MCAA SMART Solutions

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MCAA's Virtual Trade Show

MCAA's Virtual Trade Show, where our contractor members connect with the members of MCAA's Manufacturer/Supplier Council, because who doesn't need the best strategic supply chain to enhance productivity and profitability?

Learn more and experience the Virtual Trade Show for yourself today!

Don't forget to check out the "What's New" section where we have highlighted the newest additions to the show.

What's Inside MCAA SMART Solutions

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.

FEATURED Articles

MCAA Highlights

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Innovations AND Insights

Case studies in this issue of Smart Solutions include two stadiums, two jails, and a distillery—highlighting that many projects come with unique needs that require innovation and insight.

Tackling Tight Spaces

For the jail projects, learn why Brandt Companies chose Trane and Bartingale Mechanical relied on Daikin to meet the particularly strict job requirements of projects where the building was occupied at all times and speed was a high priority. Read how Heffron Company overcame constraints of scale, space, and time by using Victaulic's grooved mechanical pipe-joining technology.

Novel Solutions

Contractors are always seeking new products and new approaches to maximize productivity. With MILWAUKEE TOOL's new cordless Roll Groover, 1901 Inc. estimated saving 40–50 hours of labor on a single project. Arden Building Companies chose Belimo Aircontrols' pressure independent control valve to meet a client's long-term sustainability goals and used Belimo's piping packages to cut labor costs up to 80 percent. A Colorado distillery leveraged SIEMENS controls to increase efficiency by 75 percent. Murray Company counted on SLOAN's sustainable products to meet the high efficiency goals of the Los Angeles Clippers' new stadium.

For a multi-billion-dollar facility's chilled water system, Dynamic Systems, Inc. (DSI) used Merit Brass Company copper press fittings designed to visually confirm complete pressing, which helped avoid potentially costly errors. Johnson Controls' HVAC technology and automation systems are keeping fans comfortable and increasing attendance at the Milwaukee Brewers' renovated stadium.

In this issue, we spotlight some novel solutions arriving from the tech world. To combat the shortage of skilled welders, Novarc Technologies, Inc. launched a real-time vision processing system: NovEye™ Autonomy, the

world's first artificial intelligence (AI) machine learning program for welding. For its mobile application, Copeland introduced Scout AI to help technicians in the field quickly diagnose, troubleshoot, and resolve problems. HGG Profiling Equipment Inc. synthesized 40 years of 3D profiling knowledge into its ProCAM software to maximize throughput and material usage, saving users time and money.

Streamlining Services

Software keeps evolving to help you become more efficient. For example, L.J. Kruse Company's switch from paper invoices to ServiceTitan's system helped boost service revenue by $1 million.

P1 Construction, LLC replaced its outdated system with Access Coins enterprise resource planning software and quickly started saving money, increasing productivity, and improving service delivery. DILFO adopted PypeServer Inc.'s cloud-based workflow software to automate processes, cutting waste and enhancing productivity. Using Stratus, UMC eliminated most of its paper-based procedures and transitioned seamlessly to a digital weld tracking and inspection program.

Professional Insights

Also in this issue, McCormick Systems, Inc. offers suggestions on how to craft better plumbing estimates to win more projects. Ridge Tool Company explains how tool-integrated software can boost building operations, while MSUITE shows how to accelerate BIM modeling efficiency and transform MEP coordination through software automation. NIBCO INC. and Wheatland Tube both offer expert advice on choosing the right material for your job for long-term success. We hope you will take advantage of the insights and innovations our manufacturer/supplier partners have to offer.

Mark E. Becker
Chair, MCAA Manufacturer/Supplier Council Executive Committee

Designing FOR EFFICIENCY

with **Belimo Aircontrols** & **Arden Building Companies**

Arden Building Companies knew that a pressure independent (PI) HVAC system would help a new Massachusetts high school meet its long-term sustainability goals, but there were concerns about the cost. Belimo Aircontrols' PI control valve offered the perfect balance of performance and affordability, and Belimo went a step further, providing piping packages that cut up to 80 percent of labor costs.

Building a Green School

Massachusetts is considered a leader in the United States when it comes to energy efficiency standards, and the state provides financial incentives to districts that build highly efficient schools. New construction is expected to conform to the ninth edition of the Massachusetts State Building Code 780 guidelines, which closely follows the energy efficiency requirements of ASHRAE 90.1-2013.

Under the Green Schools Program, the Massachusetts School Building Authority rewards school districts an additional 2-percent reimbursement for projects that meet its sustainable building design requirements. All new schools in Massachusetts are required to exceed ASHRAE 90.1 by at least 10 percent. Green Schools, however, must achieve LEED certification, which requires that buildings exceed the energy efficiency requirements of the ASHRAE Standard 90.1 by at least 20 percent.

Attleboro High School (AHS) broke ground in October 2019 on an all-new $260 million campus, representing the largest municipal undertaking in the history of Attleboro. The new AHS is a four-story edifice encompassing 475,000 square feet with the capacity to accommodate 1,725 students. It opened in September 2022.

"The Green Schools Program is a system of reimbursement that provides monetary benefits to schools that opt for sustainable, high-performance designs," said Derek Bride, principal at Consulting Engineering Services (CES). "The Green Schools Program was certainly on our minds from the start of the project, and we wanted to ensure they'd be eligible for benefits," Bride noted. In the case of AHS, meeting the goals was anticipated to result in reimbursement of at least $4 million.

Under Budget Pressure

With overall budget considerations in mind, CES originally designed a traditional pressure dependent HVAC system. "Engineers often assume that going PI is going to be too costly in terms of parts, but it's not always the case," said Paul Carter of Arden Engineering Constructors and Earthwise Energy Technologies, two of the Arden Building Companies that served jointly as the mechanical and controls contractor on the job.

Pressure independent HVAC systems offer substantial benefits over traditional pressure dependent designs, providing improved energy efficiency and lower maintenance costs over time. In addition, PI systems can save money during the construction phase.

"In a PI system, the need for circuit setters and manual balancing is eliminated because each control valve regulates its own flow rate regardless of pressure changes. This reduces both materials and installation costs," Carter explained.

Familiar with Belimo's PI control valve offering, Carter quickly concluded that the Belimo electronic PI valve (ePIV) was an ideal choice for the larger valves in the system. "The ePIV is great for managing higher flow rates," Carter explained. "The integrated electronic flow sensor uses a robust control algorithm which talks to the actuator and adjusts the valve to compensate for pressure variations, performing dynamic balancing. This ensures system efficiency."

The ePIV assembly integrates a characterized ball valve, a high-performance actuator, a flow sensor equipped with glycol compensation, a temperature sensor, and flow control logic all in one unit. Despite fluctuations in system pressure, the ePIV maintains the flow setpoint by adjusting the characterized control valve based on the measured true flow.

"We used the ePIV in parts of the system where the flows were above nine gallons per minute (gpm), about 62 assemblies in total. But, for flow rates under nine gpm, we went with an affordable, compact mechanical PI solution from Belimo, the two-way ZoneTight PIQCV," Carter said.

The Belimo ZoneTight PIQCV is a mechanical PI control valve with an ultra-small form factor, making it ideal for tight

spaces. It combines a spring-action differential pressure regulator with a two-way valve to ensure a consistent flow regardless of any variations in system pressure. The PIQCV's actuator operates at just 0.3 W, which conserves energy and transformer power. Belimo 223 PIQCVs were used throughout the AHS system.

Added Savings

While pivoting to a PI design saved the costs of circuit setters and manual balancing, additional savings were needed to keep the project under budget. Carter reached out to P.J. Qvarnstrom, RetroFIT+ business manager at Belimo, to see whether other savings could be achieved. "Piping packages are a great way to save the customer some money on labor," said Qvarnstrom.

Aaron Nobel, piping packages product specialist for Belimo, said, "P.J. approached me about the Attleboro High School project, which called for hundreds of ePIV and PIQCV assemblies that needed a complete solution—including unions, isolation valves, and isolation strainers. We were able to provide piping packages for these valves which cut down on labor by up to 80 percent. Plus, the packages take up half the space compared to standard individual components."

Belimo delivered nearly 400 preassembled piping packages, creating the additional savings needed to provide AHS a more efficient, lower maintenance, PI HVAC system for about the same cost as the originally designed pressure dependent system.

"Thanks to Belimo, we were able to deliver the customer a far superior system for the same amount of money," Carter added. "Using PI valves cut costs on parts and manual balancing, plus the piping packages really saved on labor," he said.

"The current projected energy usage in the building is 32 kBTU per square foot, which is 36 percent better than the baseline," according to Dave Hillburn, senior mechanical engineer at CES. "That well exceeds the performance required to become LEED certified and receive the 2-percent reimbursement. The system will run more efficiently, will be easier to maintain, and will save the school money down the line."

For more information, visit www.belimo.com.

Earthwise Energy Technologies' Paul Carter, president, and Matt Basile, principal engineer, used Belimo's ePIV to cut installation and labor costs for a new high school. Earthwise was among the Arden Building Companies that helped Attleboro High School qualify for incentives under the Massachusetts Green Schools Program.

AVOIDING MISSED CONNECTIONS THROUGH *Innovation*

with **Merit Brass Company** & **Dynamic Systems, Inc.**

Dynamic Systems, Inc. (DSI) chose Merit Brass Company copper press fittings on the chilled water system for a multi-billion-dollar facility because of the ease of installation, cost savings, and cleanliness of the installation. Moreover, Merit's fittings are equipped with distinctive Visual Indicator Press Ring® (VIPR) technology—which provides an external visual confirmation of a pressed fitting and enabled DSI to avoid the common problem of missed pressed fittings that can derail projects.

Headquartered in Austin, TX, DSI was awarded the contract for a new manufacturing facility project in Chatham County, NC, by Wolfspeed, a global leader in silicon carbide technology. The facility sits on 445 acres with an expansion goal of more than 1 million square feet within the next 10 years.

Bret Randall, senior project manager at DSI, explained the decision to partner with Merit Brass. "The complexities of this project drove us to seek out product(s) that could contribute to our overall success, which was focused on budget, efficiencies, safety, and meeting the project timeline," he said. "We partner with companies driven by innovation with a commitment to quality, because we understand how critical piping systems are to our customers."

Risks of a Missed Connection

As the adoption of press technology continues to grow within the industry, minimizing avoidable challenges, such as a missed press, is increasingly crucial. DSI recognized that a missed press connection could lead to significant disruptions on a jobsite, including leakage, water damage, increased labor costs, delays, system failures—both immediate and over time—and even safety risks.

Most press systems incorporate some type of technology to their fitting or sealing element to identify a missed press at the time of testing, and it is industry standard to "mark the fitting" as fittings are pressed. Still, despite onsite training and experience with press installations, missed presses can go undetected, especially in large or complex systems.

To avoid the risks, DSI chose Merit Brass' unique CopperPress® fittings with VIPR for the installation. The VIPR technology features a thin, green band around the fitting that breaks once the fitting is pressed, eliminating the uncertainty that often arises with traditional press systems. Merit Brass developed this technology because they understood the challenges contractors faced with a missed press. For DSI, the added layer of assurance with Merit's CopperPress was critical in ensuring a smooth and efficient installation process.

Randall stated, "We decided to partner with Merit Brass for this project to stay on schedule and eliminate any avoidable challenges. Every contractor using press systems has experienced the frustration of a missed press fitting at some point. With Merit's press technology, not only was our team confident, but the engineering and facilities teams were also reassured that we could easily identify any missed presses early in the installation, allowing us to keep the project moving forward without delays."

Success Starts With Training

Jobsite training remains a critical element for the success of any project, whether using traditional installation methods or adopting new technologies like press systems. As the industry continues to evolve, ensuring that teams are well versed in both conventional and innovative techniques is essential for achieving efficiency, safety, and quality outcomes.

DSI consistently partners with preferred manufacturers that not only provide comprehensive training but also deliver cutting-edge solutions for a more streamlined and secure jobsite. DSI received training from Merit Brass in advance as well as onsite support as the system was being installed.

"DSI is committed to maintaining the highest standards of performance and reliability. Merit Brass will play a key part in our strategy for success moving forward because of their products, advanced technologies, support, and experience in the field," Randall concluded.

For more information visit meritbrass.com.

DSI chose Merit Brass' copper press fittings with distinctive VIPR technology that provides an external visual confirmation of a pressed fitting, so the contractor avoided missed pressed fittings that can derail projects.

AUTOMATING PROCESSES TO DELIVER TANGIBLE *Benefits*

with **PypeServer, Inc.** & **DILFO**

DILFO had already worked to modernize its fabrication process, but adopting PypeServer Inc.'s cloud-based workflow allowed them to do even more, demonstrably saving on labor and materials. As Brendan Myers, DILFO's director of operations, put it, "By automating processes, reducing waste, and enhancing productivity, the software has delivered tangible financial and operational benefits."

As one of Eastern Ontario's largest mechanical contractors, DILFO designs and builds complex systems for high-rise multifamily, institutional, and medical facilities. Headquartered in Ottawa, the second-generation family business has long embraced innovation to improve efficiency and accuracy in its prefabrication shop. To further streamline production and reduce waste, DILFO turned to PypeServer.

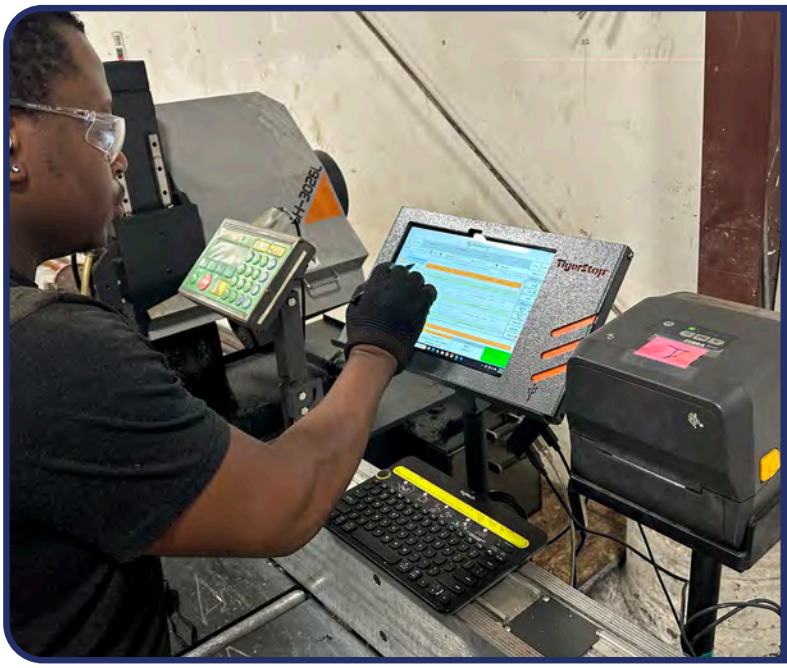
DILFO's prefabrication process begins in Revit, where risers and spools are designed in-house. Once modeled, DILFO uses PypeServer's Connect for Revit add-in to select parts for fabrication and send them to the shop using PypeServer's Cloud+. Cloud+ eliminates file transfers to shop machinery, tracks fabrication progress, extends tracking to the field with a mobile app, and keeps track of production schedules.

Once cut lists have been sent to the cloud, they are available to the fabrication stations in the shop. DILFO has deployed Lyte tool control software at three fabrication stations to date:

1. A manual saw for plastic materials
2. A custom plasma cutter for steel pipe
3. A semi-automatic bandsaw for grooved or threaded materials, fed by a TigerStop running Lyte software

At each station, Lyte nests all the parts in the cut list to minimize waste. As each part is cut, Lyte prints labels with text, images, Revit parameters, and QR codes and automatically updates each part's cut status in the cloud. The QR codes on the labels can be scanned at the assembly stations and in the field to track spool assembly, delivery to the field, and installation using the Cloud+ mobile field app.

"PypeServer's ability to optimize nesting cuts and integrate seamlessly with existing VDC [virtual design and construction] tools such as AutoCAD made it the ideal solution," Myers noted. "And the best part is, it just works—across all our machines, with minimal training."



DILFO's Panashe Nadziire uses PypeServer Lyte software to minimize waste in the fabrication process. As each part is cut, Lyte prints labels with text, images, Revit parameters, and QR codes and automatically updates each part's cut status in the cloud.

Myers continued, "PypeServer has proven to be a valuable addition to DILFO's operations," quickly delivering a strong return on investment by automating manual processes and increasing the shop's flexibility:

- Labor efficiency: DILFO saw increased throughput at cutting stations, which allowed them to reallocate one worker away from cutting tasks.
- Material optimization: Better nesting has cut down on scrap and saved on material costs.
- Paper reduction: Moving toward digital spool packages has streamlined documentation and reduced printing.

By implementing PypeServer Connect, Cloud+, and Lyte, DILFO has achieved meaningful gains in productivity and reduced costly waste. As the company moves toward full digital integration, PypeServer will remain a key part of its commitment to innovation.

For more information, visit PypeServer.com.

Exceeding STRINGENT STANDARDS

with **SLOAN** & **Murray Company**

To meet green building standards for a new basketball stadium, Murray Company Mechanical Contractors counted on SLOAN's sustainable products but also ensured close collaboration and coordination among all the "players" in the building process to secure the win. Murray Company made sure it could accommodate others working simultaneously; meet Americans with Disabilities Act (ADA), state, and LEED requirements; and ensure that the plumbing worked under peak demand.

A Sustainable All-Star

Opening its doors in August 2024, Intuit Dome is the state-of-the-art home of the National Basketball Association's Los Angeles Clippers. The arena, which can host over 18,000 visitors, is redefining fans' expectations for live experiences and changing the music and sports landscape in Los Angeles.

Built to exceed the most stringent sustainability standards, Intuit Dome is LEED Platinum-certified for building design and construction. With features that include a building-wide reclaimed water system and a nearly 6,000-square-foot Zero Waste Room, Intuit Dome was designed to support ongoing efforts to minimize its environmental footprint. At the heart of Intuit Dome's sustainable design are SLOAN's durable, water-saving restroom solutions, which are playing a key role in Intuit Dome's effort to meet and surpass California Green Building Code standards.

But to make a project of this magnitude come to life, Murray Company had to ensure the restroom installations went smoothly for the new arena to open on time. At the same time that the interior plumbing finishes were being installed throughout the area, the interior concourse floor finishes and exterior hardscapes were also being installed. As a result, fixtures had to be mobile at all times, with Murray Company moving around obstacles to get products to their final locations.

"I thank our Fab Shop for receiving, sorting, and carting such a high volume of fixtures in such an efficient manner," said Jonathan Rubin, project manager at Murray Company.

Murray Company worked diligently to ensure that ADA requirements were met. For example, they ensured that flush valves did not interfere with grab bars and that lavatory fixtures maintained the proper dimensions from the side wall. They also worked to make sure lavatories did not exceed a certain height, all while maintaining appropriate knee space clearances.

To support Intuit Dome's sustainability goals, Murray Company installed a wide variety of SLOAN's sensor-operated restroom products renowned for their water-saving capabilities. From Optima® EBF-415 Deck-Mounted Faucets and SLOAN® ESD-410 Deck-Mounted Soap Dispensers to Royal® 111 Exposed Manual Water Closet Flushometers and SOLIS® 8111 Exposed Sensor Water Closet Flushometers for use with reclaimed water, these products are helping Intuit Dome enhance water savings by minimizing unnecessary water usage—a critical consideration, especially in drought-prone California. In fact, SLOAN's reclaimed water flushometers alone are helping Intuit Dome save thousands of gallons of water every year.

"SLOAN's low-flow fixtures were chosen intentionally," said Frank Anderson, AVP, senior project manager for AECOM. "These products support our ongoing efforts to minimize water use, helping to preserve a critical resource in our region." Additionally, SLOAN's touchless faucets and flushometers help address restroom hygiene, reducing the spread of germs by minimizing contact with surfaces.

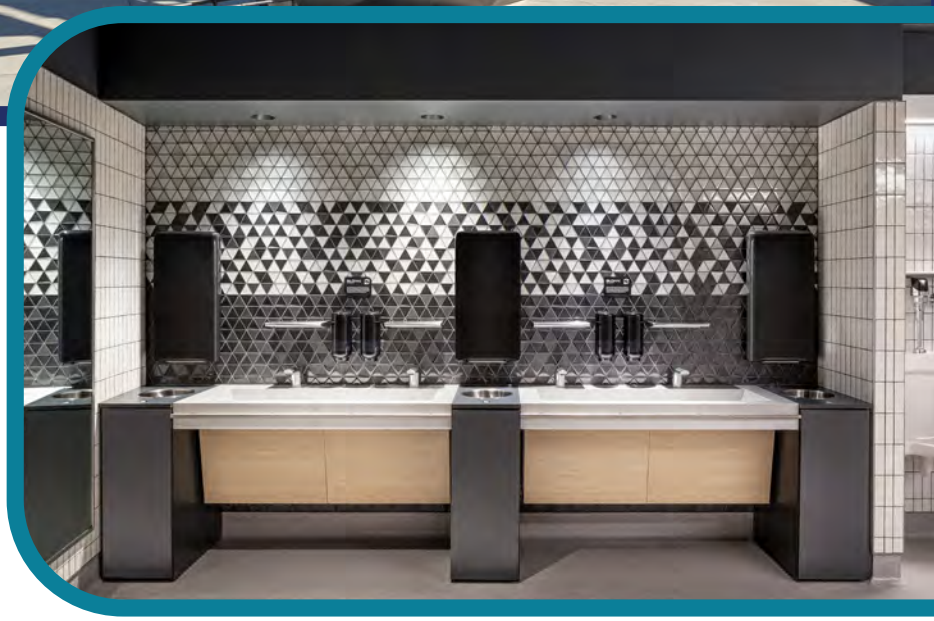
For Murray Company, installation required careful planning. SLOAN's custom sinks had a longer lead time than flush valves and faucets; the sinks were also 10' long and had to align side-by-side while leaving space for designed trash receptacles in between, so more planning and logistical considerations were required.

"Lavatories had to be installed with precision to avoid any conflict with other design elements as well as ADA requirements," Rubin said. "SLOAN's ability to provide custom lavatories with such consistency was very helpful."

High Traffic Demands

In high-traffic environments like the Intuit Dome, durability and reliability are paramount, so the arena specified SLOAN's Designer Series™ Weir Deck and Gradient Sinks. These sinks are engineered to withstand frequent use, which helps reduce maintenance costs and minimize downtime.

Murray Company relied on SLOAN's sustainable products to meet LEED and state green building standards, making the NBA's Intuit Dome a model of conservation.



Murray Company worked diligently to ensure that SLOAN's custom-designed sinks, faucets, and other products met ADA requirements and could stand up to high usage.

At the same time, SLOAN's Royal Flushometers are designed to combat the harsh conditions that reclaimed water presents. The durability of these products ensures they deliver clean, consistent performance under the demanding conditions of a bustling sports and entertainment venue. In addition, SLOAN's Optima Faucets produce minimal splashing—an important consideration for reducing cleaning time and enhancing the user experience in any commercial restroom.

With so many restrooms throughout the building, Murray Company needed proof that the building could withstand simultaneous high usage. That's why Murray Company worked alongside SLOAN during their test "Superflush" event to ensure proper functionality of all flush valves and faucets at a time when the system was being stressed to capacity.

Advanced Aesthetics

Intuit Dome's next-generation design aesthetic required restroom solutions that were not only functional, but also visually appealing. Featuring sleek designs and advanced technology, SLOAN's collection of restroom products seamlessly integrates into the arena's contemporary style.

For example, SLOAN's hands-free Optima EBF-415 Faucets are equipped with Bluetooth connectivity to wirelessly monitor faucet health and status, easily generate and share diagnostic reports, and quickly access product technical data, all from the facility manager's smartphone. In addition, SLOAN's Designer Series Sinks bring a clean and modern appeal to the commercial restroom, making a lasting impression where function and style are demanded. "The reliability and reputation of SLOAN were important factors, and its array of varying aesthetics gave us flexibility to meet our design vision," Anderson said.

Thanks to Murray Company's effective approach to coordinated installation and quality control, SLOAN's innovative restroom solutions are not only helping Intuit Dome hit its sustainability targets—they are also enhancing the visitor experience.

For more information, visit www.sloan.com.

STREAMLINING INVOICING *Skyrockets* REVENUE

with **ServiceTitan** & **L.J. Kruse Company**

Until two years ago, L.J. Kruse Company, a fourth-generation plumbing and HVAC shop in Berkeley, CA, was still using paper for invoicing. With ServiceTitan, the company's service side boosted revenue by $1 million. "I don't know how many companies are left on paperwork orders, but if there are any, you have to make the switch, and you've got to make it yesterday," said Will Kruse, vice president and service manager at L.J. Kruse Co. Switching to ServiceTitan "was night and day."

Piles of Paper

L.J. Kruse Co.'s frustration with its paper processes usually peaked every October. That's when Kruse and his team would rush to invoice all of their commercial and residential customers before Halloween—which marked the end of the fiscal year.

That task was never fun. "We'd have literal piles of invoices, which would represent tens of thousands of revenue dollars that would sit there," said Kruse. "We weren't emailing invoices. We were putting them in the mail. And we were literally losing invoices. It's a physical piece of paper that can get lost."

Invoices could sometimes be found in the kitchen. Or the warehouse. Or shuffled into a pile on a desk and completely forgotten. "[October] would be a fire drill of, 'What are we missing?'" Kruse said.

And when customers finally received their invoices, they could not pay electronically. That meant they were sending checks via mail or calling in their credit card numbers. "Sometimes, it would be a month or two before we'd see payment," Kruse said. Looking back, Kruse knows all of this "sounds crazy," he laughed. Especially now, with everything they can do with ServiceTitan.

Time for a Change

L.J. Kruse Co. has operated continuously since Kruse's great-grandfather started the company in 1916. Five years ago, the torch was passed to the fourth generation—Kruse and his brothers. That's when, after surveying the unscalable processes of their business, it was obvious that something needed to change. "But the hamstrings of being a four-generation company is, change is hard," Kruse said. "We ran into a wall of how to make that change... the path to get there was unclear."

That path became much clearer when ServiceTitan announced an integration with Viewpoint Vista, which L.J. Kruse Co. had been using for its accounting software. Soon after, the company went live with ServiceTitan in May 2023 and ditched their paper ways.

Kruse described some of his favorite features of the new system:

- **Dispatching**: When Kruse first started working at L.J. Kruse Co. 10 years ago, the company's dispatch board was "literally a bulletin board with stickies," he said. Kruse added a color-coded spreadsheet to keep things organized—but it was still chaotic. "It used to be that if two calls came in at the same time, the dispatchers would have to fight over who could get it on the board first." That's not happening anymore with ServiceTitan's dispatching capabilities.

- **Pricebook Pro**: Before they started using ServiceTitan, 99 percent of L.J. Kruse Co.'s service work was billed using time-and-material rates. Since they started using ServiceTitan's Pricebook Pro, they switched to flat-rate service pricing. "That's allowed us to increase revenue, increase margins, and turn around quotes to customers a lot (faster)."
- **Reporting**: ServiceTitan's robust reporting features have helped L.J. Kruse Co. better align with MCAA best practices. "So much of what we do, day-to-day, is data-driven," Kruse said. "[Now,] I can clue into an individual job, even if it's a one-hour job. I can know exactly how we're doing on that job. That's been huge, [and it allows us] to adjust our prices accordingly. Having the data that ServiceTitan provides has been huge in growing the [service] department and being able to follow some of those best practices."

Streamlined Invoicing

Winter is usually the busiest time of year at L.J. Kruse Co., because they do a lot of heating and boiler work. Even so, thanks to ServiceTitan, the service team is getting invoices out within 24 hours.

"There's a report in ServiceTitan that we use a lot—the old jobs report—which basically tells you what jobs are open that haven't been completed," Kruse said. "We're running that on a monthly basis. We still find things that are floating out there that aren't closed out, but we're catching them as we go, instead of having a stack of $10,000 that we never billed.

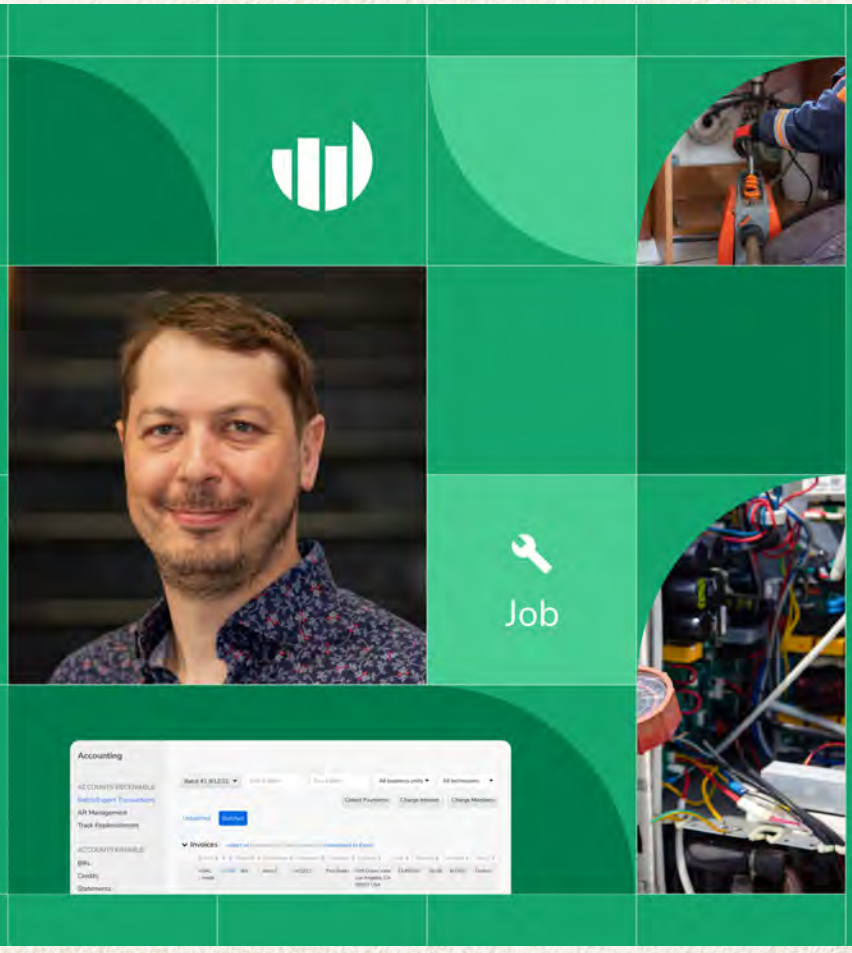
"That headache basically went away with ServiceTitan," Kruse noted.

Both Kruse and customers also love the customer portal and the ease of payments. "I'll send out a batch of unpaid invoices... and we will get half or more of those paid that night." As a result of using ServiceTitan, L.J. Kruse Co. increased revenue by $1 million on the service side, and they have grown the number of technicians from eight to as many as 12.

Looking ahead, Kruse wants to continue to grow the service side and the commercial HVAC department. He is also excited to see where ServiceTitan goes. "[ServiceTitan] started as a residential-focused company. But it's clear to me that they put a lot of money, effort, and time into growing the commercial side of things.

"You can tell that ServiceTitan cares about the future and their adaptation of AI [artificial intelligence]," Kruse observed. "It's an exciting software to be a part of."

For more information, visit www.servicetitan.com.



"I don't know how many companies are left on paperwork orders, but if there are any, you have to make the switch and you've got to make it yesterday. (Switching to ServiceTitan) was night and day."

Will Kruse
VP and Service Manager
at LJ Kruse Co.

KRUSE Plumbing Heating Cooling
A Century of Service

Designing for Success

with **Victaulic** & **Heffron Company**

Thanks to Victaulic's grooved mechanical pipe-joining technology, Heffron Company overcame constraints of scale, space, and time to meet the demand for a cutting-edge 260,000-square-foot life sciences facility in Maryland. With patient safety and global medicine supply chains depending on rapid completion and a reliable system, Heffron Company took on the ambitious project and its aggressive nine-month schedule.

Heffron Company was tasked with installing the complex HVAC systems throughout the facility, including 16" and down-chilled water and condenser water lines. In addition, Heffron needed to accommodate significant spatial constraints while coordinating with the other trades.

"This is a marquee project for Heffron due to the nature of the schedule and teamwork required to have a successful project," said Jon Weinberg, senior project manager at Heffron. "Because of the complexity and size of the systems, we had to find a solution that would dramatically accelerate our installation process without compromising quality. The schedule simply didn't allow for conventional approaches."

Engineering the Impossible Schedule

The sheer magnitude of the facility project presented Heffron with a daunting task: install more than three-and-a-half miles of pipe and nearly 5,000 fittings in less than nine months. Traditional welding methods presented significant concerns for meeting the short timeline. Welding would have required spending significantly more time per fitting, getting hot work permits, setting up a fire watch protocol, and completing extensive inspection procedures, ultimately extending the installation time and creating coordination challenges with other trades working in the same spaces.

Heffron partnered with Victaulic to compress the schedule, making the strategic decision to implement a QuickVic™ system with Installation-Ready™ 107V Rigid and 177N Flexible Couplings, QuickVic grooved fittings, and grooved butterfly valves and specialties. Opting to use a Victaulic grooved system eliminated time-consuming welding processes while the Installation-Ready technology further streamlined the installation workflow, creating significant efficiency gains while also increasing installation confidence.

"The [Style 107V] product from Victaulic was a game-changer for this project," emphasized Don Webster, a 30-year Heffron veteran and lead superintendent on the project. "It enabled us to get a lot of production in a short amount of time."

Victaulic's Installation-Ready technology arrives pre-assembled with no loose parts, meaning contractors only need to stab couplings on pipe ends and tighten bolts to secure them. This simplified installation approach was critical to keeping Heffron's project on schedule. The flame-free joining method also eliminated the need for burn permits, fire watch, and welding screens, further compressing installation and commissioning processes in areas where multiple trades were working simultaneously.

Shrinking the Expansion Loop Footprint

As Heffron and Victaulic began working together, they identified significant spatial challenges that threatened to turn into major issues if left unaddressed. "We had some tight areas within the ceiling that we recognized early on

Victaulic's Installation-Ready technology significantly expedited Heffron Company's installation process, and the visual indicators of proper installation helped ensure high-quality work.

would be a challenge using the basis of design, which was to have expansion loops throughout the floors," explained Weinberg.

With multiple trades competing for limited ceiling space, traditional expansion loops would have created serious coordination issues. Traditional welded expansion loops require substantial physical space, creating a critical space allocation problem in ceiling areas already crowded with ductwork, electrical conduits, and mechanical systems.

The Victaulic Piping Movement Design (PMD) group took a holistic approach to solving the layout challenge, examining the entire system rather than just individual components. After reviewing the original specifications and analyzing the natural layout of the pipe, the PMD team provided tailored recommendations for off-the-shelf solutions that completely eliminated the need for expansion loops in multiple locations through the strategic placement of flexible couplings. This concept not only reduced the system's overall footprint but also yielded significant cost and material savings.

In areas where expansion loops were still necessary, the PMD team recommended using grooved expansion loops, reducing the footprint of the design by as much as 80 percent compared with traditional welded designs. This comprehensive approach to system optimization exemplifies how the PMD group designs solutions specifically tailored to each project's unique requirements and specifications. It also reduced material requirements and installation complexity compared with traditional methods, allowing Heffron to allocate resources more efficiently throughout this large-scale project.

Quality Control at a Glance

For a critical life sciences facility, system reliability and quality control are non-negotiable. The grooved mechanical pipe-joining system provided significant advantages through its inherent repeatability and visual verification capabilities.

The Style 107V coupling's shift-limiting slant pad design draws pipe ends into alignment as housings are tightened together. When properly assembled, the pads visibly "lock up," allowing contractors to see whether a joint is correctly installed. This visual inspection ensured consistent quality across thousands of connections.

Unlike welded systems that require specialized inspection techniques, the visual verification process allowed supervisors to quickly confirm proper installation across large areas. Using this feature, Heffron Company streamlined the quality control process while maintaining the exacting standards required for a critical life sciences facility.

Success by Design

Construction on the facility was completed on time, with every project milestone met successfully. Heffron Company met every milestone of its scope, an accomplishment that would have been extremely challenging to achieve with traditional methods, given the project's tight timeline and spatial constraints.

Heffron Company strategically placed flexible Victaulic couplings to accommodate movement within the piping system of a cutting-edge life sciences facility, eliminating the need for expansion loops.

"Early involvement was actually in abundance," said Weinberg. "Victaulic helped us analyze expansion requirements and identify where we could eliminate loops entirely. They made routine site visits to ensure we had everything needed and stayed involved throughout implementation. Their team helped prevent supply chain disruptions and quickly resolved any installation questions that arose."

Through this strategic partnership with Victaulic, Heffron significantly reduced the expansion loop footprint, expedited installation times, and realized substantial cost savings compared with traditional methods. The grooved coupling technology's visual verification feature ensured consistent quality across thousands of connections, while the dynamic movement capabilities of the grooved system efficiently accommodated thermal expansion in tight spaces.

For more information, visit www.victaulic.com.

Streamlining Weld Tracking Processes

with **UMC** & **Stratus**

Faced with the challenge of implementing a weld tracking program on short notice, UMC needed a solution that would allow for both shop and field weld inspections without reverting to cumbersome, outdated paper methods. Stratus, a software platform designed to streamline fabrication processes, was the answer.

Darren Young, construction technology director at UMC, described a familiar scenario in the industry: receiving last-minute inspection requests and having to scramble for documentation. The conventional approach required project documentation to be manually compiled, which is incompatible with the demanding nature of modern inspections, especially when the pace of work demands instant adaptability.

Using Stratus, UMC eliminated most of its paper-based procedures. Stratus facilitated a seamless transition to digital by accommodating all necessary fields and enabling UMC to track inspections efficiently. Young's team collaborated with a third-party inspector who embraced the digital change. The shift required defining outline requirements, such as tracking fields and assigning task responsibilities, which Stratus allowed UMC to implement effectively.

A significant advantage was the ability to log data directly into Stratus, ensuring that reports and inspection records remained intact and unalterable. The solution involved numbering weld elements uniquely to avoid duplication, a common problem in traditional tracking. The inspector, through access to the Stratus system, could document detailed requirements and work in tandem with the shop personnel.

Additionally, UMC worked to configure the software to suit their project needs, setting up weld tracking reports and adjusting filtration settings. This customization was crucial, allowing UMC to filter and generate reports only for welds belonging to specific assemblies or packages.

UMC's experience demonstrates how embracing digital strategies like Stratus can enhance efficiency and reduce dependency on paper-based workflows in construction. Young's experience highlights how even unexpected challenges can be addressed with the right combination of technology and teamwork. The move toward a paperless system not only modernized UMC's workflow but also increased the accuracy and reliability of their weld tracking processes.

For more information, visit www.stratus.build.

With Stratus, UMC increased the accuracy and reliability of their weld tracking processes.

Optimizing Pipe Quality to Improve Efficiency

featuring **Wheatland Tube**

In an evolving industry where quality, labor shortages, safety, and environmental impact are top-of-mind, mechanical contractors are faced with critical decisions when specifying materials for their projects. Choosing domestically manufactured standard pipe over their imported equivalents can increase the quality, safety, and sustainability of any project.

Risks of Imported Pipe

Imported pipe can come with issues that can result in significant waste and pose compliance challenges. Common concerns include poor weld quality and early-onset corrosion, which creates red and white rust that may lead to UL violations. Beyond the low quality of the pipe itself, imported standard pipe may be produced in facilities that are not environmentally friendly or that use unethical labor practices. The high carbon footprint associated with overseas shipping further underscores the environmental cost of imported products.

Domestically Made Solutions

When you choose domestic pipe, you are choosing to use widely available products with the service and support that you need. By sourcing pipe products domestically, you have the opportunity to procure custom lengths and end finishes to avoid waste and work more efficiently on the jobsite. With more than 350 combinations of finishes, end treatments, and custom lengths, Wheatland Tube is the top domestic manufacturer of high-quality standard pipe.

In addition, Wheatland Tube's new HDZ Coat provides long-lasting protection that prevents early white rust and eliminates microbial contamination. Their proprietary, in-house, five-step galvanization process guarantees a finish with no dross or debris that meets the galvanization requirements of new ASTM A135, A53, and A795 standards.

With domestically manufactured products like Wheatland Tube pipes, you can procure custom lengths and end finishes to avoid waste and work more efficiently on the jobsite.

Relying on domestic manufacturers also offers other benefits:

- Total supply chain control: Working with domestic manufacturers gives you more control of the ordering process. Wheatland provides manufacturer-direct services, such as dedicated sales representatives, alongside technical and logistics support. Advanced commerce systems like electronic data interchange (EDI), automated inventory management (AIM), and Wheatland's Z-Commerce online portal help minimize lead times, mitigate unexpected supply chain events, and result in faster fulfillment.

- Technological advancements: Domestic manufacturers use advanced technology to optimize efficiency. For example, Wheatland Tube's products are made in a state-of-the-art facility in Warren, OH. Their Matter Automated Warehouse minimizes manual handling throughout the production, bundling, and storage process, making the facility one of the safest in the world. Additionally, by storing products in a controlled environment and streamlining operations with full automation, products are delivered free of rust and damage and ready to install, with significantly shortened lead times.

- Environmental advantages: According to a 2023 report, the U.S. could cut approximately 11.3 million metric tons of carbon dioxide emissions per year—about 13 percent of the total annual emissions of the American steel industry—if imported steel were produced domestically.* Wheatland pipe steel comes from domestic suppliers. They are committed to reducing emissions from their factories by exceeding environmental regulations and investing in technology that allows them to manufacture products more efficiently and cleanly. Buying domestically produced products contributes to local economies and to the future of the planet.

Choosing and installing domestic pipe from companies like Wheatland not only ensures quality and reliability, but also lets you take pride in supporting local industries and creating projects you can truly stand behind.

For more information, visit www.wheatland.com.

Expanding & Improving THE COMMUNITY

with **Trane** and **Brandt Companies**

Brandt Companies is familiar with the unique challenges and strict requirements around working on a correctional facility, so when the opportunity to renovate and expand the Rockwell County (Texas) jail arose, Brandt chose Trane. "It was very intentional that we wanted to work with Trane," said Scott McMillan, senior mechanical engineer at Brandt. "Trane has great resources on the controls side and smoke control projects, in particular. Ultimately, Trane delivered and was instrumental in the success of this job."

Expanding and Improving

Rockwall County, just outside Dallas, is growing fast. Unfortunately, its jail population is growing as well. Initially built in 1988 and expanded in 2000, the facility was hovering between 90 and 95 percent capacity, limiting the staff's ability to manage it. In addition, the old building needed frequent maintenance.

"The existing jail was kind of a hodgepodge of about three or four different iterations, and some of those were in constant need of repair," said Rockwall County Sheriff Terry Garrett. "We were continuously repairing the same items over and over. Also, when it's crowded, there's going to be more tension. There are more inmates in a cell and no room to move them if they're not getting along."

In 2018, Rockwall County voters approved a $50 million bond to expand the detention center. Completed in fall 2022, the 83,000-square-foot addition doubled the number of beds and added natural lighting, recreational yards, vocational and classroom spaces, offices, a larger kitchen, and improved medical facilities, including behavioral health care.

"We have quite a few mental health programs, and that's an important part of our mission," said Garrett. "Many of our inmates have some type of mental health issue, which could be drug-induced or some form of psychosis. They have trouble functioning in society, and we have worked to help them with that."

Commitment to Community

The jail redevelopment project was a perfect fit for the Brandt Companies, a design-build contractor based in Carrollton, TX, near Dallas. This would be the first design-build jail project ever completed in Texas, and the Brandt team was excited to take that on. Also, the correctional facility is a vital community asset. Brandt saw an opportunity to enhance public safety and support inmate rehabilitation.

Community has always been a major piece of Brandt's mission. Since its founding in 1952, the company has made numerous commitments, both through its contracting work and volunteer spirit. For example, over the past decade, Brandt has forged a major partnership with Special Olympics Texas, which provides year-round training and competitions for children and adults with disabilities.

"Our company is passionate about providing opportunities for our state and local community," said Chad Salge, vice president of virtual design and engineering at Brandt. "The Rockwall County Correctional Facility seeks to rehabilitate and reintegrate inmates back into the community, and that had a lot of significance for our team. Projects like the correctional facility and our support for Special Olympics—they're all part of our efforts to build community."

Unique Challenges

The correctional facility upgrade was spearheaded by Rockwall County Commissioner Dennis Bailey. The owner's representative, Broaddus, selected the general contractor, design-build team Adolfson and Peterson, and tapped Brandt as the mechanical, electrical, and plumbing contractor.

"We asked Brandt early on to come in and be kind of a multi-contractor," said Bailey. "They handled the HVAC but also the plumbing and a lot of other issues."

The detention facility offered several challenges for Brandt. First, equipment had to be both effective and tamper-proof, ensuring no pieces could be used for self-harm or to hide weapons. Also, because inmates are not allowed to freely leave during an emergency, the Texas Commission on Jail Standards (TCJS) has strict rules on removing smoke and other agents from the building.

Building or renovating a jail poses unique challenges, so Brandt Companies relied on Trane's products to successfully update the Rockwell County Detention Center, winning two industry awards for their efforts.

"A jail is certainly not a simple place to build," said Bailey. "You've got the state overseeing everything you're doing, and you have to get approvals before you even get into the building."

Still, Brandt's decades of experience as a design-build contractor, plus its internal expertise in both correctional facilities and state requirements, helped the company anticipate what was needed to complete the facility and gain TCJS approval.

"We knew the challenges inherent to this type of project—the security aspects and how you build things," said McMillan. "We definitely had to do things differently, down to the grilles, security bars, and ductwork. It all points back to security and life safety, which made it a really unique project."

The Smoke Test

Perhaps the greatest challenge was ensuring the systems detected and removed smoke within the state's very stringent requirements. The TCJS guidelines are clear about how the equipment and controls must operate during a smoke event.

The Brandt engineering and commissioning teams worked closely with the fire alarm installer and Trane to help improve the sequence of operation, which was critical to the project's success. As they encountered problems during months of preliminary testing, the team would make the necessary adjustments and test again. This ongoing process continued until it produced repeatable results.

"We spent months trying to find ways to break the system," said McMillan. "We were lighting smoke candles in buckets in different parts of the room, trying to find ways we could fail the system. The rules are quite strict: we have 60 seconds to detect the smoke and 15 minutes to clear it. If we can't do that, we don't pass the test, and we can't occupy the building."

For the Brandt team, Trane was the obvious choice for equipment and controls because they shared a determination to deliver great results regardless of the challenges. Because it was a design-build job, Brandt wanted all systems to be fully integrated and thoroughly tested, and having collaborators with that same attitude was critical. In addition, Brandt's experience with Trane's team on similar projects inspired tremendous confidence.

The TCJS final inspection and testing was challenging. All parties were on site to troubleshoot problems. It is not uncommon, despite months of testing and commissioning, for the team to hit a snag during the final tests. "The team anticipated what the inspector's questions were going to be and had the manpower to fix all the problems before they left," said Bailey. "It was a great team effort."

The TCJS inspectors planned to be at Rockwall for several days but, with the rigorous effort from all participants, wrapped everything up in one (long) day.

For their diligent work on the jail, Brandt was awarded the TEXO Distinguished Building Award and an Associated General Contractors-Texas Building Branch Award.

A New Detention Facility

Jails are unique facilities because there are people inside trying to break things. Since the facility opened, there have been a few incidents—someone tried to remove the plates on the intercom system—but overall, the facility has worked out well.

"Anytime you get into a new facility, you're going to have a little bit better sense of ownership and morale," said Garrett. "Instead of being in an old, dank, dark place with a lot of maintenance issues, we have this nicer, larger space, which helps us do our jobs."

Even though the facility has been open for nearly two years, the project is not "over" for Brandt. The company is committed to maintaining the detention center long into the future.

"We want to serve the client through the project's entire lifecycle," said Salge. "For the Rockwall correctional facility, we design, build, and maintain it. And then, further down the line, when they need additional renovations, we have all the historical IP [intellectual property] to serve them."

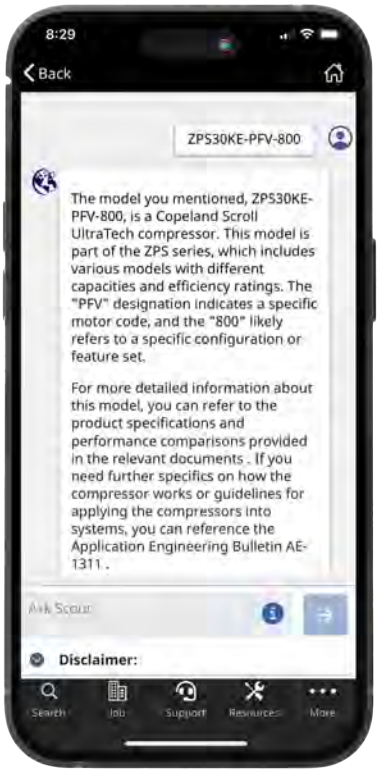
For more information, visit www.trane.com.

TRANSFORMING INSIGHTS INTO ACTION WITH *Artificial Intelligence*

featuring **Copeland Mobile**

Today's HVACR technicians rely on innovative, user-friendly tools like mobile apps to increase productivity. Copeland Mobile, one of the most trusted apps in the industry, recently added a new artificial intelligence (AI) feature, Scout. Designed as the ultimate field companion, Copeland Mobile's cutting-edge solution now leverages AI to transform insights into action, helping technicians quickly diagnose, troubleshoot, and resolve issues in the field.

A shortage of HVACR technicians means there are fewer technicians into the field to solve problems. With many tenured service technicians reaching retirement age, their successors may not have the chance to benefit from their knowledge and experience. Scout AI's powerful search capabilities provide fast access to an ever-expanding knowledge base that improves efficiency and equips users to solve complex challenges quickly and accurately.



Using the Copeland Mobile app, technicians can type or speak a question for Scout AI and get answers immediately to help them resolve issues in the field quickly and definitively.

The user-friendly AI chatbot draws from 100 years of Copeland expertise and three decades of an online product information database to deliver valuable insights in seconds. From technical bulletins, educational documents, videos, and content resources to product availability and warranty information, Scout AI ends fruitless web searching. Not only does it summarize answers to your questions, but it also provides links to specific resources for deeper exploration.

With Scout AI, you can scan a barcode on any Copeland product (or most competitive nameplates) to view its specifications, for example. You can ask questions, such as, "Why are these two lights blinking on the controller?" or "What does this error code mean?" On the Copeland Mobile app, you can type in your question or use the microphone for hands-free convenience.

Scout AI answers your troubleshooting questions with step-by-step guidance, pointing you to additional resources within Copeland Mobile to help quickly resolve issues, saving time and potentially eliminating the need to call for backup or search for additional information. By enabling technicians to troubleshoot issues accurately, Copeland Mobile with Scout AI can minimize future failures and reduce callbacks.

Copeland Mobile also allows you to cross-reference replacement parts, review up-to-date product inventories, and find where to buy at local wholesalers. Having this kind of information at hand helps you minimize delays and complete projects promptly and efficiently—whether you are on a roof, in a machine room, or at a customer's residence.

The app is free to download from the Apple App Store and Google Play or from Copeland's website. Since Scout AI launched in early 2025, downloads have increased, reflecting rapid adoption among field technicians.

For more information, visit www.copeland.com.

DELIVERING *lasting* VALUE

with **Daikin Applied** and **Bartingale Mechanical**

Speed and efficiency were top priorities for Bartingale Mechanical in renovating a Wisconsin jail, and the company successfully installed a customized Daikin Applied chiller in just one week, with inmates remaining in place throughout the project. Daikin's ability to deliver the unit on time, despite the challenges of the COVID-19 pandemic, helped the team avoid delays with using the specialized crane and contributed to a smooth and successful startup.

Originally built in 1949, the Chippewa County Law Enforcement Center has evolved through decades of renovations to meet the demands of today's public safety operations. The three-story facility supports up to 201 inmates and plays a crucial role in enhancing community safety while providing a good housing environment for individuals in the jail.

However, the facility's aging chiller system, primarily serving a 2001 addition to the building, was on its last leg. Facing costly repairs, the building management team chose to replace the unit entirely and extend cooling service to a portion of the building built in the 1950s. They called on Rick Anderson of Apex Engineering to design a smart, efficient solution under tight constraints, including limited space, noise sensitivity, utility rebate requirements, and a narrow installation window.

To bring the project to life, Apex partnered with Bartingale Mechanical for installation and Gary Krebsbach of SVL to identify the right equipment. Together, they selected the Daikin Applied Pathfinder® (AWV-016A), a fully configurable air-cooled screw chiller built for performance and precision.

The Pathfinder stood out for its ability to meet all the project's requirements. It delivered high capacity, low sound output, and energy efficiency while maintaining compact physical dimensions. Daikin's advanced selection software was used to create a customized configuration that fit the building's existing steel platform without requiring structural reinforcement or electrical upgrades.

By optimizing the evaporator pressure drop, the team was also able to reuse the facility's existing circulating pumps. This approach saved time and cost while minimizing unnecessary replacement of still-functional equipment.

The real advantage of the Pathfinder was its flexibility. Its modular design allowed the team to combine specific compressors, evaporators, and fans to suit the exact needs of the project. Krebsbach described this as a major benefit, calling it "a truly engineered solution that's far superior to a typical off-the-shelf chiller."

The unit's performance is driven by Daikin's Variable-Volume Ratio (VVR®) compressor and variable-speed electronically commutated motor (ECM) fans, which work together to achieve excellent energy efficiency and very low sound levels. These features made the Pathfinder an ideal choice for a sensitive setting.

While initial project bids focused on first cost, the engineering team looked further. They used Daikin's EnergyAnalyzer 3 software to model system performance over 25 years. The analysis revealed that the Pathfinder offered significant long-term benefits. It qualified for an additional $5,000 in utility rebates and provided better part-load efficiency compared with competing systems.

The projected lifecycle cost savings of $50,000 made it the clear financial choice and underscored the importance of considering total cost of ownership rather than just the initial price tag.

The custom-designed Pathfinder chiller was installed in just one week, staying well within the project's timeline. Since becoming operational, the unit has consistently exceeded expectations in both performance and reliability.

This project illustrates how contractors like Bartingale Mechanical can count on Daikin Applied products and software to meet demanding timelines and deliver lasting value.

For more information, visit www.daikinapplied.com.

Fueling Efficiency Through Automation

with **SIEMENS** & **Marble Distilling Co.**

Because SIEMENS automation equipment and software worked well to optimize room temperatures efficiently in their boutique inn, Marble Distilling Co. owners were open to a novel use of the technology to improve the distilling process—and they were rewarded with a 75- percent increase in efficiency as a result. The Carbondale, CO, destination is home to a craft distillery, tasting room, private club, and inn—all designed to make every guest feel as though they are a part of Marble's mission to become the most sustainable, zero-waste distilling operation in the world.

Owners Connie Baker and Carey Shanks have worked shoulder-to-shoulder with SIEMENS Solution Partner, Holbrook Service, to turn their vision for a sustainable future into the reality of running an emerging distillery. Over several years, they have taken a phased approach to optimizing their operation.

For example, Holbrook and Marble have been perfecting the design and operation of Marble's water energy thermal system, which captures and reuses both water and heat generated through the distilling process. At the same time, they have focused on maximizing comfort and energy efficiency throughout their inn. They have also deployed enhanced disinfection technologies as well as a whole-systems approach to optimizing and automating their distilling process and controls.

Improving the Distilling Process

Through this partnership, Holbrook's controls manager, David Carpenter, recommended broad-sweeping solutions to achieve the distillery's objectives. Carpenter explained that SIEMENS automation equipment and software are critical to optimizing all aspects of the Marble operation. "We have had Desigo DXRs controlling fan coils for guest rooms and Desigo Control Point as the guest interface for their room temperature. And now, we have added the Desigo Automation PXC4 controller to run their distillery equipment," said Carpenter.

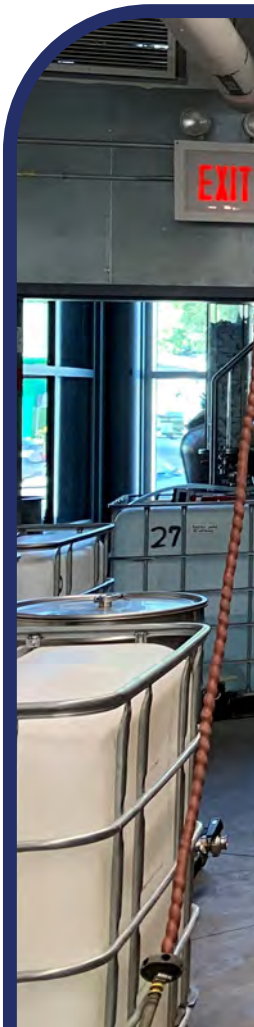
The Desigo PXC family of controllers integrate with a full range of open building automation platforms to deliver increased data processing power and memory. These devices offer flexible control and intuitive engineering with the single, easy-to-use ABT Site commissioning tool.

Typically, the Desigo Automation PXC4 controllers are deployed within the building automation system to unlock efficiencies, improve decision-making, and sharpen building operations. But for Marble, Carpenter took a nontraditional approach and applied the PXC4s to automate the distillery equipment.

"The PXC4 controllers are so easy to program. Even with a unique application that required pulling in multiple valves and actuators and rerunning conduit, the programming in ABT Site essentially took one day," Carpenter said. "We did a startup and ran the stills right away. All it took was tuning the PID [proportional integral derivative] loops and we were set in a matter of days."

Automation Saves Time, Energy

Carpenter continued, "It's all about resource conservation. We're using the PXC4 controllers for the distilling process, controlling and monitoring water source heat pumps, valves, and actuators." This setup, in combination with a Desigo Control Point panel installed next to the finish still, provides much tighter control along with performance data.



The distilling process encompasses nine fermenters, a mash tun, and four dozen valves. Baker noted, "To manually control this process with all this equipment would have been impossible. But thanks to the work we've done with SIEMENS solutions and Holbrook, it's fully automated—and I can see everything happening from my phone, too."

At the end of the day, Carpenter said, real-time data visualization has enabled control over the distilling process to within three-tenths of a degree deadbands. "The graphs are right on the Control Point panel to see history and trends, and Connie can see when to make cuts in real time. With the PXC4, we've reduced the number of runs through the still they need to get to the required proof."

Increased Efficiency

Before the new controls strategy and equipment was installed, Marble needed to run vodka through the still five times to achieve 190 proof, which took approximately 35 hours per batch. Today, the efficiencies made possible by the PXC4 controller mean Marble's vodka needs to run only one time through the still.

"We're operating at 25 percent of what we were before, which means that the PXC4 saves us an additional 200 million BTUs per year, or about 20 percent in annual cost savings—on top of what was already a very efficient system," said Shanks. "It's a huge improvement in energy savings."

Adding the PXC4 to its distilling process has enabled Marble to triple its output without adding staff or equipment—and they are setting a new industry standard for sustainable distilling.

Baker said, "We're so excited about how the PXC4 controller gives us tremendous power in how carefully we can watch things. It's truly amazing how one piece of equipment can help us pay so much more attention to runtimes, temperatures, outputs, etc., so we can cut our distillation times and energy use."

Sustainable Business Model

Marble appreciates how the Desigo Control Point makes their distilling process data readily visible to customers who come to tour the facility. "When we run tours in the distillery, the Desigo Control Point panel is prominently installed on the wall," Baker said. "We can flip through the screens and show people how SIEMENS solutions are key to our sustainability and how everyone here is helping us save the planet, one bottle of vodka at a time."

Holbrook Service has also relied on Desigo Automation solutions in ways that help Marble avoid using fossil fuels for preheating. Baker explained, "We fill our mash tun with 50° F water and then reuse water from our other processes to heat that water up to 110° F without using fossil fuels or dissipating heat. And we don't need a chiller either—which is rare for a distiller."

As they continue to discover new ways to further conserve natural resources and optimize their distilling processes, Shanks noted that the team has been taking their lessons learned and best practices on the road. "Other distillers can take what we've learned and replicate it within their own existing processes to join us on our journey of saving the planet," he said.

For more information, visit www.siemens.com.

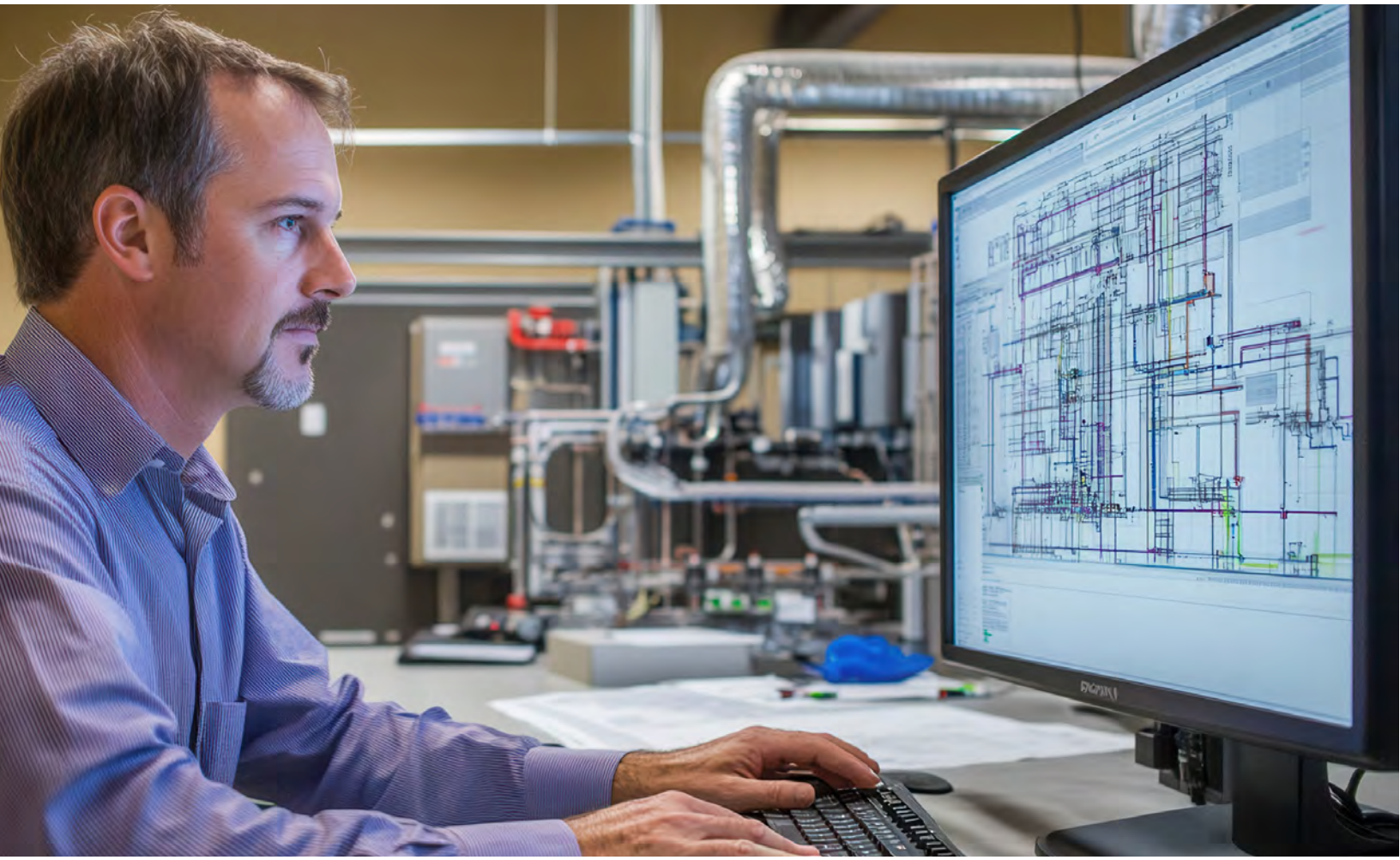
Adding the SIEMENS PXC4 controller to its vodka distilling process has enabled Marble Distilling Co. to triple its output without adding staff or equipment, while dramatically cutting energy use and costs.

CREATING ATTRACTIVE COST ESTIMATES IN

Creating clear, competitive, and professional plumbing estimates is key to securing projects. Whether it's small installations or large commercial projects, the accuracy and presentation of your estimates can set you apart in the highly competitive plumbing industry, which has more than 70,000 contractors in the United States alone.

As materials and labor costs fluctuate, it's essential to stay ahead of the curve by using the best tools and strategies. Below, McCormick Systems, Inc. offers eight ways to improve your plumbing estimates and win more projects.

1. **Use a Trade-Specific Estimating Database**
   A general estimating tool may overlook the specifics of plumbing, such as material and labor requirements. For instance, a commercial restroom renovation requires special assemblies such as PEX or copper pipe installations, backflow preventers, and fixtures that comply with Americans with Disabilities Act requirements. Trade-specific estimating software like McCormick's ensures these details are factored in, reducing costly oversights.



Plumbing estimators take advantage of McCormick's trade-specific estimating and takeoff software to craft accurate estimates quickly, increasing their competitive advantage.

Eight Ways

featuring **McCormick Systems, Inc.**

2. **Build Strong Relationships With Material Suppliers**
   Fluctuating material costs and delays can affect your estimates. Strong relationships with suppliers can lead to better pricing and timely delivery. For example, a supplier's bulk discounts on copper pipes can improve your bid for large-scale plumbing projects. Real-time pricing updates through estimating software can further enhance accuracy, allowing you to adjust bids as prices fluctuate.

3. **Factor in Labor Costs Accurately**
   Labor is a significant portion of any estimate. For more accurate bids, account for wage rates, local labor regulations, and job complexity. In certain settings, such as a hospital buildout requiring specialized medical gas piping, additional labor costs should be reflected in your estimate. Construction estimating and takeoff software allows you to integrate up-to-date wage rates directly into your bids for streamlined estimating.

4. **Account for Permit and Compliance Costs**
   Many plumbing projects require permits, inspections, and compliance with local plumbing codes. Including these costs upfront prevents unexpected expenses. For example, when bidding on a multistory office building, include the cost of backflow preventer testing and certification. Properly factoring in compliance costs will help avoid cutting into your profit margin later.

5. **Use Takeoff Software for Precision**
   Manual estimating methods leave room for error. Takeoff software like McCormick's ensures accuracy by quantifying materials, measuring pipe runs, and identifying fixture requirements directly from blueprints. For a hotel plumbing installation, for instance, digital tools can quickly calculate the number of toilets, sinks, and water heaters needed per floor, reducing the risk of over- or underestimating.

6. **Capitalize on Templates and Pre-Built Assemblies**
   Estimating from scratch can be time-consuming. Pre-built templates and assemblies streamline the process, ensuring consistency and accuracy. For example, selecting a "standard sink installation" assembly will automatically include necessary components like sinks, supply lines, and labor costs, which helps speed up the estimating process for large-scale projects.

7. **Prepare for Supply Chain Challenges**
   Material shortages and delays are common in the plumbing industry. Anticipate these challenges by factoring in alternative suppliers and substitute materials in your estimates. If your supplier is delayed on PVC fittings, for instance, your estimate will already specify an alternative, such as cast iron, and the adjusted pricing and installation time. Regularly tracking available inventory ensures your estimates are based on the most current data.

8. **Automate Pricing Updates to Stay Competitive**
   Material prices for copper, PVC, and other plumbing materials change frequently. Automated pricing updates in estimating software from McCormick and others enables your bids to reflect the most current prices, keeping you competitive without sacrificing margins. Consider a multiphase municipal water system upgrade, for example: automated updates help adjust the estimate if material costs rise during the course of the project.

The Power of Accurate Estimates

A well-structured estimate is key to building client confidence and securing more work. By clearly presenting costs—broken down into materials, labor, and permits—you establish transparency from the outset.

Including project timelines, warranties, and service terms reinforces your professionalism and attention to detail. Refining your estimating process through digital tools and supplier relationships helps you create more competitive, accurate bids. These resources allow you to present comprehensive proposals and position your business as the go-to plumbing contractor for any job.

For more information, visit www.mccormicksys.com.

MAXIMIZING WELDER WORKFORCE WITH *Automation*

featuring **Novarc Technologies, Inc.**

To combat the shortage of skilled labor in the welding industry, Novarc Technologies, Inc. recently launched a real-time vision processing system: NovEye™ Autonomy (Gen 2), the world's first artificial intelligence (AI) machine learning program for welding. The system constantly improves weld quality based on data collection and model enhancement to maximize productivity and deliver the highest quality welds.

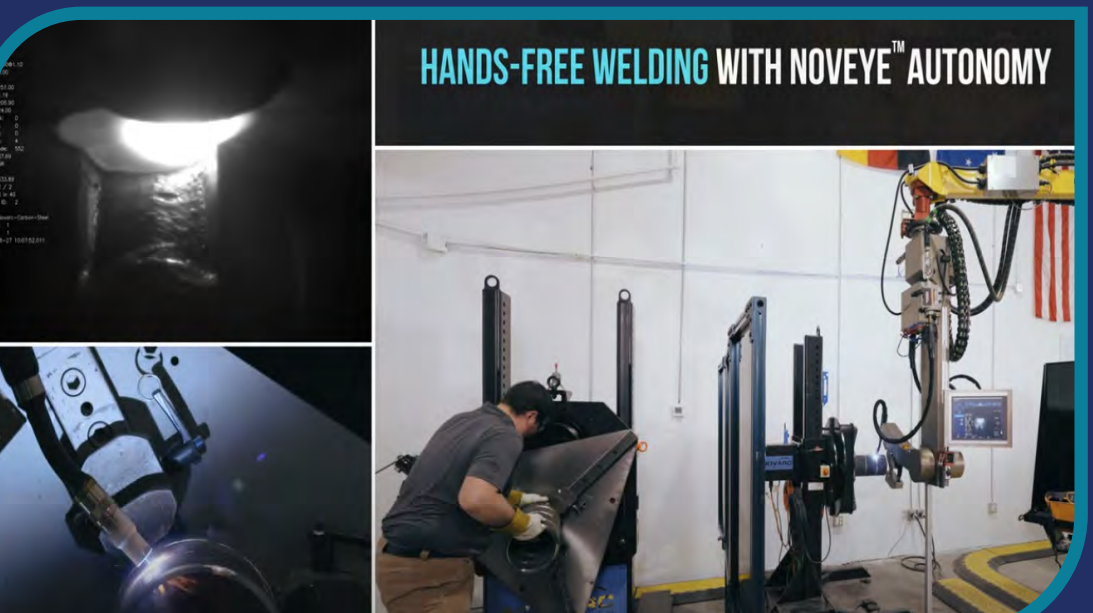
"We have developed the intelligence to fully automate the welding process" based on years of data collected through Novarc's fleet of Spool Welding Robots™ at customer sites around the world, said Soroush Karimzadeh, Novarc CEO. NovEye Autonomy gets smarter with time by incorporating learning from a terabyte-scale library of welding videos, increasing precision and reliability.

NovEye Autonomy manages repetitive tasks, empowering skilled welders to focus on complex areas requiring judgment and expertise. The software is embedded in the control system of the cobot and controls the weld pool in exactly the same way a human welder would, allowing users to delegate the boring, repetitive welds to the robot. The autonomous welding process enables uninterrupted welding thanks to NovEye Autonomy's multipass and multilayer autonomous welding system, which can handle real-world pipefitting inconsistencies like misalignment (a.k.a. hi-lo) and varying root gaps. NovEye Autonomy can immediately detect and adapt welding parameters to maintain weld integrity.

As an AI solution to automate the welding process, NovEye Autonomy is especially appealing to younger workers. "With NovEye Autonomy, the machine learning and vision system means workers can be trained in only one or two years, which typically would take 15–20 years to get to the same level of experience," Karimzadeh pointed out. In addition, "We have welders who have been in the industry for a long time but want to extend their careers; they can use this technology to stay in the game," said Karimzadeh.

Through methods like standardization and automated systems, NovEye Autonomy is helping to overcome the plateau in productivity that has burdened the entire mechanical contracting industry. Moreover, with NovEye Autonomy, operators can program the weld, then observe the weld away from the arc, reducing the risk of exposure to dangerous fumes and radiant heat and minimizing muscle fatigue. NovEye Autonomy delivers X-ray quality welds consistently, with zero operator intervention, and has undergone extensive internal and external testing to ensure that weld quality meets ASME standards.

For more information, visit www.novarctech.com.



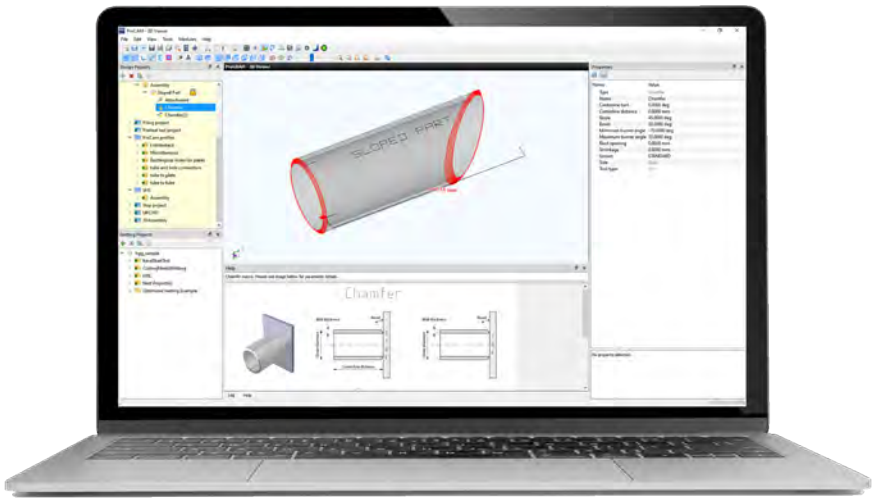
Novarc introduced the first AI-driven vision process system to assess and improve weld quality, paving the way for fully automated welding for routine tasks that frees up skilled welders to focus on complex jobs.

PROFILING SOFTWARE OPTIMIZES *Efficiency*

featuring **HGG Profiling Equipment, Inc.**

Designed in-house, ProCAM software leverages HGG Profiling Equipment Inc.'s 40 years of 3D profiling knowledge and synthesizes it into a software system designed to maximize throughput and material usage, saving users time and money. ProCAM and ProCAM Lite are the only software specifically designed for HGG profiling machines.

"We are specialists in 3D profiling, so we know what our customers need," said HGG Chief Commercial Officer Wiebe Wiersma. "What better way to ensure our software system meets our customer needs than to develop it ourselves with their input?"



HGG's ProCAM software includes ProGRAM, where you can design parts efficiently using HGG's extensive predefined macro shape library.

The ProCAM suite features the following:

- ProCAD, which connects directly with leading CAD/CAM software, including Tekla® Structures, SDS/2, AutoCAD®, SolidWorks® Inventor, Bocad, and more.
- ProGRAM enables you to design parts efficiently with HGG's extensive predefined macro shape library.
- ProMIS is a management information system that uses real-time machine data to create reports on cutting performance, processing speeds, and productivity.
- Advanced nesting algorithms allow you to maximize material usage and minimize waste.
- Stock Manager lets you manage stock material and use available material for nesting. It can be combined with the label printer and scanner option for track-and-trace functionality. Operators simply scan the material loaded on the machine, and the software automatically loads the correct cutting data.

HGG has partnered with several leading industry CAD/CAM companies to ensure seamless integration and transfer of data from design through data processing to machine. In fact, HGG recently partnered with SDS/2 to create a plugin that links to ProCAM. The plugin enables direct definition of cutting information in the SDS/2 CAD model, including detection of holes and pipe notches.

ProCAM Lite, the free version, allows users to view and check cutting details on various profiles without a cutting machine or intermediary viewing software. Users can review all parameters and weld details for a project before cutting and production, including root openings and markings, for any DSTV, NC, XML, or PCD file.

For more information, visit www.hgg-group.com.

MATCHING MATERIAL TO APPLICATION FOR *Better Results*

Advice from **NIBCO INC.**

In commercial plumbing and mechanical systems, material selection is far more than a matter of preference or budget—it directly impacts system performance, longevity, and reliability. Standards offer a framework, but truly effective practice requires that you match the materials to the specific demands of the application.

This article compares the primary materials used for two of the most commonly used valve types—ball and butterfly. NIBCO INC. believes that better understanding these materials can help you specify the right component for the right application, every time.

Understanding Valve Function and Design

A **ball valve** is a quarter-turn valve used for controlling the flow of liquids or gases in a piping system. "Quarter turn" means the valve handle turns 90 degrees from fully open to fully closed. Usually, a ball valve is bidirectional for flow and omnidirectional for installation, meaning installation is relatively straightforward regardless of orientation within the system. Ball valves can provide a bubble-tight seal. Their compact profile makes them much easier to fit into a system than a gate valve or a globe valve, and the quarter-turn operation makes them faster to operate than a multi-turn valve. Ball valves are a mainstay for isolation service and are more easily automated than gate or globe valves.

A **butterfly valve**, also a quarter-turn valve, features a disc mounted on a rotating shaft, which turns to open or close flow. Butterfly valves are commonly used where space is limited and affordability is a concern. In most cases, a butterfly valve is bidirectional for flow and omnidirectional for installation. Because of the slim disc profile, a butterfly valve is a suitable substitute for a globe valve for throttling applications, while generating less of a pressure drop. Butterfly valves are also easily automated compared with multi-turn valves.

Bronze vs. Brass: Choosing the Right Alloy

Bronze, brass, and lead-free brasses and bronzes are the primary alloys used in commercial plumbing and mechanical systems. Industry standards, such as the Manufacturers Standardization Society (MSS) SP-110 standard, often do not clearly differentiate between the types of copper alloys used. As a result, terms like "bronze" and "brass" are frequently used interchangeably, despite their differences. Each material has its own set of pros and cons to consider.

Bronze is traditionally a copper alloyed primarily with tin. Because bronze valves are typically produced via casting, they are heavier with thicker walls than forged valves, which contributes to their strength and longevity. They are highly corrosion-resistant, durable, and ideal for demanding applications. However, bronze valves tend to be more expensive and more difficult to machine.

Brass, by contrast, is a copper alloyed primarily with zinc and is often forged. Brass valves are easy to machine, aesthetically pleasing, affordable, and widely available. Forged alloy products may be generally lighter due to thinner wall structures, which can result in a shorter lifespan.

Brass is susceptible to **dezincification**, in which zinc selectively leaches out, making the brass porous and weak. Factors such as zinc content, water chemistry, and environmental conditions all affect dezincification. Alloys with more than 15 percent zinc are generally at higher risk, unless they contain additives to prevent dezincification.

Application Considerations for Ball Valves

When choosing the material for ball valves, consider these factors:

- The media being conveyed (e.g., potable water, chemicals)
- Water chemistry, including pH, chlorides and total dissolved solids
- Installation environment, such as buried service or exposure to temperature fluctuations
- System criticality, including whether the application is mission-critical

Cast copper alloys of higher tin content are recommended for high-end, commercial, or mission-critical projects and for systems with harsh media, aggressive water chemistry, or exposure to corrosive environments. Copper alloy of higher zinc content and forged alloys are perfectly acceptable for less-demanding residential systems where cost is a concern and the risk of corrosion is minimal.

Left:
Ductile iron butterfly valves offer superior corrosion resistance and strength for tough industrial and municipal applications. NIBCO recommends choosing the right material for the job to ensure better long-term performance, which can save you time, cost, and reputational damage down the road.

Below:
Ball valves are widely used for their quick operation, easy installation, and bubble-tight sealing. Installation is relatively straightforward regardless of orientation within the system. This NIBCO valve is shown open and in service on a potable water system.

Butterfly Valves: Cast Iron vs. Ductile Iron
Butterfly valves are made of cast iron or ductile iron, both of which fall under the MSS SP-67 standard for general-purpose valves. As with ball valves, each material has its own set of pros and cons.

Cast iron is known for its strength and vibration resistance. Composed mainly of iron, it also contains 2–4 percent carbon and small amounts of silicon. Cast iron costs less than ductile iron and is relatively easy to manufacture. However, it is extremely rigid, and virtually any bending will cause it to crack or break.

Ductile iron is similar in composition to cast iron but includes magnesium, which gives it superior impact resistance, tensile strength, and flexibility, so it is less likely to break or crack than cast iron. It also performs better in high-temperature environments and is more resistant to corrosion. However, ductile iron is more expensive than cast iron.

Application Considerations for Butterfly Valves
For most commercial applications where valves are properly installed between flanges and are not exposed to excessive stress or corrosive environments, cast iron is often sufficient and cost-effective. In systems that involve high pressure, frequent cycling, or severe conditions, ductile iron is a superior choice because it can better handle stress and resist cracking under load.

Best Practices
In an industry where failure can be costly or catastrophic, precision in material selection is critical. Look beyond minimum standards and generic material categories to fully understand the alloys you are working with and how they will perform under specific conditions. Consider the operating environment, installation method, and system criticality. This additional scrutiny helps ensure long-term system performance and minimizes the risk of premature failure, saving time, cost, and reputational damage down the road.

Aaron Kilburg, commercial sales manager at NIBCO, contributed the content for this story. For more information, visit www.nibco.com. For additional guidance on specific applications, contact CS-TechnicalServices@nibco.com.

Transforming Operations With Real-Time *Visibility*

with **Access Coins** & **P1 Construction, LLC**

P1 Construction, LLC replaced its outdated legacy enterprise resource planning (ERP) system with Access Coins ERP and quickly started saving money, increasing productivity, and improving service delivery. Morgan Lassise, P1 Construction accounting manager, explained, "Access Coins has been perfect for us because it meets all the needs that we have as a contractor. We're seeing increased job productivity across the board."

Headquartered in Kansas City, P1 needed a modern ERP system that eliminated silos between back office and field personnel. They settled on Access Coins, a cloud-hosted platform for MEP contractors.

Lassise noted, "We researched numerous options, and it became clear early on that Access Coins was the absolute all-encompassing, all-in-one solution. As a complex MEP contractor, we needed a platform that could handle HR, payroll, job status, service, mobile applications, and field applications. Access Coins was the perfect option for us."

For example, "Field personnel submitting payroll for their staff and crews—which would have taken hours before now—just takes a matter of moments," said Lassise.

Real-Time Visibility

With Access Coins, P1 can track company data from multiple sources in real-time. P1 CFO Gloria Keating noted, "We needed one version of the truth with our data. An ERP system where the WIP [works in progress] report was available for our project managers to forecast and manage their costs against that could also be used to create and generate our financials."

Lassise added, "Access Coins ERP provides incredible visibility of costs. Now, our back-office staff can see job costs in real time, which has been an amazing change for us at P1 Construction." P1 now can confidently forecast job costs, catch outliers, and have much stronger cost control across their operations.

Improved Efficiency

P1 has increased operational efficiency thanks to Access Coins' workflow automation. For example, they eliminated payroll processing issues and can now email invoices as soon as work is completed.

Lassise said, "Operations now has the platform to continue to grow our business and make key decisions faster than ever before. The wealth of data and tools available is enhancing the client experience as well. For staff, the ability to access their job data on any web browser anywhere, anytime is just an immense benefit for P1 and our clients."

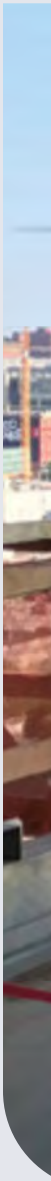
Everyone using Access Coins has access to the data they need to keep projects moving forward. The automated workflows allow seamless communications across departments. For example, accounts payable invoices are now automatically sent to project managers for approval, cutting project turnaround times by weeks.

Transforming Service Delivery

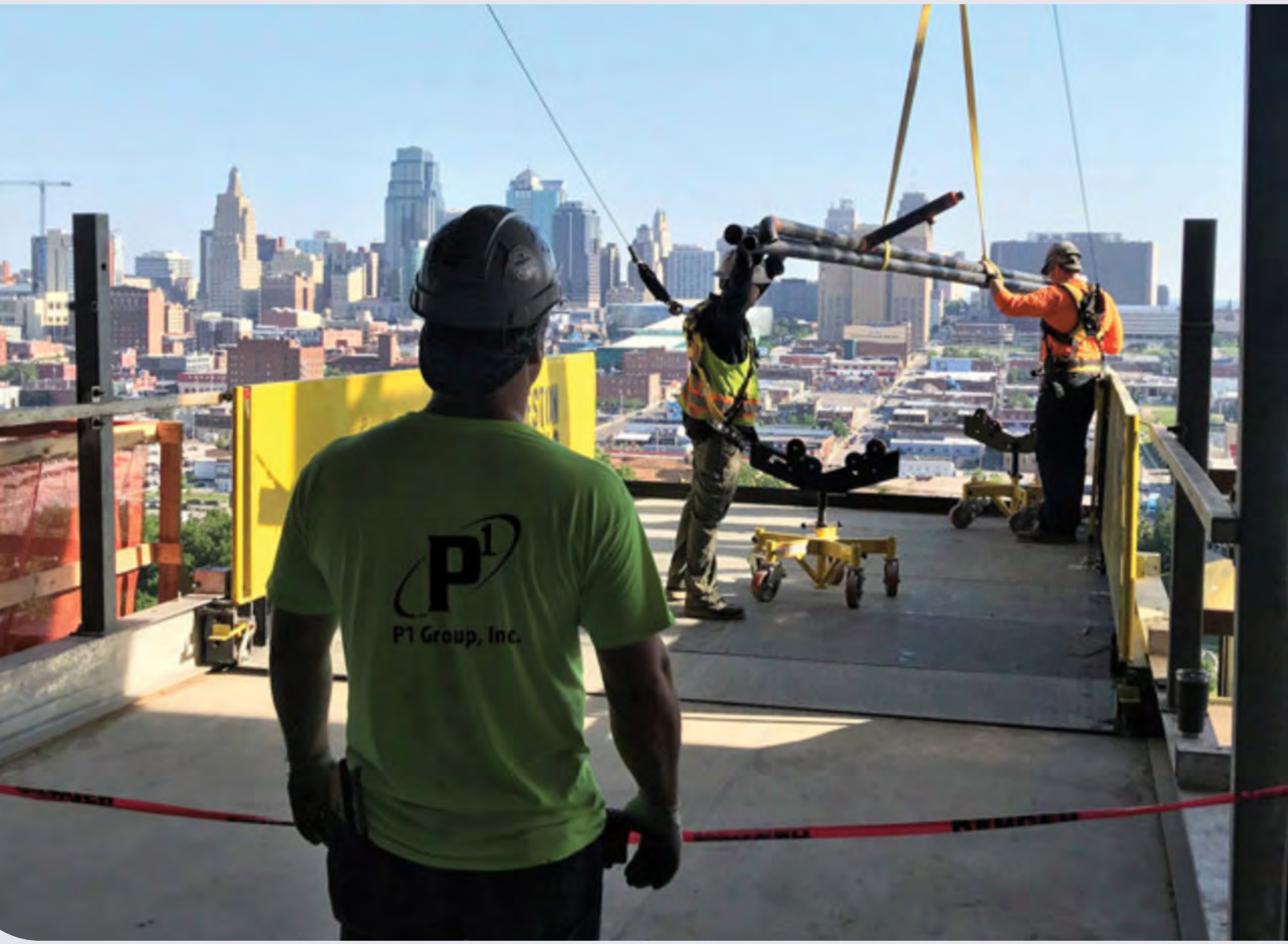
Implementing Access Coins mobile applications was transformational for P1. More than 250 foremen now use Access Coins Mobile Crew Daily Reports (mCDR), and more than 25 technicians use the Mobile Technician (MTech) remote app.

mCDR empowers supervisors to handle administrative tasks quickly onsite, such as generating daily reports on crew hours, equipment, materials, and expenses. This information flows directly to the Access Coins system for payroll, equipment usage, and other charges to the job. "We have so many good things to say about mCDR," Lassise noted. "Previously, all our field personnel had to submit hard-coded timecards, but now everything is completely mobile. These benefits reverberate throughout the company in so many positive ways."

MTech gives technicians easy access to important job information and documentation to boost productivity and improve response times. With access to historical information about work done and automated service



P1 Construction's field personnel use Access Coins mobile technology like mCDR to handle administrative tasks quickly as they work onsite, such as daily reports about hours for crews and equipment, quantities installed, materials used, and expenses.



reports, field personnel save time on administration and handwritten reports.

Lassise observed, "Our customers appreciate the level of detail that's available, and we're putting more resources into this going forward for our field personnel and operations because of just how powerful mobile tech is and the amount of data you can collect. Clients want more data alongside accurate billings and invoices."

Access Coins dashboards and report builders help management make well-informed decisions quickly. Operational reports are now automated, saving days a month for those working in finance and operations.

"Access Coins ERP has helped us facilitate one version of the truth on our WIP between project managers, accounting, and leadership," said Keating. "This allows everyone to be on the same page."

P1 plans to expand their Access Coins platform, incorporating more functionalities and workflows in HR, customer relationship management, and business intelligence. "We are excited to continue to grow our partnership with Access Coins and invest in future integrations," Keating noted. "They have played a pivotal role in ensuring an easy system adoption that was tailored to our organization's needs."

For more information, visit www.theaccessgroup.com.

Optimizing Operations & Fan Experience Simultaneously

featuring **Johnson Controls**

When the Milwaukee Brewers Baseball Club™ committed to making improvements to its ballpark, now known as American Family Field™, the organization looked to its long-term partner Johnson Controls to help provide fans with an outstanding experience while ensuring the ballpark operates at peak performance and efficiency. As a result, the team increased attendance significantly.

Playing Against the Elements

The weather at the start of baseball season in Wisconsin is unpredictable and often still cold, and the old Brewers stadium had trouble attracting fans during chillier months. The club wanted the new ballpark to have a better climate control system, not only for the colder months, but also for those unbearably warm summer days.

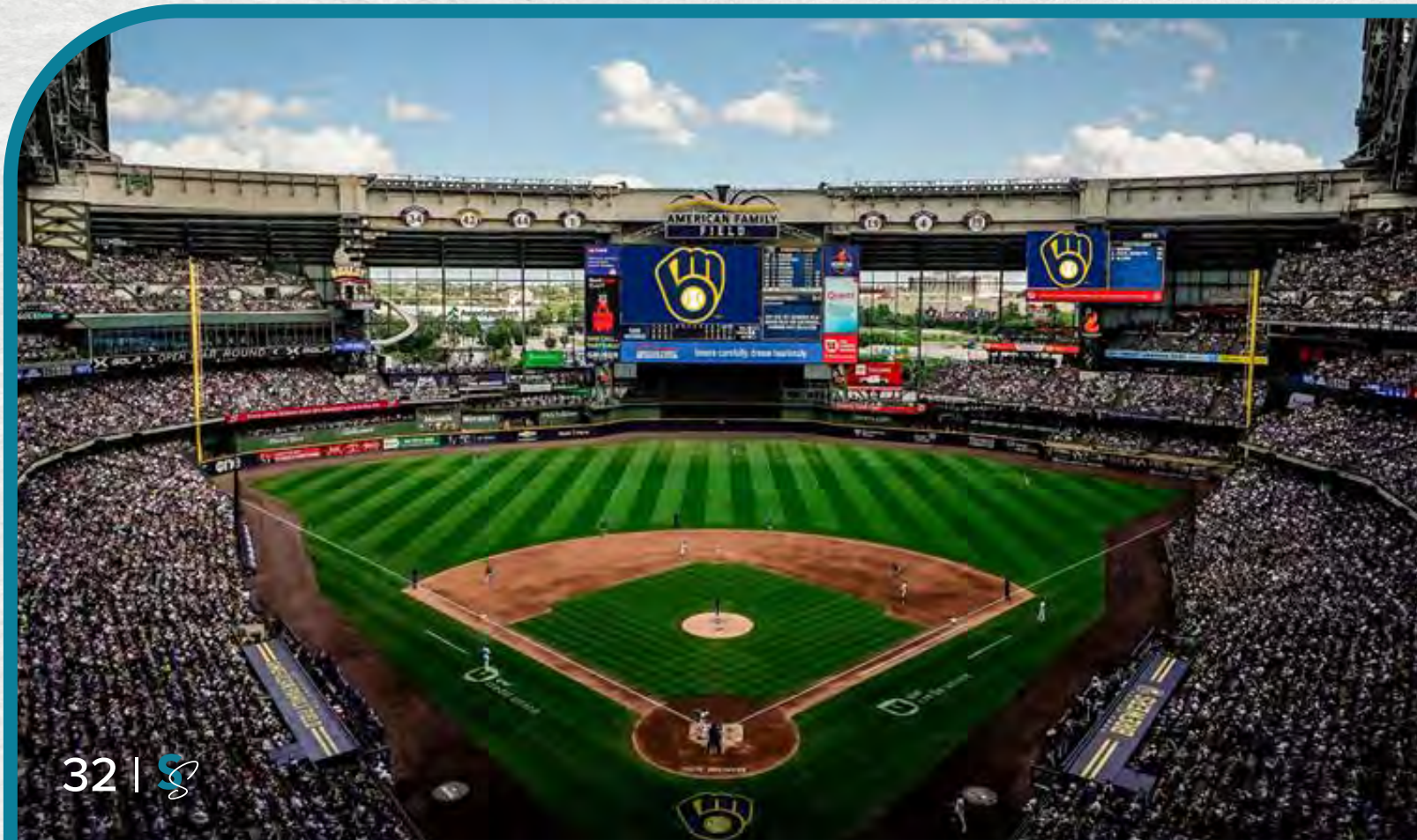
With these updates, the stadium could be used year-round for events like concerts and company outings. However, varying events require different operations; lighting, HVAC, and security systems had to run efficiently and reduce operational inefficiencies over time but also be scalable across differing scenarios.

The Playbook

During the warm summer months at American Family Field, Johnson Controls operations and maintenance of nearly 350 pieces of HVAC equipment keep fans cool. During the colder months, 14 indirect gas-fired heaters heat the seating bowl. Both the HVAC systems and heaters are managed by the Metasys® building automation system, the Johnson Controls technology platform for integrated facility management.

The Metasys system enables suite-by-suite climate control with smart scheduling for HVAC usage and maintenance to ensure comfort and regulate the temperature beneath the stadium's retractable roof, which covers the entire seating bowl. Having a central system for all HVAC operations supports seamless performance and energy monitoring, leading to long-term savings.

Uninterrupted operation of all the systems is supported by a team of Johnson Controls technicians who are present at every event. The technicians oversee the Stadium Operations Control Center, a central hub that not only manages the retractable roof and climate systems but also all lighting systems, from



public areas and parking lots to specialized event lighting. A computerized maintenance management system tracks and records work orders across HVAC, electrical, and security systems to guarantee they are addressed in a timely manner and supports operational reporting.

A Home Run

The Brewers accomplished their goal of improving climate control to attract more fans. The updated stadium has more than one million additional attendees annually compared to previous years.

Now, American Family Field maintains a consistent and comfortable temperature of 62° F with minimal variation and continues to reduce energy waste through proactive building system optimization.

The Game Never Stops

Johnson Controls' long-standing relationship with the Brewers demonstrates how expertise and technology can drive fan satisfaction and operational efficiency. There is no one-size-fits-all plan for building optimization and energy efficiency, making a proactive, flexible partnership increasingly essential.

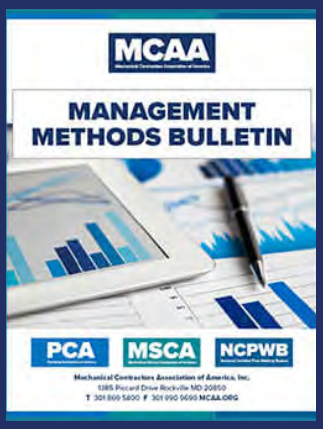
While the success of the updated stadium is remarkable, the work is not over. Johnson Controls technicians use their long-term knowledge of the ballpark's operations to perform retro-commissioning and ongoing efficiency reviews to ensure that all systems are running efficiently.

For more information, visit: www.johnsoncontrols.com.

At the Milwaukee Brewers' American Family Field, HVAC systems and heaters are managed by Johnson Controls technicians and the Metasys building automation system, the Johnson Controls technology platform for integrated facility management, ensuring comfortable temperatures year-round.

By using Johnson Controls products and expertise to upgrade American Family Field, the Milwaukee Brewers significantly increased attendance.

2 NEW BULLETINS



MCAA recently released two new Management Methods Bulletins designed to support its members with free, in-depth guidance on critical aspects of mechanical contracting.

Mechanical Contracting: An Industry Overview – Anchoring Understanding in Complexity

This bulletin addresses the unique challenges faced by mechanical contractors—such as tight margins, multifaceted team structures, variable scopes, and a rotating workforce drawn from multiple unions. It provides a comprehensive look at the realities of running a mechanical contracting company today. This in-depth exploration equips MCAA members with a holistic view of mechanical contracting, enabling them to lead with clarity and operational confidence.

How Do I Pick a Project? – Building Smarter Bidding Strategies

This bulletin zeroes in on the decision-making process essential for optimizing project success. It outlines 10 key evaluation criteria to enhance bid accuracy and performance. The bulletin empowers contractors with actionable frameworks to boost bid win-rates and ensure successful completion.

Find both bulletins, and search all of MCAA's resources, using the blue "Find A Resource" bar at mcaa.org.

TRANSFORMING *Coordination* THROUGH AUTOMATION

featuring **MSUITE**

Speed and accuracy are critical in the design phase of construction, and building information modeling (BIM) has improved teamwork and visibility throughout projects. However, support system layout remains a challenge. Despite significant advances in BIM workflows, contractors lose time and productivity because of inefficient manual processes in placing and coordinating hangers and supports. Software solutions like MSUITE Hangers can accelerate BIM modeling efficiency and transform MEP coordination through automation.

Persistent Problems

Support systems—including pipe hangers, conduit supports, cable trays, and multi-tier trapeze racks—are important for every MEP installation. However, laying them out in the BIM model often becomes a bottleneck. Why?

- The work is repetitive and time-consuming.
- Manual placements are prone to errors.
- Every model update forces rework.
- Coordination between trades becomes fragmented.

These issues disrupt project flow, increase the likelihood of rework, and reduce overall construction productivity. While these supports may be a small visual element in the model, they disproportionately impact the time and labor involved in modeling and installation.

BIM Automation as the Solution

BIM automation software allows you to manage predictable tasks, so your team can focus on what matters most: creating a high-performing model that can be smoothly installed in the field. Automating processes removes the manual labor from support system layout, dramatically improving efficiency and accuracy. MSUITE Hangers, for example, embodies this principle by bringing automation directly into the support layout workflow, enabling users to:

- automatically place supports based on system type, pipe size, and material;
- adjust placements when the model changes;
- generate accurate field layout points for installation; and
- share placement rules across project teams for consistency.

With BIM automation software, teams can model faster while reducing the chance of errors that cause delays in the field. Users can apply rules instead of manually choosing hanger types, spacing, and drawing connections. The software will then generate the placement automatically, even for complex configurations like multi-tier trapeze supports. Simplifying the workflow helps teams design hangers while placing pipe or duct. It saves time when working under tight deadlines.

Improving Productivity Across the Lifecycle

Automating hanger placement has a significant impact. Contractors who use this method see better results in field work, fabrication, and project coordination. When the team's model is supported correctly, the team can work faster during installation. When the model is linked to digital layout tools, fewer mistakes occur. Fabrication shops benefit from clearer output and faster spool creation. Project managers also gain more predictable schedules and cleaner installations.

A 2024 Dodge Construction Network study revealed that 66 percent of those who used digital workflows reported that it improved their decision-making. Meanwhile, 60 percent have implemented digital data exchanges across half or more of their internal project processes.

These findings show that digitizing construction workflows helps teams work better. BIM coordination and layout leads to more informed teams and better project results.

A New Era of MEP Coordination

MEP coordination is all about trade alignment. In dense mechanical spaces, hanger layout decisions affect clearances, access, and code compliance, so it is essential to standardize and automate support system layout across disciplines. Software like MSUITE Hangers promotes better MEP coordination by letting all trades operate from a shared rulebook. Instead of each team working on their supports alone or repeating tasks later, the software uses consistent logic and updates automatically as systems change. This method reduces clashes, streamlines coordination meetings, and keeps the model installation-ready from day one.

One standout feature in MSUITE Hangers is its Placement Rules Engine, which lets virtual design and construction (VDC) managers set rules for specific systems. Managers can define minimum distances between hangers, for example, or set support spacing based on pipe diameter. Additionally, they can choose attachment methods for structural steel, slabs, or struts. You can save, reuse, and share rules across projects and teams, so you can include your best practices in every model. Using rules can be a significant breakthrough for companies scaling across multiple jobsites. It also simplifies training of new detailers, standardizes outputs, and reduces dependency on the knowledge of one person or group.

BIM automation software directly connects to the field by automatically generating layout points tied to hanger locations. You can export these points directly to robotic total stations, saving layout crews time and improving accuracy. When design and field teams work together better, installation delays decrease. Teams spend less time looking for answers or fixing mistakes.

Contractors have already made the shift to BIM automation. For instance, one leading contractor reported that their VDC team cut layout time in half and virtually eliminated field layout errors after deploying MSUITE Hangers. “What used to take 10 steps now takes one,” said the contractor. “It’s like night and day.”

A Smarter Way to Build

In the drive for construction productivity, every gain matters. Automating a slow and error-prone process like hanger placement saves time and improves teamwork. It also reduces mistakes, allowing your team to focus on more important tasks. If you want to make your BIM modeling faster, improve MEP coordination, and simplify your support system layout from the model to installation, it is time to look closely at automating your workflows.

For more information, visit www.msuite.com.

Saving Time & *Increasing Safety*

with **MILWAUKEE TOOL** & **1901 Inc.**

After using MILWAUKEE TOOL's cordless M18 FUEL™RINGER™ Roll Groover from start to finish on a recent project, 1901 Inc. of Madison, WI, estimated saving 40–50 hours of labor, thanks to faster setup time and easier mobility compared with traditional electric grooving machines. Jeremy Baillies, a steamfitter foreman at 1901 Inc., said, "It's way more efficient, much faster, much safer; it saves all kinds of time."

For over 100 years, 1901 Inc. has built a reputation of delivering high-quality designs, builds, installations, and services of MEPF systems across the Midwest. With over 20 years in the field and the past eight at 1901 Inc., Baillies leads HVAC installations across large-scale projects, managing teams of up to 15 people. His focus is clear: Get the job done right, safely, and efficiently. In his role, Baillies is often at the center of complex installations where previous roll grooving methods have long posed challenges from physical strain to time constraints and safety risks. "Manning the tool up there then you would have to crank it around the pipe," he recalled. "It was very straining on the body and very, very time-consuming."

When possible, 1901 Inc. turned to a traditional electric grooving machine, but that came with its own limitations. "It was large and heavy. You had to use a pallet jack to move it or lift it from floor to floor. And the pipe itself had to spin, which was dangerous and limited what we could do."

1901 Inc. and Baillies himself "almost have exclusively Milwaukee cordless tools," already, so when they were introduced to the world's first cordless roll groover by Milwaukee, Baillies initially remembered thinking, "It's going to be a game changer." Now, having implemented the M18 FUEL RINGER Roll Groover throughout his latest project, Baillies' verdict is clear: "I don't feel like I would ever buy a corded tool again if they made a cordless version of that tool."

Work Anywhere

With the M18 FUEL RINGER Roll Groover now in full use, Baillies and his team are seeing major improvements in setup time and mobility. Traditional grooving tools often require lengthy setup, access to power, and multiple crew members to transport and operate. With the M18 FUEL RINGER Roll Groover, "There is no setup time," Baillies explained. "You just grab it out of the job box, slap a battery in it, take it to where you need it, put it on [the pipe], and push the button. One person can just go grab it, take it upstairs, and they're ready to rock."

Whether grooving pipe on the ground or in the air, the tool's cordless operation gives users the flexibility to work wherever it's most convenient. "You can take a short 3" piece of pipe, set the machine on the ground, push go, and it'll just sit there and spin on the pipe," Baillies added. This level of portability and ease of use has redefined how his team approaches grooving onsite.

Easiest Way to Groove

Beyond mobility, the RINGER Roll Groover simplifies the grooving process itself. "Once you groove one, then you're sticking with that size pipe, you don't ever have to change it again," Baillies said. "Once you have it set, it's good to go. You can keep going through the rest of the day."

Milwaukee's integrated control panel allows users to select pipe type, schedule, and size, while the groove depth offset dial ensures consistent, in-spec grooves. This automation eliminates the guesswork and manual checking that used to slow down the process. "This one, once you get it set, it automatically stops. It does all the checking for you," Baillies said. "It's accurate, once you set it, you don't have to think about it again." By removing the need for ratcheting, cranking, and constant adjustments, the RINGER Roll Groover delivers a hands-free process with up to 65-percent reduction in peak muscle effort.

With up to 25 3" schedule (Sch.) 40 grooves per charge, the M18 FUEL RINGER Roll Groover for 2" to 6" Sch. 10/40 delivers dependable runtime. But for Baillies, the real value

is cordless freedom. “Runtime was not a concern of mine, we got plenty of grooves off one battery,” he said. “Even if it had less runtime, I would’ve still been fine with it because of the amount of time it saves. I mean, I would just get more batteries if I needed to.” Fully compatible with the M18 battery system, the RINGER Roll Groover eliminates the need for temporary power sources and extension cords, allowing crews to stay focused and mobile.

Reducing Risk

The cordless roll groovers from Milwaukee also bring significant safety improvements. With traditional grooving machines, long sections of pipe were spinning and could unexpectedly swing or shift, creating the risk of injury to workers or damage to nearby materials. The M18 FUEL RINGER Roll Groover keeps the pipe stationary while the machine does the spinning, allowing users to work in tighter spaces without compromising safety and eliminating the physical strain of manual cranking.

“The wear and tear on the body is huge, there is none when it comes to this,” Baillies emphasized. “There’s all kinds of different reasons why that pipe not spinning is a huge safety feature out on a project.” Without the need to spin long sections of pipe or operate heavy, corded equipment, 1901 Inc. has reduced physical strain and minimized risk for workers.

Saving time, improving accuracy, and increasing safety on the job with the M18 FUEL RINGER Roll Groover made 1901 Inc.’s decision to invest in more roll groovers an easy one. Baillies concluded, “We’ll start out with a couple of them and see how much more we need.... We’re investing in a few of these just to start with, just because of how much simpler it makes the process.”

For more information, visit www.milwaukeetool.com.

Jeremy Baillies, a steamfitter foreman at 1901 Inc., uses MILWAUKEE TOOL’s innovative cordless M18 FUEL RINGER Roll Groover onsite to simplify grooving, save time, and increase jobsite safety.

Tool-Integrated Software's *Business Benefits*

featuring **Ridge Tool Company**

Would you like to make the back-office side of your plumbing business more efficient? Tool technology has changed the way we work on jobsites, but it can also simplify business management. From staying ahead of needed tool maintenance to streamlining recordkeeping, integrated tool technology in drain cleaning, pressing, and diagnostic tools can make your business run more efficiently. Here are a few examples of how tool-integrated software from Ridge Tool Company and others can boost your business operations:

- **Tool history and inventory planning**: Gain insight into tool usage to better understand how and when your tools are used on a jobsite. This information is valuable for tool purchase planning and helps ensure you are investing in the best tools for your business.
- **Maintenance scheduling**: Many tools now provide preventive maintenance reminders based on collected usage data, allowing you to plan routine maintenance to keep projects on time and in budget.
- **Tool finding**: Jobsites can be chaotic, and tools can easily be misplaced. With last-seen location features of an app like RIDGID Link, you can determine the exact location where a tool was last connected. Additional features allow remote locking and unlocking of tools to prevent unauthorized tool use for enhanced jobsite safety.
- **Job reporting**: Access detailed job data, such as video, images, maps, and graphs, that can be used in compatible reporting systems. Information can be shared via mobile device for on-the-go reporting, such as in-pipe findings, project completion details, and other key metrics. For example, RIDGIDConnect™ is an online tool designed for contractors and service providers to create and share reports with customers that include videos, documents, and pictures collected from jobsites.
- **Streamlined organization**: Tool software apps let you organize registrations, manuals, and service information in one place, so you do not need to keep track of physical copies. Easily access these digitally stored documents by phone or tablet for on-the-go viewing.

However you decide to use these features in your business, make sure the software enhances what the tool provides. Tool capability should always be first in making a purchasing decision, with business capabilities secondary. Consider whether the software is creating efficiencies for you, elevating the work you produce, and allowing you to continue differentiating yourself in the industry.

Soon, with the help of artificial intelligence, tool software will collect data on how the tool is used and optimize settings or configurations to enhance performance. As the cost of cellular connectivity comes down or other means become available that allow constant connection, many capabilities will become more common, such as remote access to control the tools, video streaming or streaming of other data from the tool to the cloud, and more granular location information available on demand so you always know where your tool is.

Brad Yuronich, director of software development for RIDGID, contributed the content for this story. For more information, visit www.ridgid.com.

The RIDGID Link app from Ridge Tool Company helps you find misplaced tools by showing the exact location where a tool was last connected—just one example of how tool-integrated software can improve efficiency for your business.

JOBSITE SAFETY *Spotlight*

with **MCAA's Safety & Health Committee** & **BuildOps**

Falls. Tools. Mental health.

The jobsite dangers haven't changed much, but some contractors are changing how they respond—and who they involve in the process.

MCAA Safety and Health Committee members Ricky Reams (Murphy Company) and Rebecca Medaris (Pan-Pacific Mechanical), joined BuildOps to discuss the challenges contractors are facing today and what's working in the field—from simplifying fall protection to reshaping the tools that get people hurt.

The podcast covers common injuries like Portabands, which are heavy, versatile, and widely used—often incorrectly.

Rebecca pointed out that many injuries came from using oversized portabands for small, overhead cuts. "They're cutting one little thing, holding the saw overhead, and it comes right down on their hand," Rebecca said. "It's a great tool—but it's not always the right one."

Visit mcaa.org and search "BuildOps Podcast" to find the recording.

MCAA

2025-2026 Event Calendar

September

8-10 Fabrication Conference
Philadelphia, PA

15-17 Field Leaders Conference
Toronto, Ontario

25-Nov 13 Foundations of Field Leadership Course 9
Online

28-Oct 2 MSCA Service Managers Training Program
Phoenix, AZ

29-Oct 2 MSCA Pump & Motor Service
Phoenix, AZ

October

1-3 MSCA Field Supervisors
Seattle, WA

1-3 MSCA Sales Basecamp
Seattle, WA

1-3 MSCA Dispatcher Training Program
Seattle, WA

5-7 Collective Bargaining Conference
Las Vegas, NV

7-9 UA/MCAA Labor Relations Conference
Las Vegas, NV

9-11 MCAA GreatFutures Forum
Salt Lake City, UT

November

9-12 MSCA Annual Education Conference
Scottsdale, AZ

December

3-5 Industry Funds Conference
Longboat Key, FL

January

12-15 Safety & Health Conference
Austin, TX

25-30 Advanced IPM Class 22
Austin, TX

26-28 MEP Innovation Conference
Austin, TX

March

15-19 MCAA Annual Convention
Phoenix, AZ

April

15-17 Field Leaders Conference
Houston, TX

19-23 IPM Class 97
Austin, TX

20-24 IPM Class 98
Austin, TX

26-28 NCPWB Annual Technical Conference/Committee Meeting
San Antonio, TX

For more information about MCAA's Educational Events, visit **MCAA.org/events.**