

MCAA SMART *Solutions*

Building the Industry
Work Force

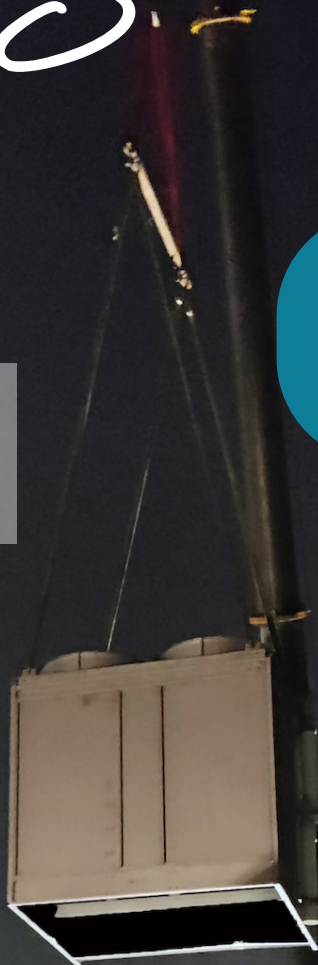
**Rethinking Construction
Site Sanitation**

**Racing Ahead of
*Casino Schedule***

Gaining

Protection and Productivity

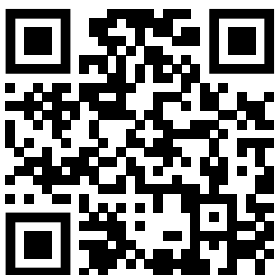
**Extra Eyes
Onsite**





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.

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Safety = Success



Parthiv Amin

Chair, MCAA Manufacturer/Supplier
Council Executive Committee

This issue of Smart Solutions includes insights on promoting safety as a key component of maintaining productivity. For example, Murphy Company relies on MILWAUKEE TOOL for novel safety features that prevent over-rotation. Ridge Tool Company describes how to avoid injuries on the job. LAARS, a Bradford White Company, and the United Association partnered to establish advanced learning labs to build a workforce committed to safety, quality, and productivity.

With productivity a top priority, The Severn Group leveraged the Victaulic grooved copper system to beat a tight timeline. Morris Group International helped Southland Industries design easy-to-transport portable toilets to save money and time. Metropolitan Mechanical Contractors, Inc. used Novarc Technologies Inc.'s cobot to dramatically increase welding capacity and quality. With its Watts Specialties, LLC pipe cutting machine, AMS Industries, Inc. slashed setup and cutting time. Letsos Company found an easy-to-install option for a historic building thanks to SPX Cooling Tech, LLC. Through its preventative maintenance program, F.W. Webb Company found and fixed a power plant's oil leak, avoiding a prolonged shutdown.

Among the growing number of contractors relying on digital technology is Modern, which adopted MSUITE technology to manage fabrication operations, and Preferred Mechanical

Group, which selected ServiceTrade software to build an efficient, technician-centric company. Thanks to OpenSpace, U.S. Engineering's managers can keep tabs on projects remotely. Crockett Facilities Services uses XOi Technologies to improve customers' experience and technicians' access to guidance. Mazza Mechanical implemented nClarity's predictive maintenance platform to streamline business operations.

In this issue, Copeland explains how the next generation of oil-free compression technologies can achieve efficiency and support the transition to more sustainable refrigerants. Faro Technologies, Inc. describes how to pair 3D reality capture solutions to optimize your workflow. Xylem, Inc.—Bell & Gossett outlines technological advancements that have improved heating and cooling pump performance and efficiency and yielded smaller, easier-to-install products. NIBCO INC. outlines its free specifications review to ensure that your specs meet current standards. CNA presents the latest season of Risk Control e-Talks online, highlighting cybersecurity. SLOAN introduces new smart systems that allow facility managers to monitor and maintain products remotely. Learn more by visiting our manufacturer/supplier partners in person at MCAA24.

Parthiv Amin

Chair, MCAA Manufacturer/Supplier Council
Executive Committee

Join me in welcoming our newest supplier partners:

- **IPEX USA, LLC**
- **Kojo Technologies, Inc.**
- **Little Giant Ladder Systems, LLC**
- **Merit Brass Company**
- **NEFCO**
- **Sunbelt Rentals**
- **T&S Brass and Bronze Works, Inc.**

Gaining Protection and With Advanced Safety

with **MILWAUKEE TOOL & Murphy Company**

Murphy Company adopted MILWAUKEE TOOL's latest M18 FUEL™ ½" Drill/Driver because it has the power and speed to keep them productive on the job, but also because of an enhanced safety feature that prevents injuries caused by over-rotation. The drill's AUTOSTOP™ Control Mode senses over-rotation in a bind-up and automatically shuts off the drill, providing more control and reduced kickback. MILWAUKEE TOOL is a benefactor of MCAA24.

The Danger of Over-Rotation

With nearly 30 years of experience, Ricky Reams, the vice president of safety and quality at Murphy Company, understands how tools directly impact safety and productivity on a jobsite. Reams described an incident in which a lead foreman was showing an apprentice how to do a task. Based on the position and height of the task, they felt safer doing it in a lift rather than on a ladder.

"They actually did a great thing! They moved the ladder, got a scissor lift in place, and went up," said Reams. "But they still had to reach completely overhead, because they were still limited by the height of the lift."

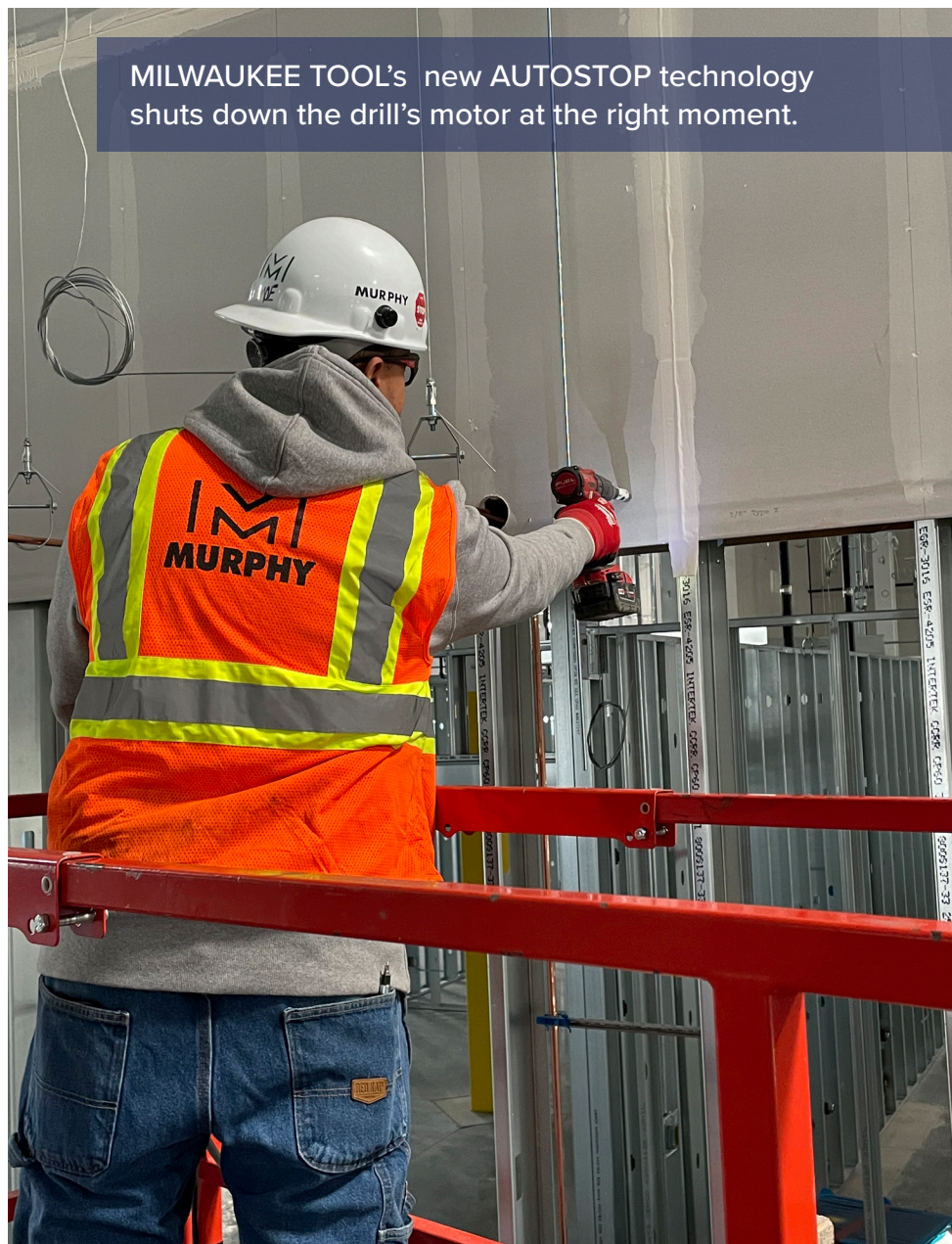
During the application, the drill caught, spun, and injured the foreman's hand. With 115 years in business and more than 1,300 employees nationwide, this one incident may seem minor in the scale of Murphy Company's business, but the company places strong emphasis on safety and continuous improvement.

"We had an injury in front of the apprentice we were trying to train and a lead foreman that required medical treatment," said Reams. "But even if we take away the direct costs and hours spent

investigating the injury, it still has an impact on how a customer perceives us. We had a recordable injury on that job because of the over-rotation of the drill."

On a quarterly and annual basis, Murphy Company does a formal analysis of jobsite injuries to assess and prioritize problems. The analysis is focused on understanding the types of injuries that occurred, how they happened, the

MILWAUKEE TOOL's new AUTOSTOP technology
shuts down the drill's motor at the right moment.



Hand Productivity Technology

task being undertaken, and how it was performed, among other factors.

“When we really got down to it, the majority of the hand injuries that we had associated with a drill were from working on an elevated platform, either in a lift or on a ladder; they were working overhead, and they were drilling with a large 4” or 5” hole bit,” noted Reams. “Many of the injuries were happening at almost the exact same task. In that overhead body position, there is less control over the tool.”

Around the same time that Murphy Company was coming to their conclusions after analyzing hand injuries, MILWAUKEE TOOL introduced their newest M18 FUEL ½” Drill/Driver. Working side-by-side with users to understand their needs and frustrations, MILWAUKEE TOOL’s research teams were repeatedly asked for a drill that reacts more consistently to bind-ups. Solutions from other tool manufacturers were either overly sensitive, shutting the tool down prematurely, or not sensitive enough, so the feature did not engage at all.

In developing the new drill, MILWAUKEE TOOL used data from users in the field and lab-correlated data points. MILWAUKEE TOOL then leveraged advanced machine learning to account for the numerous and challenging variables associated with drilling a hole with a ½” drill. The combination of real-life and machine data points led to the development of an industry-leading solution that shuts down the drill’s motor at the right moment. Additionally, the advanced algorithm results in excellent reaction time and minimizes nuisance shutdowns that can hinder productivity.

Engineering a Solution

“The message we were getting from our field employees was that over-rotation was an issue with the current drills being used in certain applications, and we wanted to find a better solution,” said Reams.

The wide range of tasks and applications Murphy Company handles requires a tool line that is diverse enough to apply to everyone. In the mechanical trades, workers often need to work overhead, at heights, or in hard-to-reach places. The further away from the body the tool is, the less control the user has, which can result in jobsite injuries.

“Think about where duct work or pipe goes,” Reams explained. “It’s in the ground, it’s in the ceiling, but very seldom allows for ideal body positioning. Often what we’re doing tends to be at some level of an off-center or awkward position.”

When MILWAUKEE TOOL’s latest drill with the enhanced technology was introduced, Murphy Company immediately put it to the test in the field with some of their top journeymen and craftsmen to understand the drill’s functionality and performance.

“Anytime we make any type of switch to any type of tool or equipment, we test it in real-world applications. We evaluated the new drill/driver with AUTOSTOP technology with multiple teams and jobsites, and the tool performed exactly as advertised—from a power perspective, from a run-time perspective, and even down to the ergonomic controls and design of the tool itself, like the weight and the battery options that are available. AUTOSTOP technology stopped the drill as soon as it sensed a bind-up and started to rotate.”

Reams continued, “AUTOSTOP technology immediately neutralizes the tool and reduces the risk of a potential injury. It was a long time coming. That’s an engineering solution to a problem that’s as old as when drills were first invented.”

Following the trial, Murphy Company updated their tool catalog so that they purchase only MILWAUKEE TOOL’s M18 FUEL ½” Drill/Driver moving forward.

“Regardless of how much training we do, the complexity and variations of our jobs will always present hazards,” Reams noted. “When using technology and engineering controls in tools to reduce or completely eliminate the hazard or the possibility of using that tool incorrectly, we’re saving countless injuries from happening.”

For more information, visit www.milwaukeetool.com. MCAA thanks MILWAUKEE TOOL for being a benefactor of MCAA24, hosting the Wednesday night reception and co-sponsoring the Awards of Excellence Breakfast.

Building the *Industry Workforce*

LAARS, a Bradford White Company (and a benefactor of MCAA24), is working closely with MCAA and the United Association (UA) toward a shared vision of continuous support for a trained, skilled workforce that is committed to safety, quality, and productivity. LAARS and the UA have established more than 50 advanced water heater and boiler training labs across the United States, with many more in development.

“Training has always been important,” said Raymond Boyd, director of education and training for the UA. “It’s the life’s blood of what we do. And the most important result of training is safety. An educated workforce is a safe workforce.” Safe workers and a safe workplace are prerequisites for the quality and productivity that drive the industry.

Additionally, the industry is evolving. Dustin Bowerman, director of training services for Bradford White, explained, “The technology our products depend on and regulations are constantly in flux, and we all should commit to staying on top of those changes in order to continue meeting the needs of our customers and living up to our partner obligations.”

In Person, Hands On, and Online

Classroom learning is essential to transfer the foundational knowledge and principles of the skilled trades. UA apprentices, for example, experience 216 hours of in-class instruction related to their field. A growing range of online and virtual training options have emerged to supplement traditional in-class and hands-on training. Live online training sessions allow instructors and trainees to connect and interact directly, in real time. These sessions increase efficiency and substantially minimize travel costs. New and emerging tools such as virtual reality and online simulations provide trainees with unprecedented safe and convenient access to new information. Following up virtual training with hands-on practice is essential for fully translating information into actionable skill.

“There’s enormous opportunity for online training, but ultimately there’s nothing like picking up tools and working directly with equipment and material,” said Eric Ortega,

training coordinator for UA Local 208 in Denver. “Hands-on, in-person training with real equipment is still the foundation for the apprenticeship model, and I don’t see that ever going away.”

Steve Moruzzi, national training manager for LAARS, added, “Technicians get more out of hands-on training than other methods. They retain far more information when they’re able to physically perform an action once or twice than if they just read it or watch someone else do it.”

Real-World Learning Labs

Learning labs that simulate the real-world environment are ideal for technical training. Bradford White and LAARS subsidized the purchase of equipment for the UA as it expands and enhances its training centers across the United States and Canada to build some of the most advanced training facilities in the world. The cost and access limitations of hands-on training make industry partnerships—such as those Bradford White and LAARS maintain with MCAA, the UA, and other organizations—critical to the well-being and future of the industry. Manufacturers offer a range of training resources and platforms, including equipment, personnel, and expertise.

“We took all the equipment that was available, and then we ordered more,” said John Sullivan of UA Plumbers and Gas-Fitters Local 1 Training Center in New



York. “We wanted to make sure we had everything we needed to train the next generation of plumbers. We didn’t want to just set up a showroom where they could look at the equipment while someone tells them how it works. We designed a learning lab where every piece of equipment is fully piped and working, so we can teach someone how to fire it up, how to bring it online, and how to troubleshoot. They get real-world hands-on experience with the equipment they’ll see on the job.”

Sullivan continued, “This kind of training opportunity is essential for the future of our industry. Leveraging our partnership with Bradford White and LAARS has served as a catalyst for something that will have a meaningful impact on our members and their customers for years to come. It’s also strengthened our partnership, which will ensure continuing benefits for all of us in the future.”

A culture of training ensures that proven skills and best practices are passed on. It also ensures that learning is a priority and helps inspire new generations of dedicated, expert workers who will become the future trainers and leaders of the industry.

The UA’s Boyd noted that partnering with Bradford White and LAARS “has been critical in our development of state-of-the-art, world-class training facilities for our members. And that success positions us to envision more ways to leverage our shared strengths in the future.”

For more information, visit www.laars.com. MCAA thanks LAARS, a Bradford White Company, for being a benefactor of MCAA24 and providing the convention bag.

LAARS National Training Manager Steve Moruzzi showcases the LAARS NeoTherm® to contractors during an on-site training session.



Extra Eyes Onsite Catching Errors Early & Cutting Travel Time

with **OpenSpace** & **U.S. Engineering**

Thanks to photos and videos captured onsite by OpenSpace technology, U.S. Engineering fixed an error during construction that would have required expensive rework if it had not been caught early. With OpenSpace, U.S. Engineering managers are keeping tabs on projects remotely, saving hours of travel time and costs.

True As-Built View Improves Quality

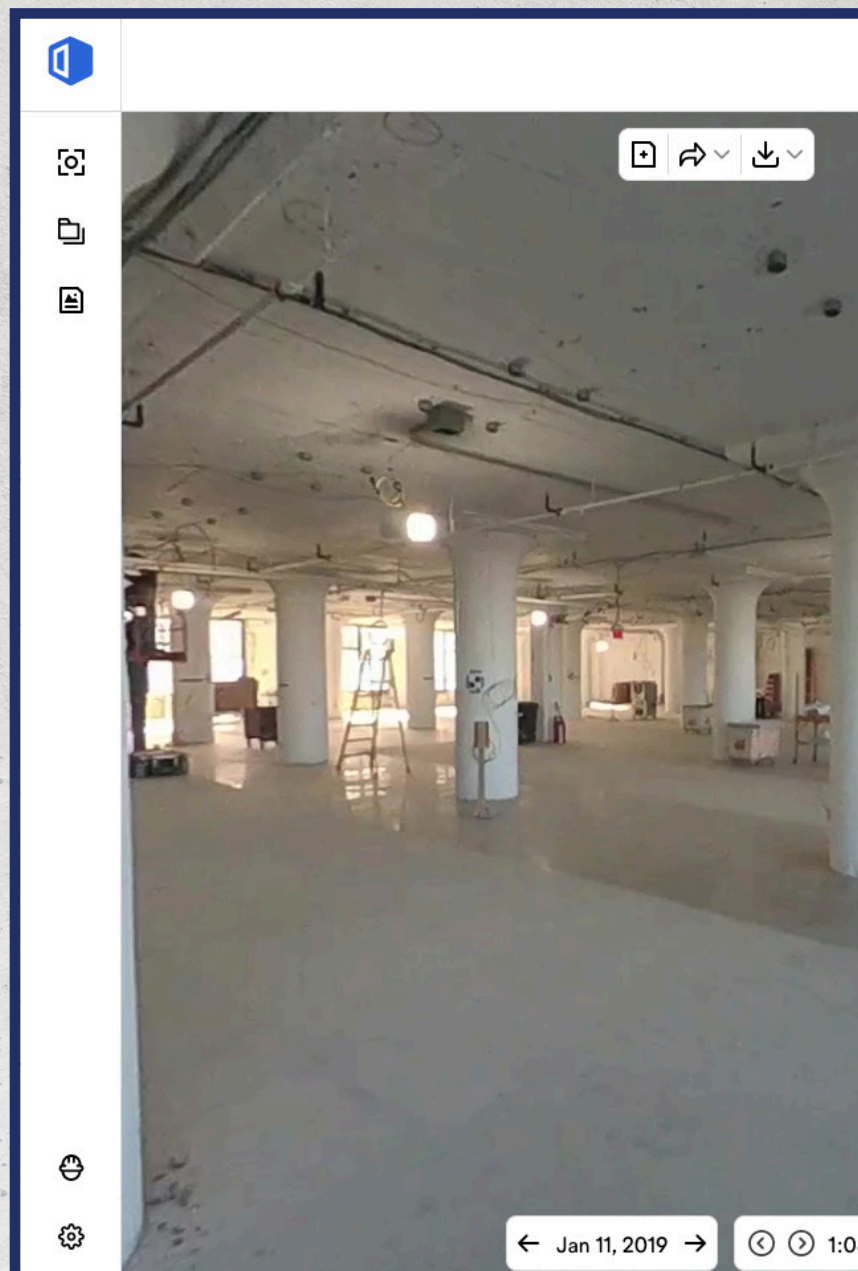
As quality control manager for U.S. Engineering, Chad Lucks routinely travels across the Rocky Mountain region to oversee projects. He wanted a better way to document the many jobsites he was tasked with monitoring than notes jotted down by colleagues and cell phone pictures, which could be unreliable and inconsistent. He also hoped to reduce his commuting time with technology that would help him stay on top of more than a dozen projects at any given time, even remotely.

Lucks started using OpenSpace to capture his projects, including hospitals in North Dakota and Arizona, a Target in Boulder, CO, and a public school system in Denver, CO, with the main objective of reducing risk. He soon began relying on the BIM Compare feature (which shows a side-by-side view of actual site conditions with the model) for day-to-day work. "I switched to OpenSpace because I can be anywhere and reference the drawings and model we're using in Arizona, for example, alongside what's really happening onsite," Lucks explained.

OpenSpace has proved easy to learn, and project engineers can capture sites by simply strapping a 360° camera to their hard hats and walking. OpenSpace automatically generates a Google Street View-style video of the project. Lucks typically plays the video at half-speed to look carefully for discrepancies and issues from his office.

Having a single source of truth helps everyone get on the same page. For example, Lucks recently noticed in BIM Compare that a section of piping and valves present in the model was missing in a ceiling. He created a Field Note in OpenSpace, assigned it to the virtual design construction technician, and linked it to

Procore. From there, the team confirmed there was an error in the as-builts, which was corrected. Because Lucks caught the discrepancy before the ceiling was closed up, U.S. Engineering avoided potential rework costs if the mistake had only been noticed months later.



“Paper as-builts are old-school and going away,” said Lucks. “Through the detailed documentation OpenSpace provides, we have a true as-built, which is better for maintenance and the owner at the end.”

Streamlining Processes

U.S. Engineering is also using OpenSpace Track to automatically generate completion percentages for sheet metal installation, which facilitates monthly pay applications and saves time. Lucks also thinks it benefits superintendents by helping them understand whether teams are falling behind on a project. U.S. Engineering Project Manager Aaron Denning is using OpenSpace Track to track sheet metal installation and forecast how much sheet metal should be brought to the project, so materials are not sitting onsite for weeks before they are needed.

Lucks is using OpenSpace’s 3D Scan feature to scan electrical and ductwork near ceilings to measure them later—without having to climb a ladder or use a tape measure, saving him time. “Our goal is to have [OpenSpace] on every project where we’re allowed to take photos,” Lucks said.

Enhancing Communication, Increasing Productivity

Thanks to OpenSpace, Lucks does not need to visit jobsites in person as often, saving him as much as 10 hours of driv-

ing per week. Recently, OpenSpace eliminated the need for designers to fly in to visit a project, because U.S. Engineering’s Senior Project Manager Patrick Barnett pulled up OpenSpace captures during an owner, architect, and contractor meeting to address their questions virtually.

OpenSpace helps keep Lucks up to speed on progress at out-of-state sites he does not visit as often, so he can contribute more effectively. “Before OpenSpace, people would be calling me without me having any context,” he said. “It was definitely a lot harder.”

Reliable documentation from OpenSpace has also helped U.S. Engineering manage potential conflicts. When a general contractor recently provided a hard deadline for work completion, U.S. Engineering was able to demonstrate that another contractor had not completed their work, blocking U.S. Engineering from proceeding.

For more information, visit www.openspace.ai.

The OpenSpace BIM Compare feature gives a side-by-side view of actual site conditions with the model.



RETHINKING CONSTRUCTION SITE *Sanitation*

Modular Portable Toilet Pods Save Costs, Water, and Worker Dignity
with **Morris Group International & Southland Industries**

With help from Morris Group International® (MGI) and its Acorn-Vac® vacuum plumbing system, Matt Davenport of Southland Industries designed portable toilets that are easy to transport and use less water than other options, saving the company money and time. Portable toilets are notorious for their unpleasantness, and Davenport, Southland's project constructability lead, found them downright "inhumane." MGI is a major sponsor of MCAA24.

Thinking Outside the Box

Driven by his dissatisfaction with portable toilets, Davenport set out to find a better solution for jobsite toilets during the construction of the \$2.1-billion Sutter Health California Pacific Medical Center's Van Ness Campus Hospital in San Francisco on a zero-lot line site. Initially, he envisioned ways to enhance privacy in traditional portable toilets but soon realized more was needed.

A conversation with MGI sales representative Mike Furlong led Davenport to the AcornVac. He inquired about the possibility of a temporary, pod-based solution, and coincidentally, AcornVac had recently developed a pod prototype. Davenport and AcornVac engineers collaborated to refine it, transforming his vision into reality: a clean, private privy equipped with a flushing toilet, internal lighting, a handwashing station with running water, and easy portability.

The complete portable toilet system was made up of 40 modular plug-and-play vacuum toilet cubicles that tied into the vacuum center located in the underground parking garage. A forklift could easily move the toilet cubicles, and the removable tops meant they could be transported as needed from floor to floor via the regular elevators. That eliminated the coordination necessary to use the demand lifts.

Transformation Through Teamwork

After finalizing the design, Davenport presented his idea to

Sutter Health and general contractor HerreroBoldt. The project used a Lean integrated project delivery (IPD) strategy, which brings together all project stakeholders in a collaborative effort. Davenport believes this collaborative approach was crucial to the success of his proposal.

"I had the positive support from the core group," Davenport explained. "With that support, my mind was free to think. But with that support comes great responsibility; you don't want to disappoint the team. It's a double-edged sword."

Davenport's AcornVac system was ultimately accepted, and he credited the IPD process for fostering the open communication and collaboration that made it possible.

In addition to improved convenience, Davenport pointed out the environmental benefits of the AcornVac system. With a flush using just under a half-gallon of water and no risk of leaks due to vacuum pressure, these units are far more sustainable than portable options.

"This is going to be a hospital," Davenport noted, "and those blue portable rooms often leak what I'd consider toxic material. That can't be good." He says cost and water savings are just bonuses: "It's about treating people humanely."

Sutter Health recognized the value right away. By adopting the innovative system, they lived up to their commitment to supporting workers. It transformed an otherwise unpleasant necessity into something elevating.

The client even sourced bathroom attendants from a neighborhood cleaning company to maintain cleanliness. The results spoke for themselves: workers appreciated the new units, and after three years, not one toilet suffered vandalism or damage.

Building on Success

Given the success, Davenport now wants to take the concept further. For his next high-rise project, he plans to add fans to the pods for airflow and water bottle fillers from Murdock® Manufacturing (an MGI brand) for hydration.

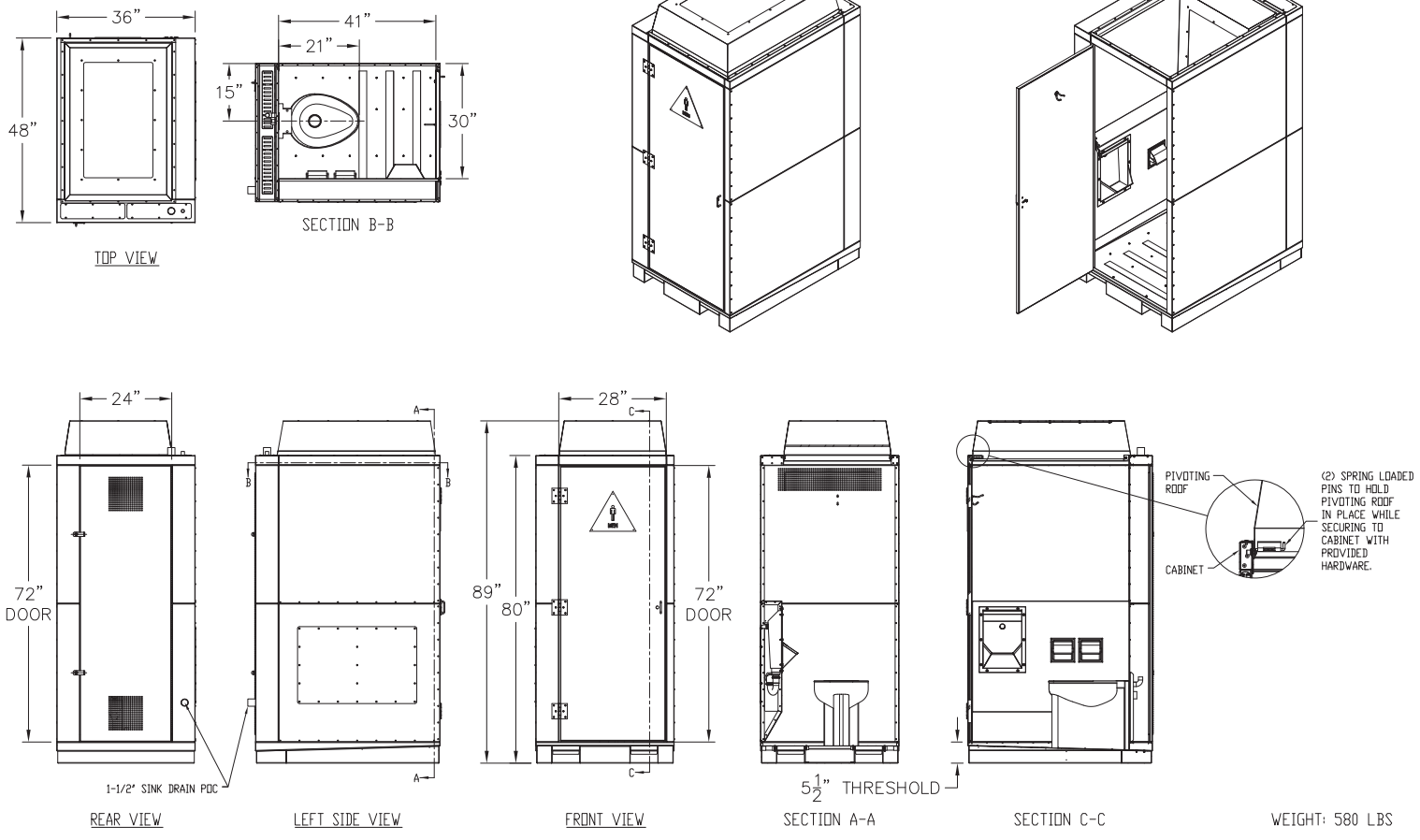
The fact that MGI supports the modular building trend attracted Davenport to its brands and products. Though initially nervous about the vacuum components, hands-on guidance gave him confidence: “The AcornVac engineers were with us every step, even after setup. That support means I’ll definitely do this again.”

Davenport said it could make sense for general contractors or large mechanical firms like Southland to purchase the pods and then move them from site to site because they are so modular and movable. That way, sites could have flushing toilets and working handwashing stations from the start of construction, then add to the system as the project ramps up.

The success of the AcornVac bathroom pod system shows the power of collaboration and thinking outside the blue box. Davenport was driven by the vision of providing workers with facilities that treated them with basic dignity. He turned this vision into reality by working with stakeholders, engineers, and an open-minded client.

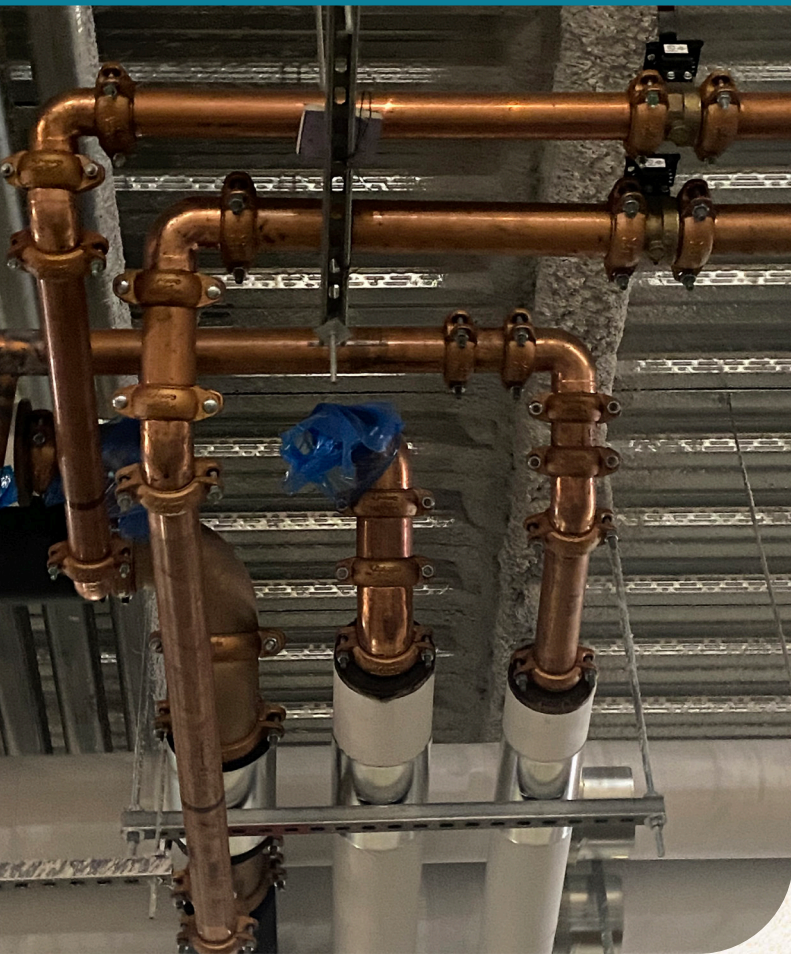
Now, the modular pods have become a blueprint—both for Davenport’s future projects and for construction firms aiming to embed quality sanitation systems right from the start. Most importantly, the transformation has had a simple but profound impact, offering essential facilities that make workers feel valued rather than miserable. When creative solutions tap into that kind of positive potential, everyone wins.

For more information, visit www.morrisgroupint.com. MCAA thanks Morris Group International for being a major sponsor of MCAA24 and providing convention lanyards.



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Racing Ahead of



To meet the tight timeline for a new multimillion-dollar casino and hotel, The Severn Group leveraged the Victaulic grooved copper system's design flexibility and on-site fabrication capabilities to manage the project's most critical aspects. As a result, The Severn Group was ahead of schedule on every portion of their scope of work. Victaulic is a major sponsor of MCAA24.

No Time for Delays

Dumfries, a small town in Virginia with a population of approximately 5,750, will soon be home to the Rose Gaming Resort, a \$372-million gaming and entertainment complex. The highly anticipated facility is expected to generate the town \$35.5 million in annual tax revenue. It will have more than 50,000 square feet of gaming casino, luxury hotel, dining, and event space. Owners made speed to market a priority for the project, trusting that their construction partners would meet the intended completion date, even when the project experienced a start delay.

The Severn Group installed the heated, chilled, and domestic water systems, as well as the mechanical room and

plumbing throughout the casino and hotel. "Because the casino is built on a former landfill, preparatory site work delayed the construction schedule for two months—but the owner's target completion date remained the same. We had to come up with ways to speed up our construction process," said Richard Grasso, director of operations at The Severn Group.

Grooved Pipe Minimizes Schedule

Among the challenges was streamlining the installation of 2"- to 6"-diameter copper pipe in 35'-tall ceilings in tight corridor spaces. According to Grasso, The Severn Group's traditional standard is to solder or braze copper tube. However, the project's time crunch required a deviation from their traditional strategy. The Severn Group only had a small crew available to perform the sizable installation at Rose Gaming Resort and needed to consider how their joining method would impact the MEP trades working around them.

"Trades in these projects are first-come, first-served. Coming second means working around the trades that arrived before us, but it didn't matter because we used Victaulic. All we needed was to get a scissor lift and a worker to the area, whereas with brazing and soldering, we might not have been able to get around the other trades," Grasso said. "Victaulic helped ease the stress. We didn't have to worry about mirror welding, burn permits, hot work orders, fire watch, cordoning off spaces, or welding screens."

The Severn Group used Victaulic Style 607 QuickVic™ Installation-Ready™ couplings, fittings, and valves to build the copper domestic water system. The products are specifically designed for domestic water applications and are resistant to potable water disinfectants. The Installation-Ready technology is delivered preassembled with no loose parts, meaning contractors only need to stab couplings on pipe ends and tighten bolts to secure them.

According to Grasso, The Severn Group gained back 10 days on the schedule by using Victaulic in the corridor and setting up on-site grooving stations despite working with a smaller crew than originally expected. As additional workers were brought on to expedite the project, they could begin installing grooved copper tube confidently following short training sessions, thanks to easy-to-use products.

"We are creatures of habit and resisted embracing a full Victaulic copper system for a long time," said Grasso. "Rose Gaming Resort changed that. It's in Severn's standards that Victaulic copper is a go. We're 100-percent sold."

Casino Schedule

with Victaulic & The Severn Group

I have no doubt that this system will run for as long as the owners want it to.”

Powered by On-Site Fabrication

The Severn Group did not have shop drawings available for all of the spaces, meaning they would need to capture field measurements, contact their off-site fabrication team, and wait for shipments to arrive before installation could begin. On-site fabrication became key to project success. By setting up a Victaulic grooving tool on the jobsite, The Severn Group achieved considerable time and material cost savings while remaining nimble enough to adapt to unforeseen changes.

“Coordination was under the gun the whole time. We couldn’t afford to lose time waiting for pieces to get fabricated and delivered. We would show up to the site and need to get pipe installed immediately, which is why we switched gears,” Grasso said. “We redlined the drawings as we received them, making changes and adjustments to navigate jumping over ductwork, conduits, and everything else on the fly.”

The Severn Group’s crews set up a Victaulic RG4300 roll grooving tool adjacent to their work area to make it as efficient as possible to prepare, cut, and groove pipe pieces. Thanks to the tool’s compact design, it is easy to transport, and The Severn Group always had the grooving station near work areas, even as they progressed throughout the expansive facility. Victaulic’s roll grooving tool also reduces the risk of error and rework time with a depth-setting feature that enables users to create quality, consistent grooves every time.

Winning Time on the Roof

The Severn Group significantly reduced schedule times on the rooftop, where they were able to complete 20 air handling units in half the time allotted by prefabricating with Victaulic products. Unlike other pipe-joining methodologies, mechanical joints can be easily disassembled when there are misalignments, effectively minimizing lost time in the event of rework. During the time-sensitive Rose Gaming Resort project, The Severn Group’s crew did not need to recut, reweld, or rely on a crane to lift additional materials to the roof when adjustments were needed.

“We had 16 hours scheduled per air handling unit; we cut that down to eight in the shop. On the roof, Victaulic gave us the ability to adjust the design in a matter of minutes,” Grasso said. “It was a conscious decision to mitigate risk and make up time.”

Partnership Drives Success

Construction on the Rose Gaming Resort is still underway, with an anticipated completion date in 2024. All components in the hotel and casino have been hydrostatically tested and signed off on in the promised time, an accomplishment that Grasso attributed to the collaboration everyone demonstrated.

“We don’t have people we buy from. We have partners, and Victaulic was a huge partner to us. Everyone worked as a team with the same goal in mind. There was no push-back, just a ‘What can we do to help?’” Grasso said.

For more information, visit www.victaulic.com. MCAA thanks Victaulic for being a major sponsor of MCAA24 and co-sponsoring the annual golf tournament at the Ritz Carlton Golf Club.



Staying Healthy On the Job

Advice From
the Experts at
Ridge Tool Company

On-the-job safety hazards are a constant risk for mechanical contractors, with some of the most frequently reported injuries coming from routinely used tools and equipment. A few simple precautions can go a long way toward helping maintain health.

Investing in ergonomic tools like the RIDGID RP 115 Mini Press Tool, the smallest, lightest hydraulic press tool on the market, allows you to work more easily in tight spaces while minimizing body strain.

Start with the Basics

Ensure protection on the most basic level by investing in quality essential safety equipment, including safety glasses, ear protection, and gloves. Avoid the temptation to skip using them from time to time to get more done. The few minutes it takes to protect yourself can be the difference between remaining healthy and being injured on the job.

Take Care on Stairs and Ladders

Injuries are common on stairs and ladders. When using a ladder, remember to always keep three points of contact—either two feet and one hand or two hands and one foot on the ladder. When a ladder is leaned against a wall, the bottom of the ladder should be one quarter of the ladder's working length away from the wall, according to the Occupational Health and Safety Administration.

On the stairs, consider using a motorized stair-climbing hand truck to make lighter work of carrying equipment up and down the stairs, and remember to use the handrail. Keep your hands free on both ladders and stairs by carrying tools in a tool belt.

Invest in Ergonomic Tools

Innovative design has resulted in lighter tools with better ergonomics. These upgrades address long-term safety with repetitive tasks, which can determine whether a professional will stay on the job or be sidelined by injury. Repetitive motions over prolonged periods of time can often cause irritation and inflammation of



the tendon sheath of the hands and arms, a condition known as carpal tunnel syndrome.

The latest tools now reduce or eliminate the need for repetitive motions, resulting in less strain on the body and decreasing the likelihood of injury. For example, the RIDGID RP 350 Press Tool has an enhanced pistol grip design that shifts the tool weight forward above the hand for all-day comfort and maximum control; the RP 115 is the smallest, lightest hydraulic press tool on the market, allowing you to get in tight spaces with ease.

Minimize Repetitive Tasks

Along with enhanced ergonomics, advances in technology are eliminating some aspects of manual labor. Invest in tools and equipment that let you minimize manual or repetitive tasks. For example, the Greenlee Shear 30T Shearing Station's retaining spring arm automatically brings dies back into the starting position for the next cut. Its material rest keeps material perpendicular for clean cuts, eliminating the tasks of resetting the die and holding the material during a cut. Small tasks like these, done by hand and repeated over time, can lead to body strain and injury.

Proper Form Is Essential

Even with ergonomic advances in tools, proper form is essential to prevent unnecessary strain on the body. When using a new tool, take the time to learn the proper form. Read the instruction manual, watch how experienced users handle the tool, and look for videos online that share best practices. Understanding proper use and form can also help to save time.

Every job has the potential for injury, but following basic safety guidelines, investing in a few tools to make lighter work of everyday tasks, and using common sense will help keep injury to a minimum and keep professionals healthy and able to stay in their careers longer.

For more information, visit ridgid.com.

Enhancing Customer Experience & Repair Reliability

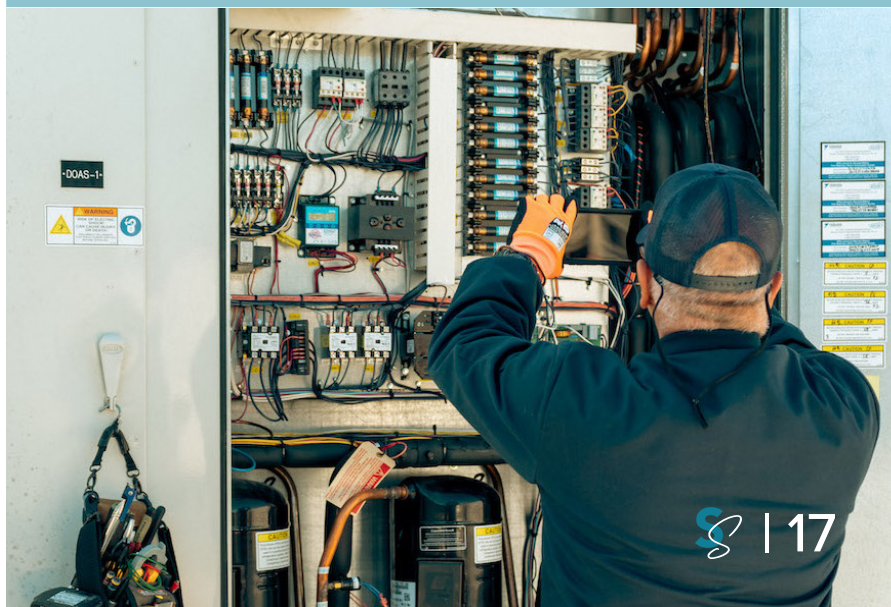
with **XOi & Crockett Facilities Services**

Crockett Facilities Services uses XOi to improve customers' experience, which translates into more confidence in Crockett's recommendations and repairs. XOi also provides Crockett's technicians with easy access to a knowledge database, repair manuals, and expert guidance, so they can make well-informed decisions, and repairs are done right the first time. Happy customers and efficient, effective technicians help Crockett be more productive.

XOi gives Crockett's customers access to live updates on the status of their service requests, work orders, and project progress. Customers can easily communicate with the Crockett team, ask questions, and provide feedback through the XOi platform. They can also download images and work orders to save for future reference or invoice approvals. This streamlined communication process ensures that customers' needs are addressed promptly, leading to quicker issue resolution and a more satisfying experience.

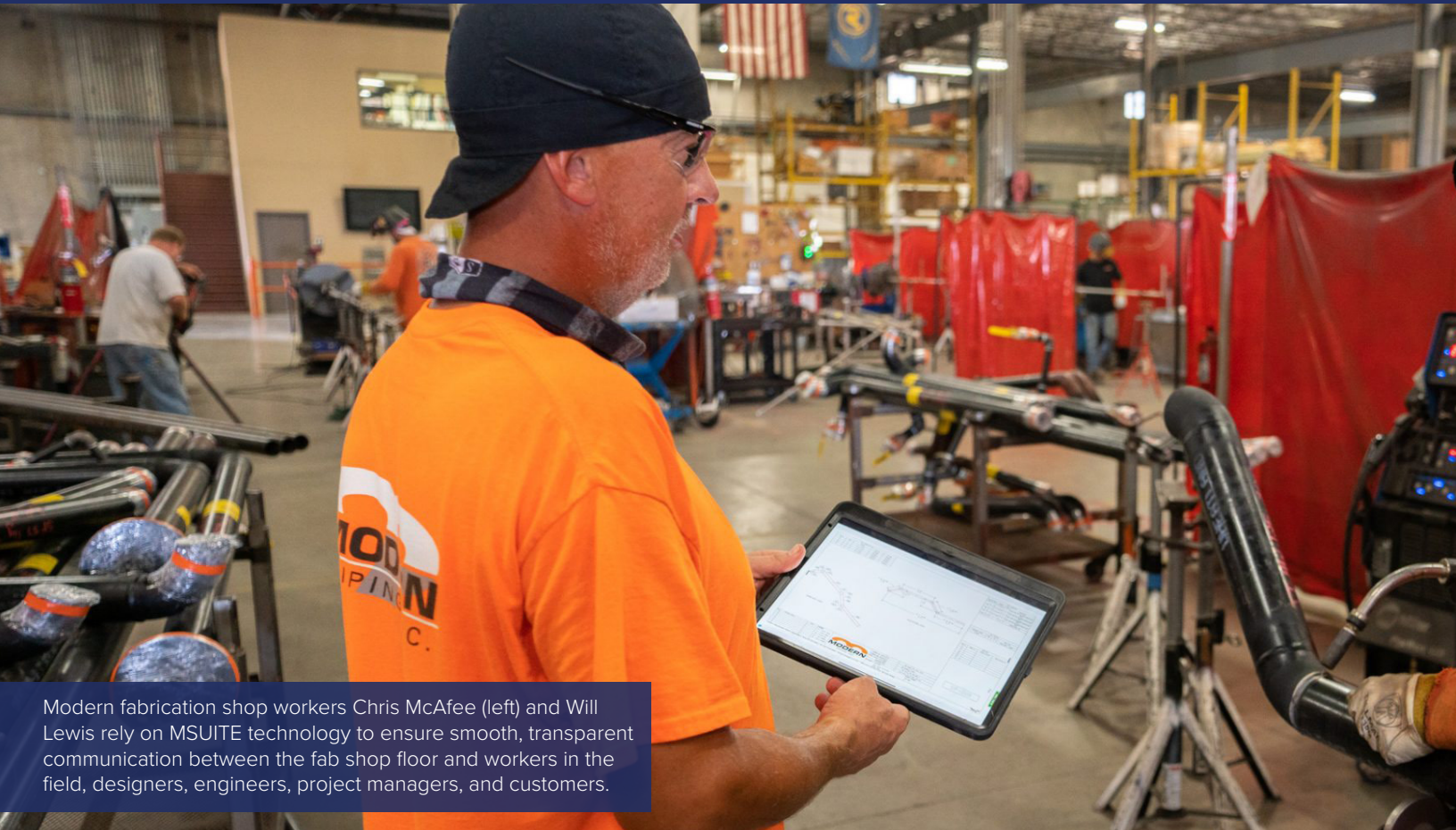
For more information, visit xoi.io.

A Crockett technician uses XOi technology on his phone to provide live progress updates, which improves communication with customers and ensures their needs are promptly addressed—simplifying the repair process for everyone.



Managing *Commun* Keeping Projects

with **MSUITE & Modern**



Modern fabrication shop workers Chris McAfee (left) and Will Lewis rely on MSUITE technology to ensure smooth, transparent communication between the fab shop floor and workers in the field, designers, engineers, project managers, and customers.

Miscommunication and excessive administrative efforts led Modern to adopt MSUITE technology to manage their fabrication operations in unison with other departments. "MSUITE helps prioritize the work for our shop managers to make sure we're on the right track," said Jim Tedrow, piping operations leader.

Managing Moving Parts

Modern, a mechanical contractor in the Eastern Iowa market and beyond for over 80 years, has had tremendous growth and built a positive culture with loyal employees who stay with Modern for decades. "I have been with Modern for 23 years and seen its amazing growth firsthand," said Tedrow. "We've moved into three different shops, beginning at a small shop of 27,000 square feet to currently a 90,000 square-foot building with office space and a fabrication floor for piping, plumbing,

and sheet metal. Now, that's grown, and we're looking at another expansion."

The high volume of work, combined with shifting priorities, documentation requirements, and staffing and schedule changes, all make production very complex; as a result, in a traditional (highly manual) working environment, communication is either nonexistent or delayed. "MSUITE fills this gap and allows stakeholders to update data that automatically resets priorities and indicates delays or schedule changes. In addition, with all of those moving parts impacting production and deliveries, MSUITE enables real-time fabrication visibility on more substantial projects," said Tedrow.

"Quality control and quality assurance are always challenges in any business. MSUITE improves quality assurance and quality

ication, On Track



control through automating digital documentation and tracking, eliminating things we used to do manually,” said Tedrow.

Tracking Changes

MSUITE provides critical visibility and communications between the fabrication shop and workers in the field, designers, engineers, project managers, and customers. The technology offers a single-source platform for collaboration, production, and delivery across multiple stakeholders involved in ensuring project success. For example, staff can update notes, place things on hold, and update due dates, helping the fabrication shop operate in sync with other departments at a high level and keeping everyone on the same page. Tedrow added, “Having complete visibility and tracking work in progress enables us to use metrics for improving performance.”

MSUITE offers several features that help Modern digitize its operation:

- **The Digital Fab Shop** means a paperless job floor, where the drawings on the floor are always the most current version. No more losing drawings or building off the wrong document.
- **Weld Log Tracking** digitally captures the welder identification, welding procedures, heat numbers, inspector, quality assurance process, and quality assurance results for reporting and administration.
- **Digital tracking** makes nondestructive evaluations more manageable; because X-ray testing, welder identifications and numbers, and other data are mapped and captured, generating reports is easy, and manual entry is eliminated.
- **Automatic closeout documentation** generates multiple documents, such as a drawing status report, weld tracking, bill of lading, and final drawing markups.

“Creating a paperless job floor, improving quality control, closeout documentation, and Weld Log Tracking are value-added benefits of the real-time productivity gained through enhanced visibility and eliminating communication gaps in one platform—making MSUITE a game-changer for Modern,” said Tedrow.

“The selling point to our team for adopting technology is that it’s hard to estimate the benefits of offsite fabrication construction. Being able to leverage data in MSUITE and provide it to the design and estimating departments enables Modern to win more business,” Tedrow explained.

Improving Worker Performance

MSUITE tracks employee productivity automatically and helps provide Modern with actionable data to help improve employee performance, no matter the level. “Historically, this was a ‘gut’ observation or [involved] manually adding stats to spreadsheets, but these types of tasks are eliminated from managing and helping staff improve performance,” said Tedrow.

The MSUITE team trained Modern staff onsite, and the technology has evolved over the years. “The customer support team is very effective; their support desk is second to none, and they’re speedy to respond. ... The key to adoption is leadership communication, adaptability, and explaining how MSUITE improves employee and organization performance. With any technology adoption effort, there’s a cultural and behavioral change.”

Real-Time Transparency

With MSUITE, control and product accuracy processes run as high as 95 to 98 percent, translating to a 2-percent failure rate on parts coming out of the fabrication shop. “If we’re doing a large industrial job, MSUITE offers ‘full disclosure’ of what our fab shop is doing and what we’re working on at any stage,” said Tedrow.

“MSUITE enables notifications to stakeholders, and it’s super easy and keeps all the messages and data in one platform and automatically connected to the production schedule. Archaic data silos (email in-box, spreadsheets, paper, phone calls, product changes, etc.) are nearly eliminated. Important tasks, messages, drawing notes, deadlines, change requests, and schedule changes that sometimes fall through the cracks are averted because everyone is on the same page with real-time data in MSUITE,” said, Tedrow.

For more information, visit www.msuite.com.

Preventing a Prolonged Power Plant Shutdown

with **F.W. Webb**

Through a preventative maintenance program, F.W. Webb Company found and fixed oil leaks at a New Hampshire power plant that could have caused major problems. Instead of a long shutdown that could have affected electricity customers across New England, F.W. Webb completed repairs during a planned two-week plant closure.

Driven by natural gas, the highly-efficient, clean-burning power plant uses both combustion and steam turbines to serve 745 megawatts of electricity to customers. The power plant engaged Webb's Process Controls Division to perform preventative maintenance on all of the plant's motor-operated valves. Webb discovered obscured oil leaks in 44% of the Rotork valves—causing downstream issues related to steam discharge.

Webb identified that heat near the steam generator damaged all the direct-mount electric actuators. The team learned that the

plant's Pakscan™ system had experienced malfunctions since 2019 because of incompatible Pakscan/Siemens cards.

The plant shut down for two weeks to allow Webb's Rotork Service Technicians to perform the following:

- Identify 54 Rotork-operated valves distributed across a 48-acre facility comprised of two generators interconnected via a Pakscan system.
- Log all settings, performance, inspection, event, and field failure data for each valve, and merge those data with historical and specification data.
- Fix leaks in 24 of the 54 valves.

Although the two-week shutdown was planned, complications compacted the schedule, including a three-day delayed start and a requested weekend reduction in crew size. The plant also required Webb technicians to work 12-hour days. To get the job done, technicians formed two groups of three. One team removed the actuators, while the other rebuilt and prepared them for reinstallation.

The Rotork actuators now perform to the manufacturer-recommended 20-year lifespan. All valves functioned properly after the plant went back online—and the Pakscan system worked flawlessly too.

Webb's crews overcame the schedule delay, including actuator rebuilds commencing the second week, to complete the project in 11 days with a 100-percent success rate and without any time lost to injury. The power plant avoided a prolonged shutdown and additional capital expenditures thanks to Webb's preventative maintenance.

For more information, visit www.fwwebb.com.



Fueling Growth With a Software Solution

with **ServiceTrade** & **Preferred Mechanical Group (PMG)**

Former service technician Kevin Harris started Preferred Mechanical Group (PMG) 4 years ago with two technicians; now PMG employs 52 technicians and an office staff of 26—and Harris projects continued growth over the next few years. ServiceTrade talked with Harris about his company's impressive growth and how the service software helped him build an efficient, technician-centric company.

When you started the business, did you anticipate this kind of success?

It's been a dream of mine for a long time, and I've been planning for 15 years. I knew what the competition was like and felt fully confident that we would do things better. We'd have better software, better processes, better techs. I felt like if we could do all that—and I felt we could pretty easily—then the sky was the limit.

And PMG has used ServiceTrade from the beginning?

Finding a software solution was one of the top priorities on my checklist. We've had ServiceTrade since month three of being in business.

You worked as a technician for over 20 years. How did that influence your decision when shopping for software?

I was very vocal as a tech. None of my technicians can be more vocal than I was. I knew what my techs needed and what they didn't and was looking for a company that could meet my high standards. When I looked at software, there were many that worked, but they weren't built for techs in the way ServiceTrade is. ServiceTrade provides my techs with a single place to do their work in an easy-to-use, intuitive interface.

How does ServiceTrade help streamline operations?

We use ServiceTrade for all parts and labor management. It forces techs to input their time accurately and correctly document what they've purchased on a job. It is the ultimate way—the only way—that you can guarantee all of your costs hit the job.

Without ServiceTrade, I'd have to hire one or two additional office staff and devote them exclusively to labor and parts management. I believe in using software for these kinds of things and utilizing office staff to grow the business in other ways.

Another thing: I'm a firm believer in not touching things twice! Once someone enters something into the system, the system should be able to take that information to wherever it needs to go. And that's what ServiceTrade does.

It sounds like you are really utilizing the platform to its fullest potential.

The platform has scaled with the business. We've started a new plumbing division and controls division on top of our commercial HVAC work, and we're able to use ServiceTrade for everything.

What I really love about ServiceTrade is that I am always pushing, asking for more, and while I don't always get it, I have a true partnership with the ServiceTrade team. They're always willing to listen and strive to provide the best software solution. That is a big deal to me. I'm always trying to innovate and be better than others. I don't like to settle. If you're not striving to be better, then you are going backwards. ServiceTrade aligns with me on that.

One of my goals as an owner of a mechanical contracting business is to have a better work/life balance and more time with my family. Having the right processes and a software partner like ServiceTrade helps the business run better. I don't have to be so "on it" and wear myself out. I can use technology to help with that.

For more information, visit servicetrade.com.

PMG chose ServiceTrade software because it's built to give technicians like Dustin McBlain, PMG chief operating officer (shown here providing maintenance for a chiller), an easy-to-use, intuitive interface that streamlines their work.



Managing the Houston Heat

with **SPX Cooling Tech, LLC's Marley Coolers & Letsos Company**

By specifying a new Marley® MH Element™ Fluid Cooler from SPX Cooling Tech, LLC, Letsos Company provided a more efficient, more sustainable alternative to repairing the deteriorating existing cooler of an historic Houston building while maintaining a similar footprint, simplifying the installation process.

Bringing Back an Icon

Letsos Company has helped maintain the HVAC system for the former Plaza Hotel, an iconic nine-story building in the Museum District of Houston, TX, for nearly a decade. Located just north of the Museum of Fine Arts, the building opened in 1926 and was once known as Houston's first "million-dollar hotel." Its luxurious rooms and fine dining made it a gem of the city, and it was one of the first buildings in the area to use a cutting-edge technology at the time: air conditioning.

In early 2023, when it came time for the building's owner to make yet another repair to their system's equipment—this time to the building's fluid cooler, a significant investment—the contractor sat down with the operators to come up with a better solution.

"The mini heat pumps in the building repeatedly had condenser water issues, the existing fluid cooler kept requiring repairs, and in the end, the system just could not keep up with the temperatures," explained Garrett Eklund, project manager and estimator for special projects at Letsos. "It was getting to the point that it was too expensive to maintain, and the fluid cooler needed to be replaced."

Letsos called in a little help from Houston-based cooling tower/fluid cooler experts S&S HVAC Equipment to provide a quote for a new tower and go over cost comparisons. The team selected the Marley Fluid Cooler, a similar model to the original, upgraded to stainless steel construction and copper coils.

The "Million-Dollar" Location

In the early 1980s, the hotel and apartment building closed after struggling to keep up with the times. It remained closed until it was purchased by a local architect/design firm in 2005. The building was renovated, and new mechanical systems were installed in 2007 to keep the building cool in the hot Houston climate. The neighborhood around the building has also seen a much-deserved revitalization in the past decade.

The building's popular location meant more traffic, so one of the first steps during the fluid cooler replacement project was to secure permits to close the street to lift the new equipment into position via crane. To make things a little easier, the fluid cooler was located on the back side of the building, atop a parking garage that was added during the renovations.

"The building is in a tight, pretty crowded urban area, so we had to be mindful of that," remembered Tom Brimer, Letsos sales associate. "The fluid cooler arrived on a Thursday afternoon, and the street was closed off. We had a plan in place to get the unit off the street Friday and start up on Saturday evening."

An Unwanted Surprise

The fluid cooler arrived at the site in two pieces: the bottom section held the unit's rows of copper coils, and the top contained fill and the fluid cooler's fan. Each piece was inspected and made ready to lift that evening. But before lifting the unit, the team noticed that a brace on one of the pieces had been damaged during shipping and would need to be repaired before lifting into place.

Letsos reached out to S&S, and they were available immediately. "We have a trim-out crew on standby for all our



projects,” said Angela Sherman, president of S&S HVAC Equipment. “At that point, the old unit was down and there was no delay optional, you have to find a way. And we did just that.”

The S&S team repaired the brace onsite and contacted the SPX Cooling engineering team to approve the fixed piece. The engineering team looked at the repairs and approved them the same day.

Orderly Installation and Start-Up

After the one small setback, the rest of the project was completed according to plan. The fluid cooler was delivered on Thursday and lifted into place the following day. The teams were all prepared once the unit was installed to begin piping it in. Piping was installed and updated on Friday and prepared for start-up on Saturday. The start-up process went as planned, and the system was back online Saturday, without delays.

“Following start-up, we saw some issues with the control system, but they were quickly addressed,” Eklund noted. “We had to get all the heat pumps in the building balanced, too. But the tower has been doing great to manage it the whole time.”

The former Plaza Hotel building, with 82,000 square feet of rental office space, is now home to Prosperity Bank and Beers Law Firm, among others, and its fluid cooler is updated and working well thanks to the team at Letsos.

For more information, visit spxcooling.com.

Letsos credited teamwork and careful planning with preventing minor hiccups from disrupting the installation of a new Marley Fluid Cooler in an historic Houston building.

Dramatically Inc

with **Watts Specialties, LLC's Specialty Pipe Cutter & AMS Industries, Inc.**

With a large project on the horizon and more on the way, AMS Industries, Inc. invested in a Watts Specialties, LLC pipe cutting machine and immediately reaped benefits. "Pipe cuts that were previously taking one man 40 hours to complete are now being cut in 8 hours—including outlets!" said Beth Thullen, fabrication shop superintendent at AMS.

Keeping Up the Pace

AMS has built their reputation over five decades of serving clients in multiple industries. They aim to build a better, stronger, and more durable company for the future; protect the AMS brand; and meet their commitments to clients to help improve local communities.

Thullen started her career in 2007 as an apprentice in UA Pipefitters Local 597 and has been with AMS Industries for 12 years. "The last three years we have seen numerous changes and a substantial increase in shop fabrication for commercial and nuclear piping," she said. "Fortunately, we have stayed extremely busy, and despite having a great team, we are always looking for ways to be more efficient. Previously, we were mainly using a bandsaw, magnetic torch, and different types of pipe and prep machines. We were also renting equipment, doing repairs, and buying replacement parts."

Thullen continued, "We pride ourselves on being competitive and finding ways to speed up our pipe fabrication flow. Accelerating the steady output of pipe was a priority. Each pipe cut was taking around 15 minutes, followed by an end-prep machine. One of our largest projects was coming due in 2023, with more projects scheduled for 2024. Simply put, we needed a more efficient way to cut pipe."

AMS began discussions about purchasing a new CNC pipe cutting

machine. "The only company mentioned was Watts Specialties," said Thullen. "We lined up a trial period with a Watts machine at another fabrication shop in the spring of 2021. One of our machine operators worked in this facility for a month, cutting pipe for AMS projects on the Watts machine. We quickly realized an automated pipe cutting machine was the solution for our efficiency goals."

AMS purchased a W-244 pipe cutting machine with a 25' conveyor system. "We are now cutting a lot more pipe from 6" to 14" outer diameter with more efficiency," Thullen noted.



Increase Efficiency

Expectations Achieved

“We were hoping for an increase in productivity with a decrease in manhours,” said Thullen matter-of-factly. “As we expected from our trial machine, we have definitely seen an increase in productivity. The cut pipe leaves the machine with clean bevels. The welders are now more efficient, spending less time on layout and fit-up.”

Thullen explained, “We are mostly running prespooled fabrication with a lot of olet holes. We also get regular requests from the field for ‘spur-of-the-moment’ piping needs. It is really nice to be able to quickly design a new spool by

simply putting the dimensions in the machine ... on the go, then load the spools on a truck and deliver the pipe to the field. This kind of swift flexibility was hard to accommodate prior to having the Watts machine.”

Game-Changing Software

Thullen also appreciates the Watts 3D-Profile Plus Software. “The software is great,” she noted. “The majority of our larger jobs are scanned, modeled, spooled, and moved to a shared file by the drafting department. My operator is able to make decisions about which jobs he uploads on a daily basis.”

Learning the software has been a smooth process, according to Thullen. “Our machine operators, only two months into working with the Watts machine, are very comfortable. The benefit of the software is greatest on bigger jobs when we upload spools to be cut in multiple quantities.”

Moreover, Thullen explained, “The software is also a game changer when we get requests for lateral, mitered, or saddled pipe cuts. It only takes five minutes to design and cut a unique spool. Before we had the Watts machine, it would take one to two hours—calculating coordinates, laying out the project, and then cutting the pipe with a torch or a grinding/cutting wheel.”

AMS has not yet needed to call for support, but, said Thullen, “start-up and training with Jessie Scribner, the lead support technician for Watts Specialties, was super informative. He definitely set us up for success, so we are not overly concerned about what might happen when we need support.”

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



Help Keep Your Project *Up To Code*

Free Spec Review
Service Provided By
NIBCO INC.

Specifications provide clear instructions on a project's intent, performance, and construction; a detailed specification can anticipate and answer construction questions onsite, saving the contractor time and money. Combined with drawings, they are contractual documents that can minimize project risk and give support if any legal issues arise. When the project is finished, construction specifications become part of the audit trail and can form the basis for future management or policies, such as best practices to optimize future endeavors.

Standards and requirements that affect specifications are continually evolving to reflect new technologies and changing circumstances. Dave Lazear, director of commercial sales for NIBCO INC. (an MCAA24 major sponsor), pointed out, "If you have not reviewed and modified your specifications in the last two years, chances are your information is outdated."

Types of Specifications

Performance specifications lay out the operational requirements, with the focus on the outcome and function of the project. Performance specifications allow a contractor to exercise flexibility and creativity when deciding how to follow through with a project.

Prescriptive specifications, which list the exact materials to be used and the processes for installing them, are typically formatted in the following ways:

- **General:** Refers to national or international design standards, product handling, required submittals, design requirements, and quality control
- **Products:** Details the products required for each task and the performance and structural requirements for each
- **Execution:** Explains how to prepare the materials, manage the installation, and test the quality after installation

Proprietary specifications require the use of a single, approved product type for an installation, often

because of owner preferences, existing equipment already on site, or the need for a specific piece of equipment to accomplish a certain task.

Keeping Up With Changes

Industry organizations are continually updating their standards and codes. For example, the National Plumbing Code is updated every three years and follows a rigorous set of guidelines, including a review process involving thousands of experts from around the country. A building's occupancy and corresponding plumbing fixture requirements are determined by code requirements, as well as project-specific requirements that may exceed code. Assessing these parameters can highlight the need for changes to a system design.

When supply chain issues and product shortages occur, you might have to adjust your specifications to reflect product availability. Also, if you tend to rely on what has always been specified before, your specifications might overlook new, innovative designs and products that can increase productivity and cut costs.

Tap Into NIBCO's Free Review Service

NIBCO offers customers the opportunity to have their specifications reviewed by industry professionals to ensure that they meet the most current industry standards. "If you aren't taking advantage of this service, you are missing out on a great opportunity for free professional advice that could impact your building's performance," said Lazear.

NIBCO can review plumbing, fire protection, and any mechanical specifications to ensure that they are not outdated. Users get one-on-one, individualized attention and interaction from experts who are up to date on the latest standards. The turnaround time for review varies but is typically complete within two days.

For more information, visit www.nibco.com. MCAA thanks NIBCO INC. for being a major sponsor of MCAA24, hosting the 47th Annual Round Robin Tennis and 3rd Annual Pickleball Tournament, and providing the Convention app.

Simplify Remote Monitoring & Maintenance

featuring **SLOAN's Smart Systems**

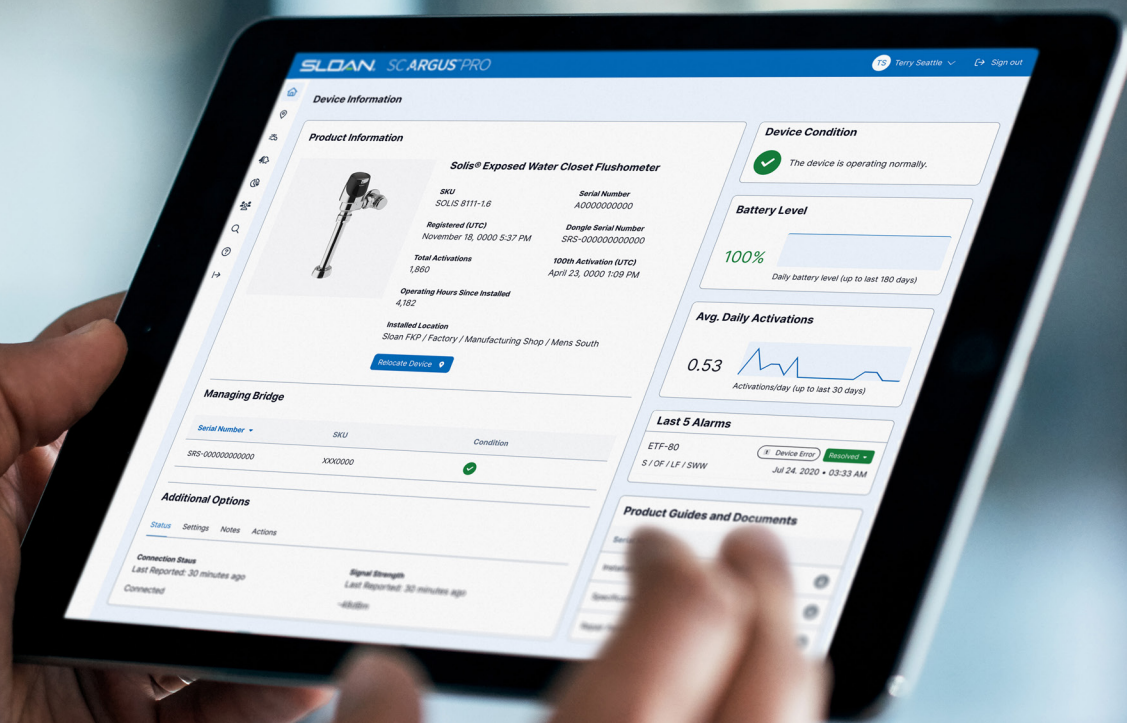
Installing smart products like the SC Argus™ Pro suite from SLOAN (an MCAA24 benefactor) allows facility managers to monitor and maintain products remotely, saving time. These products also reduce water usage, improve sustainability, and contribute to a healthier, more hygienic restroom environment.

By tracking vital metrics such as water usage, battery life, and alarms, SC Argus Pro helps maintenance teams better understand the overall status of their facilities while keeping restroom products operational. With two-way communication, facility managers can change settings, set hygienic line flushes, customize reports, and get a more complete understanding of faucet-to-flushometer activation ratios and average handwashing time.

The latest addition to SLOAN's Smart Systems collection, the SC Argus Pro suite consists of smart products, data bridges, and cloud-based SC Argus software that turns collected data into insights viewed through a web browser. The system is compatible with a wide range of SLOAN smart products, including energy-efficient SOLIS® flushometers and high-traffic ETF faucets. SC Argus Pro connects with all SLOAN IoT (Internet of things) devices for easy remote management and employs the latest best practices for end-to-end customer data security.

For more information, visit www.sloan.com. MCAA thanks SLOAN for being a benefactor of MCAA24 and sponsoring the Monday lunch speaker, Kevin Brown.

By tracking vital metrics such as water usage, battery life, and alarms, SLOAN's SC Argus Pro helps maintenance teams monitor and service facilities remotely.



Predictive **MAINTENANCE** **STREAMLINES** Operations

with **nClarity & Mazza Mechanical**

With the nClarity predictive maintenance (PdM) platform, Mazza Mechanical transitioned from the traditional preventive maintenance model to a digital-based service, streamlining business operations considerably. Mazza Vice President Ledgie DeRose explained, “We are now able to get early warnings when issues emerge without having to go onsite. This is far more productive than our old approach of dispatching techs 12 times per year.”

Ledgie DeRose continued, “In the event we feel the need to dispatch techs, they are far better prepared with a precise diagnosis, optimizing our time onsite and reducing callbacks. It’s always great when a tech gets onsite before the customer even knows there is an issue.”

Meeting Customer Demands

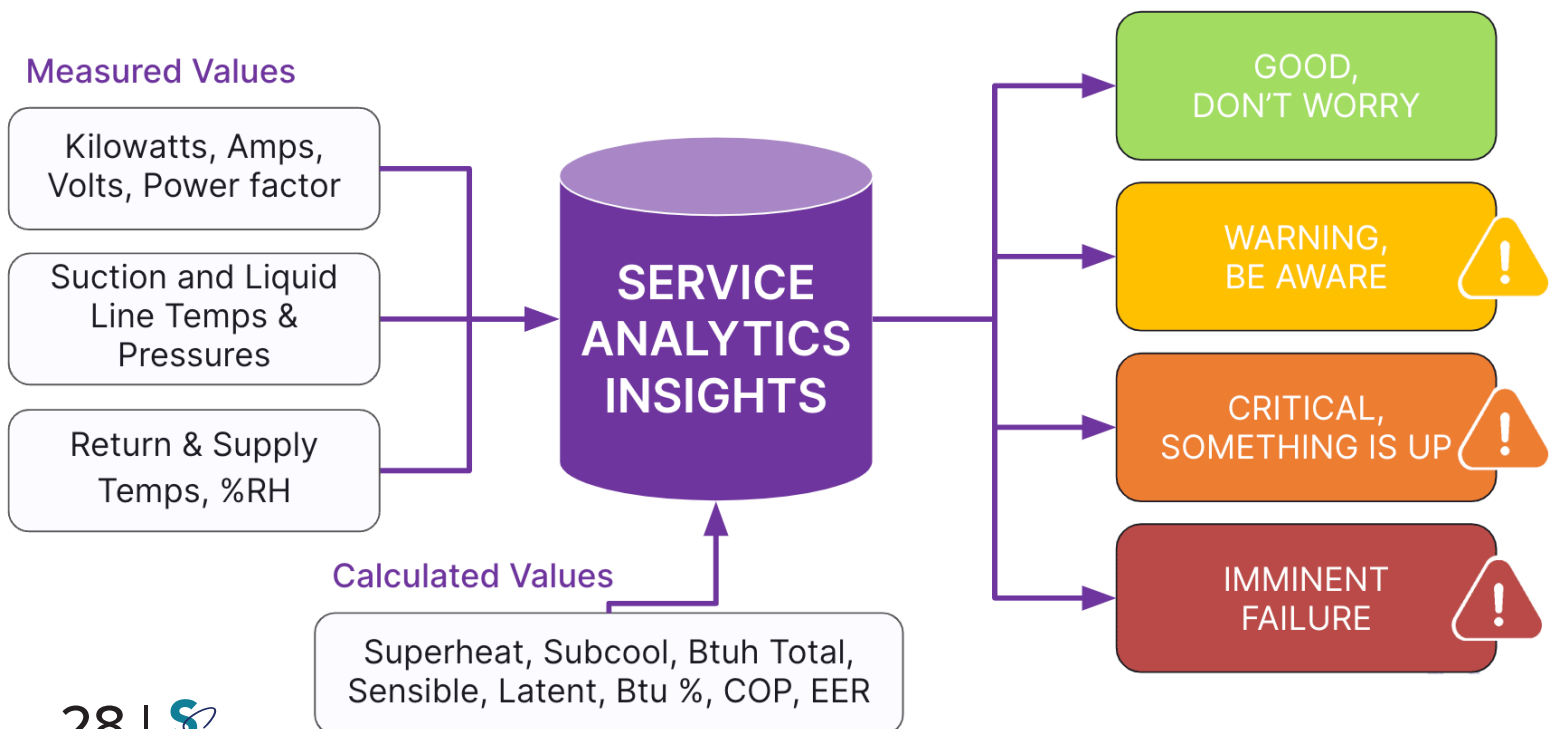
Brothers Dan and Ledgie DeRose, president and vice president of Mazza, respectively, and their team service some large, innovative manufacturing clients who expect continuous innovation from their part-

ners. Manufacturers are seeing the industrial sector’s evolution to a digitized PdM model, so it was inevitable that Mazza would feel some pressure to migrate to a PdM service model.

The DeRoses began engaging clients in discussions regarding the impact the nClarity technology could have on their operations. The real motivator for most clients was the emphasis on system monitoring integrated into their service operations that drives measurable uptime.

“Our clients are sophisticated operators that understand the value of data in their businesses. Approaching them with a platform that collects machine-level, real-time data that is processed through purpose-built analytics that detect sources of machine degradation and potential failure really addressed a need,” said Dan DeRose.

Package units that service critical areas were targeted in several facilities. Mazza techs installed Pulse circuit boards at each HVAC unit and connected





Highlighting Cybersecurity

featuring
**CNA's Risk Control
Podcast Series**

sensors from the Pulse to key components inside each unit (capturing information on supply and return air, high and low side pressure, and temperatures). An onboard, utility-grade meter was connected via a current transformer to unit power. Ledgie DeRose estimated installation took about two hours per unit.

One-minute interval data are routed from each Pulse to a private cellular network (no IT needed), which is then forwarded to nClarity's service operations analytics engine in the cloud. Ultimately, building insights (i.e., robust alerts) are pushed to service operations dashboards and mobile applications that act as a digital gauge. Service operations personnel are all able to remotely access machine data.

"While a lot of our customers have invested in sophisticated controls, we are convinced implementing a monitoring solution is really what our customers are looking for to meet this need," said Ledgie DeRose. "If we tried to do this with controls, it would be way too complicated, expensive, and not as usable by my service ops team."

A Win-Win Situation

Dan DeRose said, "We are really encouraged by the impact this data is having on our teams and our clients. Even in its early stage, it's easy to see the value of a predictive service model."

Mazza is now exploring additional benefits for clients and looking for areas that can drive further productivity gains. "From conducting 'pre-PMs' (prioritizing units based on performance before doing onsite preventive maintenance), to engaging in performance data-centric asset planning, to measuring energy consumption with the Pulse's onboard power meter, we are excited to enter into the next phase of this transition," said Dan DeRose.

For more information, visit www.nclarity.com/contractor.

Cybersecurity risks rank as a top concern for companies worldwide. CNA, a supporter of MCAA24, offers Risk Control e-Talks, a series of short podcasts (about 15 minutes each) on risk and resilience. Season 3 focuses on cyber resilience. It offers insights into current cyber attack trends, cyber risk management approaches, and solutions to manage this significant threat to business resilience.

In the first season, the Risk Control e-Talks addressed business resiliency around natural and manmade catastrophes, pandemics, and civil unrest. It explored the resilient mindset of firms that survive unprecedented events, innovative strategies to sustain operations, and how to make informed decisions in times of uncertainty.

In the second season, episodes discussed business income, such as selecting the right coverage to be prepared for disruption, restarting business after a disruption, and how to handle the most common resiliency issues that businesses face in the current environment.

For more information, visit www.cna.com. MCAA thanks CNA for being a supporter of MCAA24.

Advances IN OIL-FREE COMPRESSORS

featuring **Copeland**

In the air- and water-cooled chiller markets, oil-free compression technology is emerging as a more efficient, quieter, more easily applied, and easier-to-maintain alternative to legacy screw compressors. For original equipment manufacturers (OEMs) and end-users of mission-critical chillers in large HVAC applications, oil management adds costs and complexities to system designs—which typically result in declining energy efficiencies throughout their lifecycles.

Currently available oil-free compressors rely on costly magnetic levitation (maglev) bearings, which tend to decline in performance in warm climates and complicate system design. In recent years, environmental regulations and sustainability initiatives have driven design changes in air-cooled chillers. OEMs and industry stakeholders are pursuing the next generation of oil-free compression technologies that can achieve high operating efficiencies and simplify application complexities while supporting the imminent transition to lower global warming potential (GWP) refrigerants.

Emergence of Oil-Free Compression

Air- or water-cooled chillers provide essential cooling—and heat recovery in many cases—in data centers, health facilities, and other large buildings. Because of the high-tonnage cooling requirements of these applications, large screw compressors have traditionally been deployed. While reliable and robust, screw compressors pose oil management challenges:

- Maintenance and upkeep costs and requirements
- Declining energy efficiencies and performance over time
- Increased risk of performance degradation and potential chiller failure

In recent years, air-cooled chillers have been adopted, primarily in response to concerns about water availability and sustainability. Although an air-cooled chiller with screw compression and a flooded evaporator can deliver efficiency gains, the need for oil return and management mechanisms significantly increases system design complexities. A similar system designed with an oil-free compressor can provide the same performance benefits without the added oil management complexities, conserving water and reducing environmental impacts while improving application reliability.

The annual energy consumption of an air-cooled chiller is an important factor in determining both lifecycle costs and sustainability footprint. Chiller and compressor selection starts by matching a building's cooling load with chiller capacity. Then, the system's lifecycle costs or return on investment is calculated, including estimated operational and maintenance costs.

Air-cooled chiller and oil-free compression solutions deliver the highest possible energy efficiencies without sacrificing reliability or introducing unnecessary operational complexities. Compressor modulation technologies can provide significant efficiency gains

over the operating envelope and allow precise load matching in both full- and part-load conditions. Moreover, an air-cooled chiller solution can achieve these goals in some of the most demanding design conditions, such as the high-lift, warm-climate cooling load requirements found in many data center installations.

With the global phasedown of hydrofluorocarbon (HFC) and high-GWP refrigerants, the HVAC industry is moving toward new, lower-GWP refrigerant alternatives. The Environmental Protection Agency has set a maximum GWP of 700 for the chiller sector, which will drive the market toward emerging A2L alternatives—many of which have lower flammability designations under ASHRAE classifications.

Upgrading Existing Technology

Today's oil-free compressors, designed with maglev technology, require multiple permanent electromagnetic bearings to levitate the compressor rotor (i.e., shaft). Radial and axial proximity sensors are needed to regulate the position of the rotor, and sophisticated, on-board, compressor controls are required to maintain reliable, frictionless operation. In the event of a power disruption, the compressor is no longer energized, and standard auxiliary (nonmagnetic) bearings are needed to maintain low-speed operation. This inherent design feature can increase compressor costs and application complexities.

Oil-free compressors with maglev bearings can experience performance-related limitations:

- Insufficient envelope range for high-lift conditions (i.e., significant cooling in high ambient temperatures)
- Reliability concerns and efficiency loss in part-load, turndown conditions
- Prone to surging (i.e., flow reversal) and choking (i.e., maximum flow) in stop/start conditions
- Short cycling, which can impact cooling performance

Current oil-free technology relies on the integration of a compressor, on-board controls, and a variable frequency drive. But this pre-configured architecture can present design customization challenges for OEMs who are unable to decouple the compressor from the controls and drive. In hot, humid climates, for example, this inflexible architecture could result in on-board electronics issues—potentially increasing maintenance, threatening operational reliability, and limiting chiller applicability.

Oil-free centrifugal technologies are raising the standards for chiller performance—delivering high-lift reliability, improved efficiency and sustainability, and a broader application range for the next generation of air- and water-cooled chillers. For example, Copeland's oil-free centrifugal compressor leverages frictionless Aero-lift™ bearing technology to optimize energy efficiency, simplify design complexities, and maximize the performance of air- and water-cooled chillers in demanding conditions—and in full- or part-load cooling scenarios. Aero-lift bearings enable the Copeland oil-free centrifugal compressor to operate independently—without reliance on electromagnetics, proximity sensors, and complex controls. Compared to existing screw compressor technology, the Copeland oil-free centrifugal compressor delivers significant energy efficiency gains in full- and part-load conditions.

For more information, visit www.copeland.com.

Ramping Up Welding Capacity

with **Novarc's Spool Welding Robot & Metropolitan Mechanical**

Metropolitan Mechanical Contractors, Inc. (MMC) put Novarc Technologies Inc.'s Spool Welding Robot™ (SWR) to work and dramatically increased their welding capacity, achieving consistent, high-quality welds every single time. Corey Hagerty, pipefitting shop foreman at MMC, described the impact: "Before implementing the SWR, we typically had three to four guys welding (depending on the project) and we averaged from 60 to 80 factored diameter inches (FDI) a day. Currently, we're doing 200 to 250 FDI a day on the SWR; we even achieved 290" in one day."

MMC has an impressive portfolio of completed projects including the Mall of America, Target Center, Target Field, and the Xcel Energy Center. "The SWR has helped with our capacity on the larger projects, and that's definitely where we have shined," said Hagerty.

Aiming for Quality and Consistency

When evaluating pipe welding automation systems for their fabrication shop, MMC was looking for a solution that would help them achieve consistent, high-quality welds. "The projects that we work on vary a lot," said Hagerty. "Specific jobs typically require a percentage for X-ray and ultrasound testing. Sometimes we run into jobs where it is 100% X-ray and sometimes 10%. What was important to us was to improve the quality and consistency of our welds."

Novarc's SWR is a welding cobot designed specifically for pipe, small pressure vessels, and other types of roll welding. Since implementing the SWR, MMC has increased their pipe welding capacity dramatically, with no failures or repairs needed to date. In North America, repair rates at pipe fabrication shops are typically around 3 to 5 percent. A shop producing 6,000 welds per year with a 5-percent repair rate is likely spending around \$300,000 each year on repairs. At MMC, Hagerty noted, "The cost of repairs is typ-

ically between \$800 and \$1,000 per test, and with Novarc we've achieved a 0-percent failure rate."

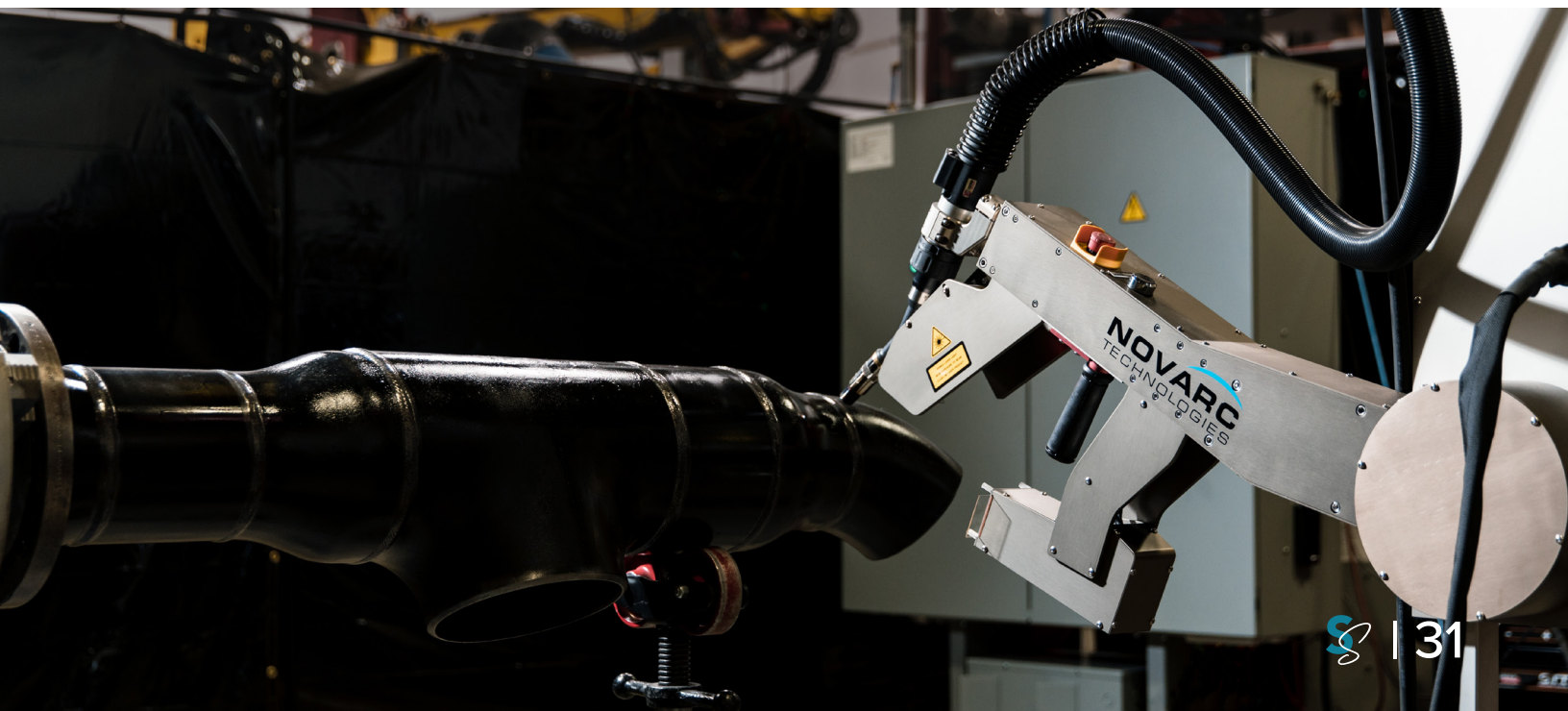
Tackling the Welder Shortage

The SWR has reduced MMC's dependence on highly skilled welders, of whom there is a global shortage. With the SWR, MMC has been able to leverage the skills of its current workforce. Hagerty explained, "We actually have an individual that was a pretty skilled welder in the field of stick welding, and he didn't have a significant amount of experience in wire, but he just obtained certification with wire, and we've been able to put him on the SWR. It's been pretty seamless to be able to put a junior-level welder on the SWR and achieve high-quality welds."

In addition, Novarc has helped MMC get the most out of their SWR. "Novarc's support team has been very helpful, and they ensured that we were up and running all the time," said Hagerty. "I really like the platform that the team has in the background; basically, if there is an important issue, they see it and they take care of it right away. They have a gauge on who takes care of it, how, and why."

Hagerty also praised Novarc's training opportunities. "The Novarc Academy was also a great help. I had walked through the training sessions myself, and I think that it took out a lot of the unknown and the pessimistic views that a lot of welders can have towards it. The fact that you can override it, interact with it, and make adjustments on the fly is a huge benefit. I fully believe that's the benefit to Novarc over the other semi-automatic processes," Hagerty concluded.

For more information, visit www.novarctech.com.



Pairing Scanning Technologies to Boost Productivity

Tips From **FARO Technologies, Inc.**

By Jerry Hardy

Integrated Marketing Director, Architecture, Engineering, Construction, and Operations, FARO Technologies

Different jobs require different tools—not to mention the software to accompany the hardware options. The 3D reality capture solutions available today can work together to create a perfect blend of technologies to optimize your workflow efficiency and productivity.

The Need for Speed

Simultaneous localization and mapping (SLAM) enables mobile scanning of indoor, outdoor, and subterranean environments. Problems can arise when an autonomous or semi-autonomous device needs to identify its geospatial location in real time without the aid of the Global Positioning System (GPS) or other global navigation satellite system, while creating a map of its surroundings and placing its location on that map. SLAM technology solves this challenge by using computer algorithms and light-ranging technology like LiDAR (light detection and ranging) plus 360° cameras to perform both functions simultaneous-

ly. The technology is useful where GPS triangulation is difficult or impossible, such as in certain engineering and construction settings.

Increasing Accuracy

Mobile scanning complements stationary reality capture achieved through terrestrial laser scanning (TLS). Laser scanners like the FARO® Focus Premium Laser Scanner, now with Flash Technology™, are perfect examples of what fixed position scanning can achieve.

Even with the speed and accuracy of stationary laser scanners, increasingly accurate mobile scanning—like that provided by the FARO Orbis Mobile Scanner—can be a critical time-saver, because it better captures hard-to-reach locations efficiently. At normal walking speeds of 2 to 4 mph (3.2 to 6.4 kph), a SLAM mobile scanning system can capture data up to 10 times faster than traditional TLS methods alone.



Cloud Software Enhances Productivity

Once the data are collected with the right 3D measurement tool for the job, the information must be processed through the right software. A cloud-based solution like the FARO Sphere® XG Digital Reality Platform allows construction, operations, and geospatial professionals to upload, view, measure, analyze, and share reality capture data in a single environment.

A platform solution can integrate data from a wide variety of capture methods, including stationary scanning, mobile scanning, iPhone LiDAR scanning, and 360° photo capture. It also can consume data from standard industry file formats and integrate with several of the industry's most popular building information management (BIM) and project management platforms.

A cloud-based platform allows for real-time collaboration and project oversight; the ability to scan, upload, and share reality capture data; and secure storage of historical data

throughout the project lifecycle. Efficient software is a vital component of a balanced 3D reality capture toolkit.

Improving Profit Margins

The efficiency gain from a 3D reality capture workflow has a significant productivity multiplier effect. More locations can be scanned faster, with fewer personnel onsite and less risk of data gaps, so repeat site visits are reduced or eliminated. Enhanced throughput and project-to-project agility (thanks to speed, accuracy, ease-of-use, and portability) can translate into important new business opportunities in existing and yet-to-be-tapped markets.

SLAM technology like that in the FARO Orbis Mobile Scanner attempts to unite the accuracy of stationary laser scanning with the portability of quick mobile scanning solutions. An ideal workflow features stationary scanning for highly granular work, plus a mobile scanner to quickly map and measure natural or as-built environments.

For more information, visit www.faro.com.

How Smart Pump Technology Simplifies Installation & Maintenance

Featuring Xylem Inc. - Bell & Gossett's Smart Pumps

The development of intelligent pumping systems with smart motors is key to meeting the growing demand for better efficiency and reduced energy consumption. Integrating smart technology in pump systems can simplify installation and maintenance, ensure reliable operation, and minimize environmental impact.

Technological advancements like electronically commutated motors (ECMs) have vastly improved overall performance and efficiency in pumps used for heating and cooling applications. ECMs use variable speed controls to react to system demand by speeding up or slowing down, resulting in the most efficient system operation. By determining the minimum energy required to obtain optimal pump flow, ECM pump systems can dramatically reduce the power consumption of a traditional circulator pump without sacrificing comfort.

High-efficiency pumps outfitted with international efficiency level 5 (IE5) motors also substantially contribute to energy savings and reduced carbon footprint. The International Electrotechnical Commission, which established the IE standard motor rating system, created the IE5 rating to designate ultra-premium efficiency. IE5 motor losses are at least 30-percent lower than IE3 motor losses, which alone reduces the energy consumption by 10 percent with a typical pump load profile.

Xylem's Smart Pumps, equipped with built-in IE5 motors, are simple to install and commission in new and retrofit installations. With its embedded electronic drive, motor size is reduced, resulting in a compact footprint. Additionally, Xylem Smart Pumps can handle extreme environmental conditions and shocks, ultimately extending the life of the equipment. Bell & Gossett, a Xylem brand, recently introduced the Series e-90E Smart Pump combined with the Xylem Smart Motor. The integrated pump solution combines pump, motor, and variable speed drive in one package, which allows for easy, cost-effective installation.

As industry professionals continue to prioritize optimizing HVAC performance while reducing energy consumption and carbon footprint, integrated drives and controls, ECM technology, and motors with IE5 efficiency are proving to be game-changers in the commercial building market, giving contractors an entirely new level of control over system design and performance. With the ability to improve water usage, detect anomalies, and adapt to changing conditions, these smart pumping systems provide a dynamic approach to pump operation and efficiency.

For more information, visit www.xylem.com.

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JUNE 24 – 26
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Want to improve your business relationships, gain product knowledge and leverage your business strategy? Join us for MCAA Converge. More than just a meeting, MCAA Converge is a meticulously crafted experience designed to address the unique needs of your company. Picture executive-to-executive meetings, a melting pot of strategic discussions, and an atmosphere buzzing with innovation.

This exclusive gathering of industry leaders will be set against the backdrop of Victory Field, home to the acclaimed Indianapolis Indians, and hosted at the luxurious Westin Indianapolis.

At 2024 MCAA Converge, we redefine engagement, offering a top-tier, strategic experience that goes beyond the local level. Executives from MCAA members – 25 manufacturer/supplier companies and 40 contractor companies – converge to explore a spectrum of topics: from current and future market conditions to upcoming significant projects, emerging technologies, and the invaluable art of relationship building.

“This event and atmosphere create an ideal environment for the right individuals to collaborate and formulate plans that support each other’s business requirements. All participants come well-prepared to strategize on how we can consistently enhance value in both current and future solutions. Undoubtedly, these two days stand out as among the most productive moments we share with our partners.”

- Mike Kirby, Director of MILWAUKEE TOOL
and MCAA Converge Chair

“Roughly sixty percent of most mechanical and plumbing projects consist of material, equipment, subcontracts, and other soft costs. Through tactical meetings with member Manufacturers and Suppliers, MCAA Converge provides a platform for contractors to gain advantages on their projects through the implementation of emerging technologies, strategic planning, and negotiation. Finding ways to reduce costs and increase productivity through this event can significantly decrease labor risk and increase margins on current projects. Advantages gained at Converge could also be the difference between winning and losing future projects.”

- Rick Gopffarth, V.P. Marketing/Business Development,
Dynamic Systems

The verdict from the most recent MCAA Converge? A resounding 9.3 out of 10, with 88% of participants expressing an overwhelming likelihood of attending the 2024 edition. Act swiftly, as only 40 spots await MCAA contractor companies, and a mere 25 for MCAA manufacturer/supplier companies.

Seize the opportunity to secure your company’s spot or schedule a personal meeting to delve deeper into what awaits. Don’t miss out – fill out the survey now and be a part of a transformative experience at the 2024 MCAA Converge!

Visit mcaa.org and search “Converge” to reserve your spot.

DEPARTMENT OF DEFENSE ANNOUNCES

New CYBERSECURITY REQUIREMENTS

In 2020, the Department of Defense announced a new strategic effort to provide enhanced cybersecurity efforts for their building projects going forward. The Cybersecurity Maturity Model Certification (CMMC) will ensure accountability for companies to implement cybersecurity standards to protect sensitive data during the design, build and operations of DoD facilities. Through research grants by the John R. Gentile Foundation and ELECTRI International, a

video series, along with official DoD CMMC documentation, has been produced by MCAA’s Chief Security Fanatic, Nick Espinosa to provide ongoing updates on CMMC changes as the standard evolves and in-depth tutorials on all 110 CMMC Level 2 security controls.

Visit mcaa.org/jrgf and search “CMMC” to find all the resources.

RAISING *Mental Health* AWARENESS WITH SAFETY RESOURCES

Construction has one of the highest rates of death by suicide of all industries in the United States, about four times higher than the general population. MCAA is proud to tackle Mental Health Awareness & Suicide Prevention head on with a series of NEW resources developed in partnership with the United Association (UA).

- Mental Health Awareness & Suicide Prevention Video – Our newest safety and health video highlights the success story of an industry veteran, with appearances from MCAA’s president Robert Beck, the UA’s Jen Massey, industry expert Dr. Sally Spencer Thomas, and MCAA member Ricky Reams. The video is available in both English and Spanish to MCAA members and the general public.
- Joint Statement from MCAA & UA – UA General President Mark McManus and MCAA President Robert Beck highlight the importance of mental health awareness and suicide prevention.
- 988 Chips & Hard Hat Stickers – The MCAA and the UA have partnered to create UA/MCAA branded chips and hard hat stickers highlighting the 988 National Suicide and Crisis Lifeline. See 20 Years of Safety Excellence – September 2023: Mental Health Awareness for ordering information.
- Mental Health Toolbox Talks – This series of 38 toolbox talks is easy to reference, quick to use, and a great way to start the conversation on mental health awareness and suicide prevention in construction at your company. The talks are available in both English and Spanish.

Studies show that suicide is killing workers in the construction industry at five times the rate of work-related injuries like falls and struck-by incidents. And it’s killing them in all parts of the industry – including upper management. Unfortunately, there is no simple answer to why this is happening nor is there an easy fix, but in many cases deaths from suicide CAN be prevented when we push mental health stigma aside and help one another. The MCAA & Alliance

Partners Suicide Prevention Webinar explored the topic. This is one recording you won’t want to miss – you could help save a life!

MCAA consistently offers mental health education and training as part of its Safety & Health Conference. Mark your calendar for the 2025 Safety & Health Conference, January 14 - January 16, 2025 in Fort Lauderdale, FL.

This problem is not going away any time soon, and we cannot solve it alone. MCAA is committed to ongoing, collaborative efforts that shine a light on the issue. We are committed to providing resources to combat it. Stay tuned for future developments.

Visit mcaa.org and search “mental health” to see all MCAA’s mental health awareness and suicide prevention resources.



MCAA

2024 Event Calendar

MARCH

17-21 MCAA Annual Convention
Orlando, FL

APRIL

22-23 NCPWB Technical Conference/Committee Meeting
Scottsdale, AZ

MAY

6-8 CEA National Issues Conference
Washington, D.C.

JUNE

10-12 Women in the Mechanical Industry Conference
Cleveland, OH

17-19 Field Leaders Conference
Philadelphia, PA

24-26 Converge
Indianapolis, IN

JULY

28-31 AEC Best Practices Conference
Washington, D.C.

For more information about MCAA's Educational Events, visit
[MCAA.org/events](https://mcaa.org/events).



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