity, it's also the simple tricks and tools people put to use that can greatly improve efficiency and productivity.

When it comes to finding the right equipment or software, it's important to test out systems and see how they serve your purpose. Presentations always look good, but until you actually get your hands on the product and test it in your process, you don't really know if it'll work for you.

It's also important to partner with companies that make it a priority to keep improving their products. PypeServer has been phenomenal about listening to and incorporating suggestions we've made. We have a direct line of communication with their developers, and, hopefully, some of our suggestions can help other contractors as well. I have used these same responsiveness criteria in some of our large equipment purchases, too.

For more information, visit www.pypeserver.com.

Cannistraro, Atomatic Keep Costs in Check With Wheatland Tube's SureThread

Atomatic Mechanical Services, Inc. and J.C. Cannistraro both rely on SureThread™ pipe from Wheatland Tube to keep their costs down. Cannistraro Fabrication Manager Billy Gardner said, "SureThread is the only brand we use for fabrication. It creates less wear on our tools, which saves us money." Nick LaMonto, piping superintendent at Atomatic, added, "We're threading every day. We can't afford inferior pipe."

The only domestically manufactured continuous weld standard pipe on the market, SureThread has a uniform grain pattern and smooth weld seam that makes it stronger and more ductile than electric resistance weld pipe. That makes grooving, threading, cutting and bending easier, with substantially less wear on tools and less rework required on the job.

SureThread ASTM A53, Type F, is now Grade B certified, which means it can be used in a wider range of applications, including small-diameter (less than 2"), low-pressure applications, making it a more cost-effective and readily available option than seamless pipe. SureThread comes with a exterior protective coating, Ultra Z-Coat™, that makes pipes more corrosion- and scratch-resistant, protecting them against the elements when stored in an outdoor distribution yard or jobsite. The coating has no volatile organic compounds and is produced with no hazardous air pollutants, making it more environmentally friendly than other options.

For more information, visit www.wheatland.com.

SureThread's smooth threading makes connections easy, saving time and money for companies like Cannistraro and Atomatic.

Jomar Explains How Adjustable Thermostatic Balancing Saves Time and Money

If your team is tired of callbacks because of a lack of hot water at the point of use and the labor required for manual balancing, thermostatic balancing, a more efficient domestic hot water balancing method, is now an option. Thermostatic balancing recirculates the hot water loop based on temperature, as opposed to pressure or flow.

Balancing a domestic hot water line is often a challenge because it is an open-loop system that is constantly changing in relation to user demand. Once a system is up and running in the field, it can easily fall out of balance. Thermostatic balancing ensures that all fixtures maintain the minimum desired water temperature constantly.

Manual vs. Thermostatic Balancing

Manual balancing is the most common type of balancing in plumbing. It is based on pressure, and often results in customer dissatisfaction. It is also labor-intensive, because it involves having a person at each point of use as well as a person at the balancing valve adjusting the valve to ensure hot water is available at every fixture for every line throughout an entire system. Additionally, manual balancing is an ongoing challenge, because when one balancing valve is adjusted, it affects the entire system, instantly putting the system out of balance. Maintenance teams often adjust the valves in response to users' complaints about fixtures not receiving hot water.

Thermostatic balancing eliminates the need for a person to be at the point of use during the installation, eliminates callbacks due to flow adjustment, and increases customer satisfaction.

Thermostatic balancing recirculates the hot water loop using a thermostatic cartridge that adjusts flow based on temperature, as opposed to pressure or flow. Products like Jomar Valve's RecircSetter help ensure that users have hot water on demand, which eliminates frequent maintenance callbacks.

You simply install the thermostatic balancing valve at the end of each hot water supply line before the recirculation loop and then turn on the hot water to balance the system. Because you no longer need contractors in the field to turn on every fixture to ensure hot water is in the line, you can direct workers to the projects where their skills are most needed.

How It Works

The technology behind the product uses a thermostatic cartridge that adjusts flow based on temperature. The valve will modulate open as a line cools and closes as a line achieves its desired temperature, using water's path of least resistance to ensure adequate flow throughout an entire system. The valve never fully closes, which prevents deadheading the recirculation pump.

The thermostatic cartridge in Jomar Valve's RecircSetter™ eliminates the need for pressure ports to balance a system. By selecting the same temperature at each valve, a uniform temperature is ensured in every branch. Designers select the design temperature within the range of 95° F to 140° F (the factory setting is 125° F), and the temperature is set in the field by the contractor using the presetting hand wheel.

Site-Specific Options

Jomar Valve offers three different models of the RecircSetter that address different installation needs. The standard thermostatic balancing valve balances domestic hot water lines from 95° F to 140° F. The thermal disinfection model has an added thermal disinfection cartridge that is particularly useful in health care settings that need to avoid the proliferation of bacteria in a potable water system. The RecircSetter with an actuated thermal disinfection valve allows the end user to choose the thermal disinfection temperature, duration, and frequency through a building maintenance system.

The RecircSetter has a temperature sensor port that allows for remote monitoring through a building maintenance system, so it can be easily integrated. The standard drywell thermometer on each valve allows for easy identification of the water temperature flowing through each unit. Drywells are located on each side of the RecircSetter for orientation flexibility. The assembly models have fewer connections, shorter assembly lengths, and an integrated check valve option, which saves costs, takes less space, and makes installation seamless. The valve can be adjusted in the field to accommodate design condition changes without valve replacement.

For more information, visit www.jomarvalve.com.

A&R Boosts Morale, Productivity, and Profits With Procore Workforce Management Solutions

Since A&R Mechanical Contractors adopted Procore's workforce management software, project planning has become much less of a struggle, timelines have decreased, and profits have increased. For example, getting paid for out-of-scope work has dramatically improved with the T&M [time and materials] Ticket Tool.

A&R, a specialty contractor based in Illinois, had been using various apps and manual methods for planning, payroll, and scheduling, which was inefficient and complicated. With Procore's single, centralized platform, A&R has aligned teams, both in and out of the field, so that everyone can easily collaborate and access project information in real time.

Justin Weidner, vice president of A&R Mechanical Services, the civil division of A&R Mechanical Contractors, said, "Procore increases communication across all fields throughout all projects. We've got more informed teams, which, in my opinion, increases the morale of the guys in the field. They feel like they're connected and they know what's going on. And when you have an informed team, you have a better team."

Containing the Chaos

As the person in charge of A&R's self-performing contractors, everything from overseeing scheduling to collecting payments at the end of projects falls onto Weidner's shoulders. To manage each of these aspects, Weidner implemented a number of different apps, but the technology was actually creating problems instead of solving them.

"I was putting things in places that were tough to access," Weidner explained. "Our workers were reaching into too many spots for information. We had too many manual methods. Time cards, papers, T&M tickets for change orders, schedules—you'd be amazed how many time cards we got with no one's name on them."

Using the Procore platform, A&R has simplified and improved scheduling and communication, so it can put the right people in the field with the right skills for the job and everyone has the information they need, resulting in a more productive team.

Weidner continued, "The field workers are really just trying to get the job done. When you're a self-performing contractor and you've got all these types of projects, you've got to be able to adapt and move quickly.

"We needed a way to track the work that we had, obviously. Procore did that for us. We were able to bring everything that we were looking to track under one umbrella." Weidner observed.

Paying and Getting Paid

Using Procore, A&R has accelerated the overall payroll process, and payroll is more accurate. Instead of attempting to track time manually with paper time cards, employees sign in to their Procore accounts, and, using Timesheets, access their project and enter their hours with cost codes. The days of losing time cards, getting the job number wrong, or simply forgetting to put their name on their card are virtually gone. Taking payroll tasks to a cloud-based platform has enabled A&R to collect more accurate information quicker and pay its workers much more efficiently.

On top of this, A&R has leveraged the T&M Ticket Tool to track, submit, and get approval on out-of-scope expenses, which has improved payment. Employees can track out-of-scope work, then easily request the authorizing signature with just a few clicks. Previously these tickets would have the wrong job number, would lack critical information, or just be lost in the foreman's truck for months. As a result, the ticket would often be rejected, and A&R would not be paid for extra work.

"With the T&M ticket tool, we're able to be in the job the moment it's time to start the ticket. We're able to put all of the information, pictures, receipts, and anything that you're going to need to get paid later, and put it right in there," said Weidner.

"The best part of this tool is that you can import the timesheets for the crew you just used over to the T&M ticket, which eliminates double entries," Weidner added.

Optimizing Workforce Scheduling

Procore has also helped A&R simplify what used to be a chaotic process. Instead of scheduling using a messy whiteboard that lacks important information, project managers can use the software in the following ways:

Determine the best fit for a task. By clicking on the name of an employee, A&R's project managers see the employee's profile page,

which contains details that help managers select the right person for the job when scheduling.

See who's available. For example, Weidner said, "If I schedule Chris for the next couple of weeks, I can see his previous obligations to ensure I'm not creating any conflicts. After I finalize the assignment details, I can ensure all relevant parties are immediately notified of the changes. When we transition to the Gantt view, I can see who should be coming and going across projects and when. I can also see when we need more people."

Craft an easy-to-view schedule. A&R has saved significant amounts of time just by having the option to create a clean, readable schedule that clearly shows its people, along with their information and availability.

Weidner said that scheduling within the Procore platform "makes it easier for everybody to manage what they need to do. Everybody sees what their assignment is, the project name, address, and any other specific details we want to include.

"With workforce planning, the amount of detail you need on some of these projects and certain nuances make scheduling difficult. Procore gives A&R the ability to act on last-minute things right away."

Streamlining Communication

Perhaps most important to A&R, though, is the fact that communication has become much more thorough across the board. Weidner remarked, "The biggest advantages we've seen from [Procore] are our staff conversations. It's been phenomenal for us. Our project manager is more in touch with who their teams are. Superintendents know more about the skill sets of field guys."

With Procore, A&R can share necessary project information with workers before going out to a site to make sure that employees know what is going on. Project managers can even send alerts with updated information via text message. A&R's project managers and those in the field no longer have to worry about knowing who is working or when and where they will be.

Weidner noted, "We're seeing more of project ownership. We do a lot with self-performance, which is driven by our project foremen. Knowing their teams helps them to own the project more. They're more in touch with making sure they're not adding additional resources and keeping the right people on certain jobs, which results in an increase in productivity for us."

For more information, visit www.procore.com.

Fostering a Learning Organization to Avoid Human Error and Accidents

Adapted from materials provided by Frantz Belot, Ph.D., Co-Founder, Tyfoom

Human error is often misinterpreted as solely a human issue. However, it predominantly arises from system flaws within organizations. We inadvertently create systems that tolerate poor processes for the sake of rewarding outcomes, leading to constraints and errors. To effectively prevent and mitigate human error, it is crucial to shift our focus towards understanding the systemic factors at play.

Identifying Root Causes

Traditionally, human error has been labeled as the root cause of incidents and accidents. However, this perspective oversimplifies the issue. Human error should be viewed as a result of flawed organizational systems rather than an isolated failing of individuals. Errors can be caused by various factors, such as the following:

- Inadequate training
- Unclear procedures
- Inadequate supervision
- Ineffective communication

When organizations solely focus on blaming individuals, they miss the opportunity to address the underlying causes and prevent future errors through targeted interventions and system improvements.

Systemic Analysis

Adopting a systemic analysis approach allows organizations to delve deeper into the factors that influence human behavior and contribute to errors. This analysis involves examining the organizational culture, leadership practices, communication channels, training programs, and work processes. By thoroughly understanding these elements, organizations can identify potential weaknesses in their systems and make targeted improvements to prevent errors.

People do things that make sense to them at the time given other constraints and priorities. Investigation should ask why employees thought they were doing the right thing or why their actions made sense to them at the time.

Creating a Learning Organization

Building a learning organization is a key aspect of addressing human error and promoting safety. A learning organization encourages a proactive approach to safety, where employees are empowered to improve their skills and knowledge

continuously. It fosters a culture of open communication, where reporting errors and near-misses is encouraged without fear of blame or punishment. This approach enables organizations to learn from incidents and implement preventive measures.

One of the pillars of a learning organization is effective training programs. Organizations can use video-based microlearning courses to provide employees with accessible and engaging learning experiences. Companies like Tyfoom offer short, focused content that can be easily understood and retained. By delivering training in bite-sized formats, organizations can ensure that employees have the knowledge and skills necessary to navigate complex systems and make informed decisions that prioritize safety.

Tyfoom's platform enables employees to create their own videos to share their best practices with their peers—the ultimate expression of a learning organization. Microlearning courses are designed to be easily accessible to employees at their convenience, allowing for learning during short breaks or downtime. These modules can be accessed whenever employees encounter specific tasks or situations, promoting just-in-time learning and reducing errors caused by knowledge gaps.

See the sidebar, MCAA Partners With Tyfoom, to learn about MCAA member access to select Tyfoom educational materials and products.

The Power of a Learning Culture

A learning culture encourages employees to embrace a mindset of continuous learning and development, which in turn leads to better decision-making, increased efficiency, and reduced human error. Employees are empowered to share knowledge, learn from mistakes, and actively contribute to improving systems and processes. This collaborative and innovative environment nurtures engagement, motivation, and a sense of ownership among employees, ultimately creating a safer and more productive workplace.

Learning cultures thrive on continuous improvement and feedback loops to identify system weaknesses and implement corrective actions promptly. Organizations should establish mechanisms for employees to provide feedback, report concerns, and suggest improvements. A strong learning culture also builds a safety culture that not only protects employees from harm but also enhances productivity, reduces costs associated with incidents, and improves overall organizational performance.

Let's embrace a systemic perspective, unlock the potential of our systems, and cultivate a learning culture that prioritizes safety and optimal outcomes.

For more information, visit www.tyfoom.com.

Sidebar: MCAA Partners With Tyfoom

Tyfoom offers MCAA members access to select MCAA-produced training and education material and products via Tyfoom's video-based microlearning format. With Tyfoom's advanced training capabilities and MCAA's safety training content, members can stay competitive and keep their employees safe. MCAA safety training content will be rolled out throughout the second and third quarter of 2023. New users may sign up at www.tyfoom.com/signup.

Learning cultures reduce human error and accidents

FARO Looks at the Future of AI and 3D Laser Scanning for MEP Applications

It is clear that artificial intelligence (AI) is advancing fast and coming into everyday use. In the near-future, AI systems will be paired with established technology, such as 3D laser scanning for mechanical, electrical, and plumbing (MEP) applications. What many do not appreciate is that AI is still largely only as good as the quality of data fed into the system, either by human operators or through technology that gathers and organizes information, such as 3D laser scanners and cloud-based data platforms.

As AI evolves, investing in technology that accurately captures building information—such as FARO hardware and software—means you will have reliable data you can use to realize the potential benefits of AI applications.

As MEP professionals know, whether you're constructing something new or completing a redesign of a building for repurpose, enhancement, or maintenance, the success and timeline of an entire project rely on accurate and comprehensive data of the site. Any inaccuracies or clashes in MEP installation can lead to unnecessary rework, higher costs, and a subpar final result. 3D capture technology ensures that MEP designs are accurate and that piping, plumbing, and ductwork for HVAC fit narrow spaces with tight tolerances. Only once these data are captured and shared can sophisticated AI software like that currently being developed do its job.

See the sidebar, Successful Scanning, to learn more about 3D capture improves the accuracy of data.

So once you have accurate 3D data collected, organized, and shared, where does AI fit in?

AI for MEP can be useful in two ways. First AI is excellent for culling data and recognizing patterns. Every MEP system is different, so how can you determine that one design or set of designs is superior—for example, more energy-efficient because it requires less piping? AI has the potential to rapidly review thousands of MEP projects and identify the best, most energy-efficient solutions. AI can also be used to look at factors such as cost-effectiveness and strategic implementation.

AI can also be used for project management. AI can monitor, collect, control, evaluate, and manage energy consumption in relation to MEP needs across an entire building or set of buildings. AI can be useful in long-term energy management system planning, of which MEP is an essential component. It can also analyze processes to highlight the need for changes in the MEP design and suggest solutions.

MEP installation stands to benefit from the near-term union of AI, 3D laser scanning, and humans working together: 3D scanning and human operators capture and input data, and AI assists in identifying enhanced efficiencies and informing long-term energy system management. AI continues to evolve, and tomorrow's AI could far surpass our expectations. The contracting industry should think now about possible applications and the guidelines needed to maximize the potential of AI.

For more information, visit www.faro.com.

Sidebar: Successful Scanning

Working with 3D laser scanning hardware and software solutions, such as the ones developed by FARO Technologies, Inc., offers several immediate advantages by ensuring accurate data capture:

- **Faster installation verification.** Instead of relying on cumbersome manual measurement, 3D reality capture devices verify the built environment (which includes MEP) with greater accuracy and in a fraction of the time, while accompanying software makes it easy to convert raw data into tangible information.
- **Enhanced as-built-to-building information modeling (BIM) comparison.** With 3D laser scanning and construction software, you can compare the installation of the MEP components to the BIM output and identify accurate MEP placement.
- **Simplify data organization and project collaboration.** Increasingly, the technology enables secure sharing of all data with project stakeholders from anywhere in the world, reducing the risk of miscommunications or misunderstandings.
- **More accuracy for retrofit and remodel projects.** With most retrofits, you must determine how much you can rely on the original design documentation. The latest scan-to-BIM technology ensures that the as-built 3D replica represents what actually exists.

VICTAULIC

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instead of alternating between bolts, accommodating high-performance impact guns and streamlining installation. On many retrofit projects, standard lengths of pipe tend to be larger than the service elevator. Contractors must choose between cutting pipe lengths to fit on the elevator—which translates to added welding time—and increasing material handling time and coordination of 21' pipe lengths. Fresh Meadow avoided this lose-lose situation by cutting down pipe lengths to fit in the service elevator, and then joining riser sections within minutes using QuickVic Installation-Ready couplings.

> *By using Victaulic couplings, "We didn't have to shut down anything and didn't interrupt the tenants at all."*
>
> — Keith McKee, Superintendent
> Fresh Meadow

"The pipes were taller than the floor-to-ceiling height, so we cut them in half to get them upstairs. Adding joints may have slowed us down in a different project, but Victaulic grooved connections made it a more efficient installation. We got the building back online much faster than if we had utilized other methods. It was the adaptability we needed for this retrofit," said McKee.

Additionally, the collective Victaulic team, including the Piping Movement Design group, provided detailed drawings of pipe layouts to the on-site crew and coordinated expedited material deliveries so the project could progress from design to installation without pause.

> *"Victaulic grooved connections made it a more efficient installation. We got the building back online much faster than if we had utilized other methods."*
>
> — Keith McKee, Superintendent
> Fresh Meadow

Space-Saving Solutions

Restricted by the riser shaft's tight dimensions, Fresh Meadow had to design a dual-temperature system that accounted for sufficient space for thermal expansion and contraction. "There was simply no room to put an expansion loop within the existing shaft," explained Mike Russo, chief operating officer of Fresh Meadow.

"The owners would need to modify their occupied building, inevitably encroaching on hallway space and evaluating building code, in order to compensate for pipe growth caused by temperature changes using traditional methods like expansion loops." said Russo. "Instead, using the Victaulic self-contained [Style 155] expansion joint assembly was advantageous because we could work within the existing shaft."

Fresh Meadow installed two Victaulic Style 155 expansion joints with three Victaulic Style A10 riser anchors at specific levels of the multistory building to accommodate for thermal expansion and contraction. The engineered solution provided the necessary expansion and contraction capability without the need for additional coordination, review, and field work that would have affected the schedule and budget.

> *"There was simply no room to put an expansion loop within the existing shaft. Instead, using the Victaulic self-contained [Style 155] expansion joint assembly was advantageous because we could work within the existing shaft."*
>
> — Mike Russo, Chief Operating Officer
> Fresh Meadow

From Challenge to Triumph

Rapidly replacing an extensive system with minimal disruption to residents' day-to-day life was a tall order. Attention to detail and thinking ahead during the design phase, combined with Victaulic's Installation-Ready grooved couplings and engineered motion control solutions, enabled Fresh Meadow to set and maintain a furious pace, cutting a full week off of the project timeline.

For more information, visit www.victaulic.com.

Harris Realizes Immediate ROI With Watts Specialties Pipe Cutter

Harris saw an immediate return on investment (ROI) from their Watts Specialties automated pipe cutter, with improved efficiency in cutting and handling and no need for hand-cutting for olets or saddles. Based in St. Paul, MN, Harris has 15 regional offices with more than 300,000 square feet of fabrication shops.

In Need of an Upgrade

"Our operation in the Bellingham facility was growing... fast," said Garett Andersen, director of the fabrication shop and field operations for Harris' Bellingham location. "We needed to gain efficiency, and we knew that we needed an automated pipe cutting machine to gain that efficiency. We had an old Vernon machine with problems. One of our other shops had an older Watts Specialties machine, and they were getting the efficiency that we lacked.

"We looked at Watts Specialties. Then we looked at three other manufacturers: all three were either priced too high or their machines did not have the features we wanted.

"We decided to take a small group to the Watts Specialties facility in Puyallup, WA, to meet the Watts team," said Andersen. "We met a couple of the owner/managers, which was good, but then we met with a few of the machine technicians and support team. We were completely impressed with the machine guys. We walked away knowing that we were going to move forward with Watts. Seeing how they build each machine specifically for the purchasing company was also impressive. The personal contact with their service and support team was HUGE if or when we have any issues."

Anderson continued, "We wanted a larger machine, but our need for an automated solution outweighed our ability to wait for a machine to be built. We needed a machine more quickly, so Dave Dunham [Watt's managing director of operations] offered us a rental machine so we could get started quickly and see the benefits before we made a large capital commitment.

"We leased a W-244-Eco machine with a 24' bed. We use Stratus so we were able to import pipe data directly into the machine through the Watts software. We immediately realized a benefit we had not expected—savings on pipe fitup. The cutting accuracy—the quality of the bevels, joints, and olets—saved us on prep manhours. We would typically transport a cut pipe to another fabrication station for prep and fitup. Prep work was reduced dramatically!"

Harris found that the quality of cuts made by the Watts Specialties pipe cutter dramatically reduced the work needed for pipe fitup in preparation for welding.

"We immediately realized a benefit we had not expected—savings on pipe fitup. ... Prep work was reduced dramatically!"

— Garett Andersen, Director, Fabrication Shop & Field Operations Harris, Bellingham

Results in Real Time

"We immediately benefited from leasing the Watts machine," Anderson noted. "Their service technician came to our shop and trained our machine operator. In a day-and-a-half, she was running the machine. The operator inputs the data with Stratus into the Watts software and the machine starts cutting. We quickly saw the ROI with this machine; the efficiency in cutting and handling was immediate. No more measuring and marking pipe. The operator inputs the data and the machine makes all the cuts. We realized immediately additional ROI by not having any hand-cutting for olets or saddles."

Anderson added that Harris is extremely happy with the Watts software. "The software is easy to learn, easy to use. Importing data through Status also reduced the learning curve."

Now, Harris is planning to expand the capacity of its Watts machine. "We are now looking at extending our W-244-E with a 40' cutting bed and other logistics," said Anderson.

"The economy version came without loading racks. Adding loading racks will make material handling far more safe and efficient."

For more information, visit www.watts-specialties.com.

"We quickly saw the ROI with this machine; the efficiency in cutting and handling was immediate."

— Garett Andersen, Director, Fabrication Shop & Field Operations Harris, Bellingham

Harris leased a Watts Specialties W-244-Eco automated pipe cutter and saw an immediate return on investment, thanks to the ease of use, efficiency, and quality of cuts.

Xylem Illustrates How Smart Technology Streamlines Preventive Maintenance

By Stephen Clark, Director, Product Management for Intelligent Solutions, Xylem

Preventive maintenance is crucial for ensuring the reliability and efficiency of pumps and motors, which are essential components of commercial HVAC applications. An effective maintenance program can reduce unplanned downtime, decrease maintenance costs, and extend asset life. All of these drive business value, which is especially important in today's competitive and challenging commercial building environment, when building operation teams are being asked to do more with less.

However, traditional preventive maintenance plans can be labor- and cost-intensive, with the potential for overmaintenance and unnecessary inspections and repairs. For those reasons, many building owners and operators are turning to digital tools and intelligent technologies from companies like Xylem Inc. – Bell & Gossett to enhance their preventive maintenance plans and optimize HVAC system performance. These smart technologies have the potential to effectively streamline operations, reduce maintenance costs and energy consumption, and increase awareness about overall equipment health.

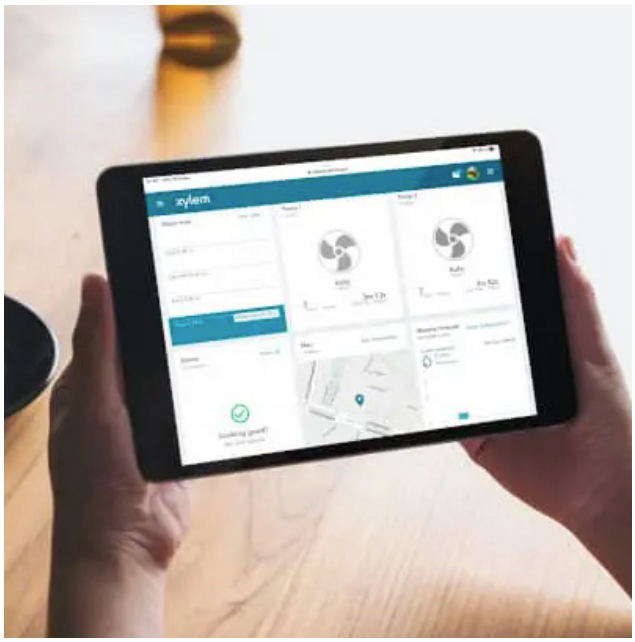
Ongoing Condition Monitoring

One of the most common and effective ways to use digital tools and technologies for preventive maintenance is to install sensors and monitoring devices on pumps and motors. These devices can track the condition and performance of HVAC equipment in real time and identify potential issues or anomalies before they escalate into failures or breakdowns.

Although condition monitoring sensors have been used in industrial applications for some time, the commercial sector has only recently started incorporating these tools in mechanical rooms, thanks in large part to declining costs and smaller device size.

Condition monitoring devices provide health guidance and predictive maintenance insights for mechanical and electrical assets, such as pumps, motors, heat exchangers and steam traps. Monitoring solutions like Xylem's optimyze™ sensor use magnets to mount directly to the pump or motor and periodically monitor system vibration, temperature, and pressure. These devices also collect, store, and analyze asset health information, allowing users to understand health and historical trends, create maintenance reminders, and generate detailed reports.

Affordable and easy-to-use, optimyze monitoring sensors are now being fastened directly to Bell & Gossett pumps before they ship to the customer. Integrating monitoring sensors



Intelligent solutions like Xylem's Avensor system allow customers to remotely monitor HVAC equipment from their smartphones, tablets, or laptops, which can reduce the need for physical inspections, site visits, or manual interventions.

on commercial pumps can also help lower lifecycle costs and improve the return on investment. All the customer needs to do is download the monitoring app and take action only if a reading indicates an issue.

Data-Driven Insights

Remote monitoring and control systems also boost preventive maintenance by enabling easy and convenient access to data for building owners and managers. They can improve communication, collaboration, and feedback among maintenance teams and stakeholders.

Xylem recently launched Avensor, a cloud-based monitoring system that allows customers to remotely monitor HVAC equipment from their smartphones, tablets, or laptops. Avensor collects and analyzes data to provide live data, trends, and alerts via the web or mobile app. An affordable alternative to advanced supervisory control and data acquisition (SCADA) systems, for which integrating new devices can be complex and costly, the Avensor system can connect assets by leveraging existing systems while protecting data.

Remote monitoring and control systems like Avensor help detect system issues early, sending automatic alerts to building owners and operators so they can adjust equipment settings, parameters, or operation modes as needed. Receiving remote data and actionable insights also helps reduce the need for physical inspections, site visits, or manual interventions, saving time, money, and resources.

A Smarter Future

As the commercial building sector continues to seek ways to better optimize HVAC system performance, connected digital solutions are pushing the boundaries of traditional preventive maintenance plans.

Intelligent solutions like optimyze and Avensor demonstrate the ability to bridge the gap between the industry challenges of today with adaptability for the future. Both tools feature true remote connectivity and real-time monitoring to prioritize system equipment health and enable more efficient allocation of system time and resources.

With the help of service providers like Xylem, building owners and operators are implementing advanced predictive maintenance plans that deliver key insights and a new level of connectivity through simple-to-use smart technologies.

For more information, visit www.xylem.com.

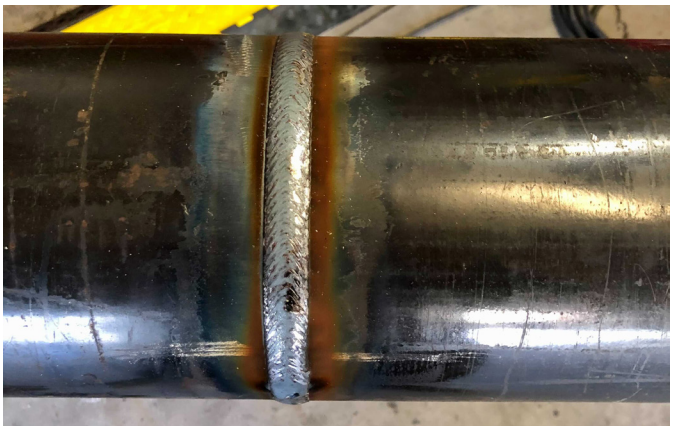
Western Allied Mechanical Saves Time, Expands Reach With Novarc's Spool Welding Robot

Like every contractor, Western Allied Mechanical is always looking for innovative ways to get ahead in their market and deliver projects better, faster, and cheaper for their clients. Also like every contractor, Western Allied is facing the nationwide shortage of qualified welders. By adopting Novarc's spool welding robot (SWR), they have not only increased productivity dramatically, they also increased capacity and are taking on bigger jobs.

Opening Up to Automation

Western Allied operates in the highly competitive market of California's San Francisco Bay area. Cyrus Patel, piping superintendent at Western Allied, explained that the company has been trying to automate more of its production processes to improve efficiency and productivity. "Robotics is the way of the future," he said. "We have been looking at it for a long time from the sideline." About two years ago, Western Allied decided to move forward, to "see where robotics would help us as a team to achieve some better results," said Patel.

The company focused on areas in the fabrication process where fatigue had the most impact. Jim Jeffrey, operations manager, explained, "We learned that we were having fatigued welders, and that was the bottleneck in our fabrication process. When we compared the productivity at the start of the day to the end, we noticed that we were kind of dragging. So that's why we looked at automating our pipe welding and choosing the SWR, because it doesn't call in sick, it doesn't get fatigued, and it takes a lot for it to beg for mercy."



With Novarc's spool welding robot, Western Allied increased productivity dramatically. Despite the growing shortage of highly qualified welders, Western Allied is taking on bigger projects because of their increased welding capacity.

Finding the Perfect Fit

When they came across Novarc at FABTECH Expo, Western Allied knew that they had found the right automated solution to speed up welding and increase productivity. They also needed a solution that would meet the requirements of ASME B31.1 and B31.3 codes.

"We were looking for a custom, tailored product at the FABTECH Expo when we came across the Novarc machine. The SWR had the lead on the other solutions, so we took that and ran with it,", said Patel. "I really liked the SWR; it was a well-manufactured product."

Novarc's SWR is a collaborative welding robot designed specifically for pipes, small-pressure vessels, and other types of roll welding. As a collaborative robot, the SWR enables less-experienced operators to significantly improve shop productivity and produce high-quality welds every single time.

"Novarc did some testing for us, and we fell in love. The first project we did we cut off four-and-a-half man-weeks of shop welding, so we saved around $114,000 on that project, and it made us competitive and added value to the end user," said Jeffrey. "Also, with the SWR we could take the video of each weld and give it to the inspector if he's not there, and that basically was the driver."

Scaling Up

With the SWR, Patel said, "We're now going after projects that we were shying away from because of the size. Since we have implemented the SWR, we have been spooling a lot more, and we are also taking on bigger projects, knowing that we have the capabilities of the welding in place. So it's actually helped us go after some projects that we were not going after before."

Jeffrey added, "We've reduced our dependence on hybrid systems and embraced flanges and bolting it up because the net effect is that it is cheaper and faster, and the quality is there." Moreover, the SWR is helping Western Allied manage the shortage of highly-qualified welders. "We are getting repeatability and productivity so we can compete head-to-head with non-union shops. And I'm not worried about having a qualified welder that I have to have all the time," said Jeffrey.

Filling a Gap

The American Welding Society anticipates that the current labor crisis will very quickly escalate to a shortage of about 400,000 welders by 2024. "The labor shortage has been coming for years," said Jeffrey. "We had been experiencing it before the pandemic as well, so we had to innovate to keep up with the demand."

Western Allied also appreciated the simplicity of the training for Novarc's SWR. "Once you get it up and running, to feel happy with it and to feel comfortable with it, you are not talking months and you are not talking about getting another university degree," Jeffrey observed. "It's very intuitive, and in three days, you are good at it. In five days, you are really good at it. So that's what really more than anything else made me pleased. I can train people, and I'm not dependent on people who have changing commitments."

For more information, visit www.novarctech.com.

Reliance Worldwide Corporation Offers Three Reasons to Use Outlet Boxes in New Plumbing Systems

As the trades continue to navigate an ongoing labor shortage, innovative products and methods of installation become increasingly important. Over the past decade or so, one such product that industry professionals have gravitated toward is outlet boxes for new construction. The options run the gamut, from fixtures to washing machines to ice makers, and they offer a more efficient alternative to traditional rough-in plumbing methods for these kinds of installations. Here are the key reasons why outlet boxes are becoming the industry standard and how they can support your workflow, bottom line, and craftsmanship.

Fixture outlet boxes like this one from HoldRite save installation time and costs, because they consolidate many of the various parts required.

1. Outlet boxes save time.

Outlet boxes help you complete stub-outs more easily and earlier in the building process. The design of the product streamlines both pre-installation planning as well as the on-site work.

When planning out the needs for a project, you often have to consider which parts you need and how many of each you will have to order to complete the job. With old-school methods, whenever you had to install different water supply lines—such as those for washing machines and sinks—you had to collect several parts: brackets, clamps, caps, fixture stops, hammer arrestors, and sanitary plates.

Outlet boxes consolidate a lot of those different elements into one ready-to-go product, so there are fewer parts to order. That makes outlet boxes not only time-efficient but also cost-effective, as you can cut the number of parts ordered almost in half.

On the jobsite, outlet boxes continue to save you time. In traditional methods, the process involves several time-consuming steps. During the rough phase, bracketing is installed, then stub-outs are installed or secured. Next, the stub-out is connected to the water supply and tested. In the final phase, the stub-out is cut, cleaned, and deburred. Preparation for the supply stop is next, including applying flux, tape, etc., and installing escutcheons. The supply stop is then attached in the proper position, and a final test is performed.

However, with outlet boxes, the steps are simplified. During the rough phase, the outlet box is attached to a stud or bracket. Next, it is connected to the water supply, and a test is conducted. In the finish phase, the debris cover is removed and replaced with an escutcheon or trim plate.

2. Outlet boxes are versatile.

Not only can you find outlet boxes that consolidate multiple parts into a single solution, but you can also find options that work with multiple connection points. While some manufacturers use dedicated connections, others, like HoldRite from Reliance Worldwide Corporation, offer different tail pieces that are compatible with different pipe types and connection methods using the same outlet box. Those tail pieces can also have near 360-degree movement for installation in any orientation.

Additionally, you can find outlet boxes with fire-rated options if you need to install one on a shared wall. You can also get versions with and without hammer arrestors, depending on code requirements in your area.

3. Outlet boxes produce a professionally finished result.

Aside from functionality, outlet boxes also take aesthetics into account. For instance, HoldRite fixture boxes come with chrome and white trim plate options that you can match to the overall appearance of the area. These finishes thread into place, so there is no need for adhesives or fasteners. You can also find outlet boxes with other high-end finishes, such as washing machine boxes with contoured, white, paintable trim covers, along with chrome valves and water hammer arrestors.

These options allow you to not only work faster, but also customize the installation so it matches the aesthetic of the overall design. Outlet boxes provide time- and cost-savings along with professional results that you can be proud of.

For more information, visit www.holdrite.com.

F.W. Webb's Rapid Response Helps City Resolve Water Main Crisis

Over a span of 32 hours, a city of about 20,000 people in upstate New York suffered 13 residential water main breaks. After making temporary emergency repairs, the Department of Public Works (DPW) turned to F.W. Webb, which supplied thousands of feet of HDPE pipe within weeks.

After repairing the initial leaks, the City Council authorized emergency funding for the water main replacement project. Knowing that the existing mains were susceptible to additional breaks, the city had to complete the high-priority project quickly and efficiently. Once the DPW provided a short-term fix for the leaks in the existing asbestos cement pipes, they explored an immediate, long-term solution to replace 23,000 linear feet—or more than 4.3 miles—of water main piping. In addition, the city needed the accompanying water main accessories, so the DPW engaged F.W. Webb, a premier distributor of HDPE pipe, to assist in the repair project.

Compared with iron piping, HDPE pipe is much more lightweight and flexible, less expensive, and lasts longer. HDPE pipe is also leakproof and ideal for directional drilling. These factors made it the obvious choice to solve the residential water service crisis.

The work involved replacing mains in 14 streets serving 400 residences in 120 buildings, many with multiple water service connections. The repairs also included 35 hydrants and 75 mainline gate valves. Webb worked directly with the DPW to source the necessary materials and coordinated with vendors to expedite delivery so work could commence 6 weeks after funds were approved.

Three separate contractors installed the new piping adjacent to the existing mains using open-cut and directional drilling. The DPW kept the old system active until all new piping was pressure-tested and disinfected and installation of the new service connections was complete. Then, the DPW shut down the old water system in sections.

The work also included the installation of four iHydrants. Manufactured by the Clow Valve Company, a McWane, Inc. division, iHydrants allow a municipality to monitor pressure and temperature changes throughout a water system. The iHydrants will provide a safeguard to prevent future disruptions.

The water main replacement was soon completed in all 14 streets. F.W. Webb's ability to quickly source and supply more than 4 miles of pipe and the accompanying accessories provided the city with the resources to resolve a water supply calamity before it worsened.

For more information, visit www.fwwebb.com.

Following a spate of water main breaks, F.W. Webb fast-tracked delivery of more than 4 miles' worth of HDPE piping and accessories to replace a small city's water mains with a reliable, long-term solution.

Egan Employs MSUITE to Meet Critical Needs in the Energy Industry

Michigan-based Andy J. Egan Co., Inc., relies on MSUITE software to improve their fabrication operations, which has enabled the company to grow exponentially as it carves out a niche in the energy industry. For example, Egan credits MSUITE with helping them shave three weeks off a major power utility upgrade project.

Energy Industry Insiders

In the Midwest, and specifically in Michigan, a few main utility contractors have aggressive commitments to going coal-free by 2025. Egan performs a lot of work for various clients, including small municipalities and towns, seeking to make the transition to alternative energy sources. Pat Heffron, Egan's director of fabrication, explained, "They're shutting off their coal burners and moving over to the combined cycle or a Phase Out Peaker project." (Phase Out Peakers is a move to replace peaker power plants with clean energy alternatives.) Egan has worked with clients to fabricate and install new piping and equipment.

Industrial fabrication involves very high quality and technical

standards, so there is a smaller labor force and fewer companies that can handle the technical requirements. For contractors like Egan, these projects pose a high risk but can also bring high reward if the project goes well.

"Documentation, quality control, and certifications of the welders are critical," said Heffron. "The difference is in material and metals, such as chrome, and working on projects like pressure vessels. Egan is an ASME code shop, so they build a fair amount of pressure vessels and stamp them for both internal and external projects within the industrial sector."

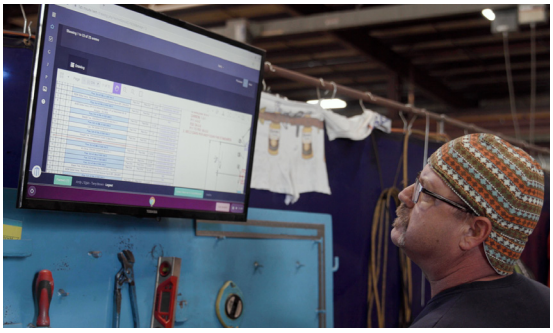
Substantial Time Savings

For a major utility company project, Egan replaced significant equipment and associated piping at a compressor station. The $8.2 million project required installation of 6,200 linear feet of piping along routes with 14 different tie-in points.

Without a detailed 3D model, prefabrication would have been impossible, and the crew would have constructed everything in the field. Egan gathered data using laser scanning and converted it into a precise 3D model using MSUITE tools. As result, Egan was able to install 80-foot towers without any connected piping, saving three weeks on the compressed project schedule. Field welds were kept to a minimum, and because so much of the documentation took place in the fabrication shop, paperwork required for quality control was also minimized for the field crew.

Improving Efficiency

Heffron's team at Egan used to spend countless hours doing manual inventory to get status updates. They could easily keep track of what had not started production and what was complete, but they had trouble keeping on top of which products were in which stage of production. As a result, consistent and accurate production updates were almost impossible, making forecasting and scheduling extremely difficult. "MSUITE FAB has solved this one for us," said Heffron. "Knowing where a specific spool or workpiece was physically in the process at any given time" has been a significant factor in Egan's success.



Terry Brown, CWI, a journeyman at Egan, relies on MSUITE software on the floor to keep track of production, so Egan has precise information for forecasting and scheduling.

MSUITE helped Egan standardize workflows to improve throughput, efficiency, and productivity and achieve consistency in fabrication processes. Egan eliminated the master production spreadsheet that required hours of daily updates. They also got rid of paper and manual activity tracking. With MSUITE, Egan also improved quality control and tracking for large industrial clients.

Shane Shook, CWI, Egan superintendent, examines the quality of a pipe weld. By using MSUITE, Egan has improved quality control and tracking, which is crucial for large industrial clients.

When Egan first encountered MSUITE, said Heffron, "We were impressed by MSUITE being 100-percent dedicated to mechanical contractors, and that was a key decision factor in moving forward." With MSUITE BIM, Egan is taking advantage of the MSUITE platform to make the transition from CAD MEP to Revit.

Overcoming Apprehension

Once Egan decided to implement MSUITE, leadership had some apprehension about using it throughout the fabrication facility. "We had to be cautious, because we had glaring needs for improvement and employees that were averse to using technology in the fabrication shop," said Heffron. "Our guys got into the trades because they like building stuff, not using software, but MSUITE's focus on the mechanical trade and being onsite for training is a big reason for overcoming this culture shock."

The MSUITE team configured the system correctly to Egan's exact specifications and mirrored Egan's process requirements. Holding the team of 30 to 50 employees to that process removed the risk that they might take shortcuts, which could create larger issues.

MSUITE helped Egan fabricate more than 2,500 carbon steel, coated spools for a dry ash system at the largest coal-fired plant in the western hemisphere. The spools were shipped to the project jobsite and installed with a 99.4-percent accuracy rate.

For more information, visit www.Msuite.com.

Western Allied Mechanical Cuts Quote Delivery Time in Half with ServiceTrade

Since they implemented ServiceTrade software in 2021, Western Allied Mechanical's service department has been able to cut their quote delivery time in half and send invoices three times faster, while also providing clients a better overall experience with more visibility. ServiceTrade allowed Western Allied to streamline their operations and improve the customer experience while sticking with their existing accounting software and processes. In this Q&A, Western Allied Vice President Jeremy Goodland talks about how the company has been improving operations, customer experience, and sales since implementing ServiceTrade.

Please describe your prior processes and the journey to ServiceTrade.

Five or six years ago, we were doing everything in editable PDFs. Time cards, repair work orders, everything was a PDF. Techs would either email them as attachments or upload them to the cloud. Then we'd take all that information and manually enter it into Spectrum, our accounting software.

In 2018, we began utilizing Spectrum's service component, but it fell short in a few areas where we knew we could do better. One of the areas we really felt was lacking was proposal (or quote) generation. We were doing all of our estimates in an Excel spreadsheet. So every job would have an Excel estimate and a Word proposal that we'd have to type up, save as a PDF, and email to the client to sign for approval. Then they'd have to email it back.

It was a clunky process, and given that we're a service business generating hundreds of proposals each month, we felt it was in our best interest to try and streamline that process.

With ServiceTrade software, Western Allied Mechanical cut the time from identifying a repair in the field to sending the proposal to the client by 50 percent on average, which means service technicians in the field like Derek Yee and Stas Yudashkin can get to work sooner.

Was streamlining that quoting process a big factor in choosing ServiceTrade?

It was. We knew that if we were able to reduce that turnaround time by even just 20 percent, we'd be able to crank out that many more proposals and generate that much more business. We ended up cutting the time from identifying a repair in the field to sending the proposal to the client by 50 percent on average.

How have customer communications changed with ServiceTrade?

ServiceTrade's customer portal allows our clients to access all of their information—which is great for them, of course, but also for our account managers. I can't tell you how often our clients reach out, saying, "Hey, can you send me the last two years of records for our account?" Now, with this portal, they have all that data at their fingertips, and that's really helping out our account managers with that pain point.

The client portal is huge. It has a big impact on how we're able to go to market. We're able to pitch that added value to the client and differentiate ourselves. Prospective clients see that value. Tasking is also well received, and it's nice to be able to sell it as it connects to the customer portal. As soon as the tech submits a task sheet, the client can access it through the portal.

Does that visibility help you sell to bigger or more complex clients?

Our construction division does a lot of work in life science and biotechnology buildings. Those clients have strict requirements and have to run a pretty tight ship. In order to work with these types of clients on the service side, we need the ability to send them the information they need right away. So, yes, it has definitely been a big selling point for these clients.

For more information, visit www.servicetrade.com.

Heat Stress: ClickSafety Explains Your Responsibility as an Employer

According to the Occupational Safety and Health Administration (OSHA), employers have a responsibility to protect their workers from extreme heat. Every year, dozens of workers die and thousands more become ill while working in hot or humid conditions. Heat is the number-one cause of weather-related deaths in the United States. According to the U.S. Bureau of Labor Statistics, there were 815 heat-related worker deaths and 70,000 heat-related serious injuries between 1992 and 2017.* To protect workers, employers should establish a complete heat illness prevention program in addition to observing the heat index.

Under OSHA law, employers must have the appropriate measures in place to protect workers and establish a complete heat illness prevention program that includes these elements:

- **Education:** Provide training to employees and supervisors on the signs and symptoms of heat illness, as well as the preventive measures that can be taken.
- **Hydration:** Make sure employees always have access to fluids and encourage frequent breaks for hydration.
- **Shade:** Provide areas of shade for employees to rest in during breaks or when working in direct sunlight.
- **Clothing:** Supply appropriate clothing for employees who are working in high-heat environments, such as light-colored, loose-fitting clothing.
- **Monitoring:** Regularly monitor the heat index to ensure that employees are not exposed to dangerous levels of heat.
- **Acclimatization:** Allow for a gradual increase in exposure to hot temperatures to ensure that employees can safely adjust to the heat.
- **Rest:** Make sure that employees have access to rest and recovery periods throughout the day, especially when the heat index is high.

Employers should recognize the warning signs for heat illness:

- Heavy sweating
- Paleness
- Muscle cramps
- Fatigue
- Dizziness
- Rapid heartbeat
- Headache
- Nausea
- Confusion
- Fainting

Workers should also be aware of factors that increase the risk for heat-related illness, such as high temperature and humidity, direct sun exposure, physical exertion, and medications. The National Weather Service created the heat index to indicate the risk of heat-related illness for workers exposed to hot and humid conditions. The risk increases as the weather gets hotter and more humid and is especially serious when hot weather arrives suddenly early in the season, before workers have had a chance to adapt to warm weather.

The heat index can be categorized into four risk levels, with protective measures for each:

- **Lower (caution):** Basic heat safety and planning
- **Moderate:** Implementation of precautions and heightened awareness
- **High:** Additional precautions to protect workers
- **Very High to Extreme:** More aggressive protective measures

Risk factors that must be taken into consideration even when the heat index is lower include employees working in direct sunlight, performing prolonged or strenuous work, or wearing heavy protective clothing or impermeable suits. Workers at higher risk of heat stress include those who are age 65 or older, are overweight, have heart disease or high blood pressure, or take medications that may be affected by extreme heat.

Employees also must be able to recognize the risk factors of heat illness and know what to do if they are experiencing symptoms. ClickSafety offers safety training for heat illness and stress awareness, so you can help keep your employees safe.

MCAA members get a 10-percent discount with the code MCAA23 on all ClickSafety training courses. For more information, visit www.clicksafety.com, email Katie Adams at katie.adams@clicksafety.com, or call her at 913-239-2692.

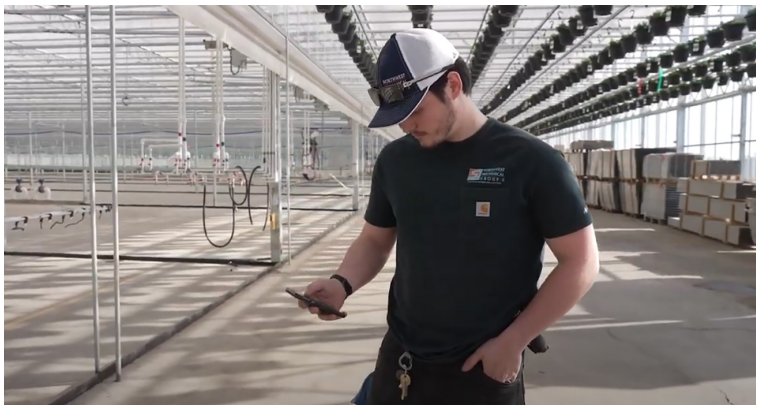
**See OSHA Training University. Heat awareness for workers. Available at http://oshatrainingu.com/safety-articles/protecting-workers-from-heat-illness/*

Northwest Mechanical Group Ramps Up Business With BuildOps

When their out-of-date software started slowing them down in the office and the field, Northwest Mechanical Group switched to the BuildOps platform, simplifying and streamlining data management so they could grow their business. "Before we knew it, we were seeing quicker turnaround times on job closeout and a huge improvement in the time it took for quotes to be accepted by our customers," said Chris Howard, owner and CEO.

Operating out of Portland, OR, Northwest Mechanical Group has been in the commercial service industry for more than 30 years, specializing in low-temperature refrigeration and HVAC services for supermarkets. Northwest relies heavily on technology to help manage its operations and improve overall productivity—both in the back office and on the jobsite. However, their previous software system was out of date, with no future updates in sight. As a result, they were experiencing pain points in the field and slowdowns in the back office. Data were being lost between different platforms. The constant need for repetitive entry and manual processes was causing growing frustration throughout their workforce. As a critical step to growing and scaling up their business, Northwest needed to find a better solution to help manage operations more efficiently.

Northwest spent years looking for software that could keep up with the modern needs of their growing operations. Eventually, they discovered BuildOps. "Since switching over to the BuildOps platform, we've experienced a significant jump in job satisfaction from our field technicians and back-office employees," said Chris Howard.



Since switching to the easy-to-use BuildOps platform and its mobile app, Northwest noticed a significant increase in job satisfaction and productivity among on-site workers like Group Field Technician Ethan Gentles, as well as back-office employees.

"The platform is much more user-friendly than what we were used to," Chris Howard continued. Northwest's technicians appreciated the easy-to-use nature of the platform and its mobile app. "The [BuildOps] simple approach to field service and project management is unparalleled," said Howard. "It lets us do exactly what needs to be done, no questions asked."

BuildOps also saves Northwest both time and effort with invoicing. "The process has become far smoother than it's ever been," said Liz Howard, CFO. "And we no longer have to rely on insight from multiple applications to build an invoice—it's all right there, rolled into one single platform," she added. This new and improved process has allowed the company to refocus their efforts—helping them take on additional work, which in turn has helped them grow their business.

Since integrating the new BuildOps platform, Northwest Mechanical Group has increased their staff by 30 percent. With more staff, Northwest can keep up with the growing workload—a testament to the impact the right field service management software can have on a commercial business. "We highly recommend BuildOps to any other commercial contractor in the industry," Chris Howard said. "It's been a great tool for us to use both in the office and in the field."

For more information, visit www.buildops.com.

Althoff Industries' Revenue Surges With ServiceTitan for Customer Service

Althoff Industries credits their switch to ServiceTitan software with an improvement in customer service that contributed to an increase from $8.5 million in revenue in 2021 to $11.4 million in 2022. Althoff went live with the software in July 2021 after spending decades on a server-based customer relationship management system. It was such a momentous occasion for Blake Wiltshire, director of residential services at Althoff, that an empty bottle of champagne sits on his shelf to commemorate the moment.

Exceptional Customer Service

Exceptional service starts with the first phone call, and Wiltshire loves that he and his customer service representatives (CSRs) can play the role of psychic the second a customer calls in. "Their information pops up, and it's easy for our CSRs to quickly identify who they're talking to, what plan they have, and look at open invoices," Wiltshire said.

He also has heard many compliments about the customer experience component of ServiceTitan. Customers appreciate things like text messages that include appointment reminders and technician bios, as well as tech-tracking features similar to that of Uber rideshare service.

"When we dispatch, it sends the profile of the guy, but also the little button where (customers) can track and see where (our tech) is coming from," Wiltshire said. "These are just things that you expect today."

When Wiltshire first pitched ServiceTitan to Althoff's owners, he emphasized customer expectations around service. He told leadership, "We're a premium brand in our market, we present ourselves that way. Our processes and our software and the things that we're doing need to be a premium brand, too."

Staying Competitive

Althoff recognizes that even premium brands need to offer competitive prices. As a union shop, Althoff has to compete with prices from nonunion shops, which was a challenge until the Mechanical Contractors Association of Chicago (MCA) stepped in and created a solution.

"The best thing that the union and the MCA have worked together on has been the residential and light commercial, or 'R card,' agreement," Wiltshire said. "They recognized that the union contractors were starting to lose a lot of residential business."

The R card has given Althoff the ability to be more competitive against the low-cost, nonunion contractors it competes with in the Chicagoland area.

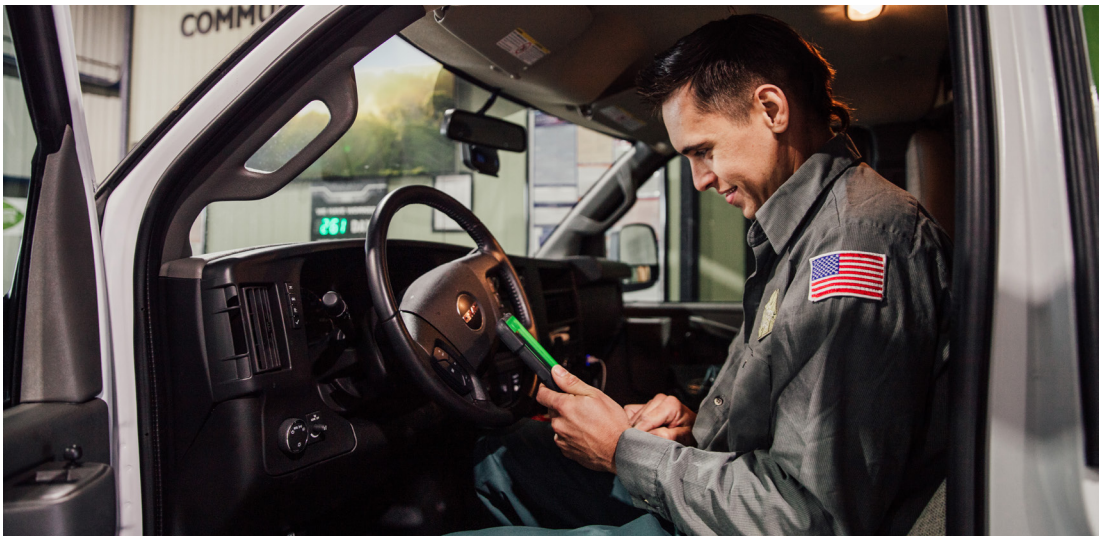
"This has been a game changer for me and my company, and we were early adopters," Wiltshire said. "We heavily utilize the program, and the majority of my field technicians are R cards."

Wiltshire added, "The MCA (Chicago) also promotes its contractors to potential customers. This helps provide legitimacy to our claims as the best around."

Adding to that legitimacy is the newest feature Althoff recently rolled out: rewards points. It's just one more way that Wiltshire is making good on the promise of being a premium brand.

Althoff aims to reach $14.6 million in revenue in 2023, and ServiceTitan and the support of the MCA will make a huge difference in hitting that number.

For more information, visit www.servicetitan.com.



Using the ServiceTitan Mobile App, Althoff has immediate access to customer information, so technicians can review the service history from anywhere.

Enhance Productivity & Profitability with MCAA's Virtual Trade Show

Mechanical contractors are constantly challenged with tighter budgets and shorter timelines, while also being pressed to innovate and streamline processes. MCAA's Virtual Trade Show connects our contractor members with solutions that enhance productivity and profitability from our Manufacturer/Supplier Council members.

Visit the Virtual Trade Show at mcaa.org to find information about:

- Products that improve performance and efficiency, as well as decrease costs
- Software that streamlines business processes
- Complimentary services that free up project resources
- Programs that help you develop new product offerings and revenue streams

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