

# SMART SOLUTIONS

SUMMER 2016

Helping contractors save money and enhance productivity



Using a variety of Zurn products prefabricated to specification, U.S. Engineering saved at least 10 percent in labor costs as they roughed in a new stadium for Colorado State University.

## U.S. Engineering Saves Time, Labor with Zurn Lean Construction Plumbing Solutions

Zurn Industries, LLC enabled U.S. Engineering Company to “move the chains” faster than usual during the rough-in phase of building a new stadium for Colorado State University in Fort Collins, CO. Patrick Barnett, project manager for U.S. Engineering, said Zurn’s lean construction practices provided “at least a 10-percent” labor savings for the company.

The new 41,000-seat stadium, targeted to open for the 2017 football season, features Zurn carrier banks and stabilizer plates prefabricated to specification—as well as Zurn’s acclaimed new EZCarry™ High Performance Carrier System. The Zurn products and processes helped U.S. Engineering save time and money in several ways:

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## Egan Company Earns High Marks for University Installation of Daikin Rebel Comfort Control

By installing Daikin Applied highly efficient Rebel rooftop units, Egan Company overcame time challenges and space constraints, providing Bethel University with a more effective, energy-saving solution to its HVAC needs. Installation of the units was phased to meet the university’s budget and had to take place when dorms were not occupied. Egan Company had to use existing openings on the roof. The units were installed in August 2013, August 2014, and March 2015.

### *Demands of Dorm Life*

Bethel University, a top-ranked, evangelical Christian university based in St. Paul, MN, needed to replace rooftop equipment original to two nearly identical residence halls built in 1977. “One of the driving forces to replacing the old units was trying to get better ventilation, drier air, and make it more comfortable inside the dorm rooms,” said Chuck Broz, HVAC technician supervisor at Bethel University.

The four-story Bodien residence hall sits on a hillside and is connected to the three-story Edgren hall by a common student lounge in the middle of the complex. While the dorm rooms in the 52,720-square-foot complex are served

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Egan Company found the Daikin Rebel rooftop unit improved student comfort and delivered substantial energy savings thanks to an energy recovery wheel that draws 60 percent more humidity from the air stream.



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## SMART SOLUTIONS

Helping contractors save money  
and enhance productivity

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

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MANUFACTURER / SUPPLIER COUNCIL

**MCAA**

Adding Value to Your Supply Chain



## Finding the Win-Win

MCAA and our Supplier Partners recognize that you're always aiming to meet your clients' needs while improving productivity, cutting your costs, and saving time on the job. In this issue of *Smart Solutions*, you will learn how Zurn Industries, LLC and Jay R. Smith Mfg. Co.<sup>®</sup> helped keep projects on track with customized solutions. You can also read how Egan Company overcame time challenges and space constraints to provide Bethel University with an energy-saving HVAC solution by installing Daikin Applied highly efficient Rebel rooftop units. The Hill Group saved around \$45,000 by relying on Erickson Incorporated's aerial services for several heavy lifts in downtown Chicago, IL. Using the Miller<sup>®</sup> PipeWorx 400 welding system, De-Cal, Inc. improved productivity by as much as 40 percent.

Other stories in this issue illustrate how the right products can help you meet the complex, varied challenges you face as a contractor. A.T. Chadwick turned to Victaulic's drawing services team and grooved piping systems to manage a historic building renovation without a hitch. Working within the limitations imposed by a hospital renovation project, Dynamic Systems, Inc. prefabricated as much as possible, calling on CADDY products to get the job done and also saving time on the jobsite. PAR Plumbing found that HOLDRITE<sup>®</sup> support systems allow them to work within the narrow confines of New York City high-rises.

Digital innovations in the contracting field are arriving daily. This issue of *Smart Solutions* has examples from Jonas Construction Software, Technical Sales International, and Milwaukee Tool on how contractors used digital solutions to improve productivity and grow their businesses. Other innovative companies are marrying technological and mechanical solutions—such as touchless sensors for restrooms (Sloan Valve Company) and smartphone monitoring of HVAC operations (Daikin Applied's Intelligent Equipment<sup>®</sup> controls).

With all these digital solutions come new concerns about managing devices and software, so KEY2ACT offers tips on when to upgrade your operating system. Also in this issue are insights from Baltimore Aircoil Company on getting the most from your evaporative cooling equipment and from Wayne Water Systems on selecting the right sewage pump for the job.

You can also read about University Mechanical's use of Uponor's radiant heating and cooling system to achieve LEED<sup>®</sup> Platinum certification and All Area Plumbing's selection of stainless steel waste and vent piping systems from Josam Company for a restaurant in need of a product that could stand up to just about anything. MCAA and our Supplier Partners know you aren't just looking for solutions, you're looking for *Smart Solutions*.

Bill Tavenner, Chairman

### Join me in welcoming our newest supplier partners:

- Appion Inc.
- GT Water Products, Inc.
- Honeywell Refrigerants
- Nu Flow Technologies
- E.H. Wachs

## Victaulic Helps A.T. Chadwick Renovate a Philadelphia Icon

To meet the coordination challenges and compressed timeline of an historic building renovation in downtown Philadelphia, **A.T. Chadwick** turned to **Victaulic's** drawing services team. The speed of installation of Victaulic grooved piping systems would also prove crucial to meeting deadlines, as well as reducing costs. Thanks in part to Victaulic, A.T. Chadwick finished on time and on budget.

### *An Icon on Walnut*

One of Philadelphia's most striking examples of art deco architecture, the 25-story building at 1616 Walnut Street originally opened in 1930 and earned a spot on the National Register of Historic Places in 1983. Located in the popular Center City area of Philadelphia, the building attracted the attention of real estate developers who, in 2012, purchased the property and planned a \$50-million renovation to create a new luxury apartment building, Icon 1616. The mechanical portion of the project entailed replacing the old HVAC equipment with efficient, contemporary equipment as well as running new piping.

### *Time & Logistics Crunch in the Heart of Philly*

Used to the challenges that come with working in downtown Philadelphia, A.T. Chadwick knew the 1616 Walnut project would present coordination issues. Preparation would be critical for a site with no laydown area and limited time in which to close surrounding streets. Adding the typical bottlenecks of a construction elevator and crane serving multiple trades meant that material would have to be very well coordinated before it even arrived at the site. With labor rates approaching \$100/hour in the metropolis, any unproductive time quickly translates to wasted money. In addition, construction began in May

2013 and was scheduled to finish in November that same year.

To solve these challenges, A.T. Chadwick turned to Victaulic for help. At up to 10 times faster to install than other pipe-joining methods, the company's grooved piping products would help ensure rapid completion of the mechanical system installation. The speed of installation greatly reduced labor costs, contributing to overall total installed cost savings. A.T. Chadwick submitted an option credit for grooved systems when it bid on the project. The owner approved the cost savings credit and agreed with A.T. Chadwick's recommendation to use Victaulic.

A.T. Chadwick also brought in the Construction Piping Services (CPS) department at Victaulic, which offers drawing and building information modeling (BIM) coordination services. They knew from experience that CPS can help shrink the timeline in the drawing phase. Whereas contractors may be limited by the number of draftsmen or BIM coordinators available to staff a project, Victaulic CPS can assign multiple members from its team of 80 global project coordinators to complete drawings quickly. CPS acts as a partner, offering services such as flagging long-lead-time items during the drawing phase to ensure products are available when the contractor needs them. In addition, Victaulic's bag-and-tag service enables products to be shipped to the fabrication shop or jobsite for just-in-time delivery, labeled and packaged per the contractor's direction.

### *From 1616 Walnut to Icon 1616*

With a plan in place for timely completion of the project, preconstruction work began. The existing elevator equipment was to remain in place in the penthouse mechanical

room, so the CPS team had to place the new mechanical equipment around it strategically. The Victaulic project coordinator visited the site to take measurements, ensuring the equipment was accurately represented in the contract drawings. Being mindful of clearance for maintenance and egress in the tight space,



A.T. Chadwick used Victaulic grooved piping products to join the mechanical systems, including the condenser water piping and pumps, which are up to 10 times faster to install than other pipe-joining methods, saving installation time during the project's compressed timeline.

CPS designed and drew the 2 1/2" to 10" condenser water and cooling tower piping systems and the 2 1/2" and larger cooling tower equalizing system. A.T. Chadwick handled all other systems.

Upon completion of the drawings, CPS produced fabrication drawings with correlating bills of material. "It saved us time for the material take off, for the spooling of the drawings, fabrication, and gave us assurances that everything would fit accurately

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## DSI Uses CADDY Products to Gain an Edge in the Competitive Austin Market

Faced with the need to minimize noise and limit work to daytime hours for a hospital remodeling project, **Dynamic Systems, Inc.** (DSI) prefabricated as much as possible, calling on CADDY products from **Pentair** to get the job done and also saving time on the jobsite. The project called for DSI to add a floor to the hospital while the hospital was still serving patients.

Denny Gosser and the other DSI project managers meet regularly with the prefab shop to discuss how they can be more efficient on the jobsite. This constant examination of their means and methods has led to DSI becoming one of the top mechanical contractors in the booming Austin, TX, market.

Before concrete decks were poured for the hospital, the DSI team positioned preset anchors, located by using building information modeling (BIM) as well as GPS and laser-guided location solutions. Because the overhead anchors were installed before the concrete was poured, Gosser eliminated much of the timely hammer drill use that would normally be required on such a project.

DSI used CADDY ROD LOCK, a threaded rod fastening system that is available in a lot of different configurations for a multitude of applications. Unlike traditional methods that involve hours of threading nuts or other hardware onto threaded rod, with CADDY ROD LOCK, the assembly is lifted and locked into place, saving DSI valuable jobsite time.

The DSI team prefers to use a CADDY ROD LOCK Telescoping Strut Replacement, or TSR, for light-duty trapeze applications. The TSR is a strut profile that telescopes to accommodate



**Top:** By using CADDY Telescoping Strut Replacement, DSI did not have to cut strut, which saved time and also allowed them to avoid disturbing patients while remodeling a hospital.

rod spacing from about 12" to 20". "We really liked the CADDY TSR200RL," said Gosser. "It's much easier than dealing with 20' sticks of strut everywhere. We also don't have to cut strut, so we saved time there, and it also didn't disturb the hospital."

Gosser specified CADDY ROD LOCK TSR for applications such as medical gas, heating, hot water piping, and domestic water piping. In some applications DSI had to use a three-layer trapeze with different services running down the same pathway. Because the profiles could be easily pushed up the threaded rods, building a three-layer trapeze was faster than building a single-layer trapeze with traditional methods.

"Now that they're available," said Gosser, "we'll use the CADDY ROD LOCK preset anchors for similar applications in the future. These

anchors allow the threaded rod to be pushed in place, rather than threading it in. This way you can pre-assemble the hanger to the rod, then just shove the rod into the hanger."

For larger applications CADDY offers traditional strut profiles, precut to length, with integrated CADDY ROD LOCK devices on each end. They can be used the same way as the TSR, but work with heavy-duty applications. Gosser said he uses the TSR solution for applications from 10"-16" and will turn to CADDY ROD LOCK strut in precut lengths for larger applications.

Another example of adopting an innovative solution to solve a very common problem is Gosser's use of CADDY SLOT LOCK clevis hangers. Unlike a traditional clevis hanger, CADDY SLOT LOCK has

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# University Mechanical Use of Uponor Radiant Flooring Leads to LEED Platinum

To help San Diego State University's (SDSU's) Associated Students reach its goal of making all its buildings LEED® certified by 2020, **University Mechanical** installed **Uponor** in-slab radiant heating and cooling system in the new student union. Now, the three-story Aztec Center is not only highly sustainable, it is also LEED Platinum-certified. (Associated Students is a student-directed, not-for-profit auxiliary organization of SDSU.)

Construction of the 202,000-square-foot building began in the spring of 2011. It houses student offices, a recreation center, and an intercultural relations center, including a 1,200-seat lecture hall and a 300-seat theater.

The Aztec Center boasts numerous energy-saving features that make it more efficient than its predecessor and significantly reduce operation costs. The HVAC system includes Uponor's hydronic radiant heating and cooling system coupled with a dedicated outside air system. It is designed to consume 40-percent less energy than standard HVAC systems.

San Diego-based University Mechanical had worked on two similar radiant heating and cooling installations, both smaller in scope, at the nearby University of California at San Diego campus—the Structural and Materials Engineering Building and the Health Sciences Biomedical Research Facility.

The project used 75,000 feet of 5/8" Wirsbo hePEX™ tubing on three floors on the west side of the building to serve 36,000 square feet of space, including dining and lounge areas on the first floor and meeting and office spaces on the second and third floors. The tubing was spaced 6" on center

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University Mechanical helped San Diego State University's new student union reach LEED Platinum certification with sustainable, energy-efficient solutions like Uponor's radiant heating and cooling.



University Mechanical used 75,000 feet of Uponor's 5/8" Wirsbo hePEX™ tubing on three floors on the west side of the building to serve 36,000 square feet of space in the new Aztec Center, one of several energy-efficient features that led to LEED Platinum-certification for San Diego State University's student union.



## Pan-Pacific Mechanical Combines Expertise with Jay R. Smith Mfg. Co. Flexibility to Meet Challenges

With customized solutions from Jay R. Smith Mfg. Co., Pan-Pacific Mechanical (PPM) sidestepped the challenges of the California Building Code and met their client's demand for a visually pleasing building. PPM has the expertise to engineer creative and efficient processes, an inherent understanding of the importance of aesthetic details, and the ability to come up with the best solutions to any request. Jay R. Smith's willingness to provide products that adapt to PPM's custom approach ensured that construction of the new Kaiser Permanente San Diego Regional Medical Center (KPSD) went off without a hitch.

### *A Better, Faster, Safer Way*

Chris Young, a project manager for PPM, explained that they have had challenges on past projects stemming from the California Building Code regarding anchor design for "cracked concrete" and the complexity of working with post tension (PT) decks. PPM decided that challenge needed a better solution—and it needed one before they started installing more than 1,000 lavatories and sinks on the KPSD project.

PPM likes the flexibility and ease of working with the Jay R. Smith's Labor Saver® lavatory supports. However some situations require a more customized approach. PPM was unable to put all four Hilti TZ bolts into the support legs of the Labor Saver supports because that would breach minimum TZ spacing requirements. While Smith will



PPM designed—and Jay R. Smith fabricated—a custom lavatory plate that builds in 1/2" of left/right flexibility so PPM can make any adjustments outside the wall, saving a significant amount of time and money. This custom solution is an example of the partnership between the two companies that contributed to successful construction of the new Kaiser Permanente San Diego Regional Medical Center.

supply the contractor with a letter confirming the acceptability of using just two anchor bolts in each support leg, not all inspectors are satisfied with that confirmation.

In addition, while you can scan the deck to identify where a PT cable is, you do not have a lot of flexibility as to where the posts can go. You often have to install a subframe to move the bolts off the PT cable.

As an alternative, PPM designed a custom lav plate using 1/4" flat stock steel with an angle iron welded to the plate. That plate is then affixed directly onto the studs, eliminating the need for a floor-mounted frame. Smith 0723 concealed arms, which come with a bulkhead adapter, are then attached to the plate.

"We use the Smith products because they are applicable in so many different situations. They [Smith] are willing to work in conjunction with us when a custom approach makes the most sense," said Young.

Not only does that plate eliminate many of the problems relating to the concrete deck, but it also can prevent a lot of headaches post installation. The Americans with Disabilities Act requirements demand sinks be a minimum of 18" dead-center from a wall. If an extra 1/8" or 1/4" too much mud is applied when tiling over drywall, the contractor will have to open up the wall and re-drill the frame.

PPM's plate eliminates that headache because it builds in 1/2" of left/right flexibility. PPM can make any adjustments that are needed outside the wall, saving a significant amount of time and money.

#### *Experience Breeds Expertise*

Kaiser was adamant that the main entry of the new hospital be as aesthetically pleasing as possible. Early

*"We use the Smith products because they are applicable in so many different situations. They [Smith] are willing to work in conjunction with us when a custom approach makes the most sense."*

—Chris Young, Project Manager, Pan-Pacific Mechanical

in the project, it became apparent that penetrations in the envelope of the building for overflow drains were causing a great deal of concern. Kaiser felt the standard cow tongues were not consistent with the face of the building. On top of that, the large openings could eventually be a place people would stuff with garbage or debris.

The only alternative apparent to almost everyone was to route the overflow drains to the other side of the building. However, this solution would cost an exorbitant amount of money and consume valuable space in the already-congested overhead space of the hospital.

PPM was familiar with this type of request and therefore was able to suggest a much better solution. A couple years ago, they had a similar issue when working on the Camp Pendleton Naval Hospital. At Camp Pendleton, the concern was that someone could potentially insert an explosive device into overflow drains at the ground level of the building.

At that time, PPM asked Smith to come up with a locking cover for the ground level overflow drains. The result was a downspout nozzle with a perforated latching stainless steel hinge cover that could be locked securely and sits flush with the building. Those covers are now a standard Smith product. (See *Smart Solutions*, Summer 2015, for more details.)

"We showed the covers to Kaiser, and they were very happy with our solution," said Young.

#### *Success Is In the Details*

It is not unusual to come across a surprise or two as you are completing a big project, and the KPSD project was not immune to those surprises. Quick thinking on the part of the contractor and fast shipping on the part of the supplier can turn a potential disaster (or, at the very least, an embarrassment) into the perfect solution that keeps the project on schedule.

"We were just days away from the turnover of the hospital support building project when we identified a cleanout located in the main entryway," said Young.

Given Kaiser's exacting standards for the front of the building, PPM knew their client would not want a bronze or stainless steel cleanout cover marring the aesthetics of their beautiful terrazzo floor, and they needed to do something quickly. Smith manufactures a terrazzo cleanout cover (4180) just for this very situation. The cover was rush shipped to the jobsite, and the only thing the client saw was their perfect, unblemished lobby floor.

The state-of-the-art KPSD is expected to achieve LEED Gold certification. It is targeted to open in 2017, bringing quality medical care to those who live and work in the San Diego area.

*For more information, visit [www.jrsmith.com](http://www.jrsmith.com).*



## De-Cal Improves Productivity 30–40 Percent with Miller PipeWorx 400 Welding System

By taking advantage of the multiprocess capabilities of the Miller® PipeWorx 400 welding system, mechanical contractor De-Cal, Inc., was able to change its pipe welding processes to significantly improve productivity—by as much as 30–40 percent—while also growing business. The PipeWorx system offers conventional stick, TIG, MIG, and flux-cored welding processes optimized for pipe welding in addition to advanced wire processes, including pulsed MIG and Regulated Metal Deposition (RMD®) from Miller.

Based in Warren, MI, De-Cal has worked since 1992 to establish itself as a premier mechanical contractor in the mid-Atlantic states, with additional locations in Youngstown, OH, and Pittsburgh, PA. The addition of a fully functional fabrication shop at the Youngstown location allowed the company to add a new element to its business to meet the demand for customers in oil and gas as well as municipal water, chemical, power generation, food and beverage, and institutional applications.

The fabrication shop used several PipeWorx welding systems along with a series of weld positioners. However, most of the local welding talent had been certified to the ASME codes using only stick and TIG welding processes in fixed positions. To remedy this issue, De-Cal worked with UA Local 396 to certify welders in MIG and flux-cored processes to UA and ASME codes.

The productivity gains that De-Cal realized spurred them to make the switch from the proven-yet-slower stick and TIG processes (in fixed positions) to the faster MIG and flux-cored processes (rolled using a positioner). De-Cal has achieved numerous certifications under ASME Section 9 that included extensive radiographic and bend testing to prove the quality of these processes.

One of the primary contributors to De-Cal's success has been the conversion of most root pass applications to the RMD process from Miller. RMD is a modified short-circuit MIG process in which the welding system anticipates and controls the short circuit, then reduces available welding current to create a consistent metal transfer. Precisely controlled metal transfer provides uniform droplet deposition, making it easier for the welder to control the puddle. The smooth metal transfer also compensates for high–low misalignment between pipe sections and creates more consistent root reinforcement on the inside of the pipe than other short-circuit MIG processes.

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As De-Cal has largely standardized on two processes (RMD and flux-cored), process changeover with the PipeWorx and its dual wire feeder (with solid wire on one spool and flux-cored wire on the other) is as simple as picking up the appropriate gun and hitting the trigger.



## Erickson Incorporated Gives Hill Group a Big Lift

Thanks to **Erickson Incorporated**, a global provider of innovative aerial services, **The Hill Group** saved around \$45,000 on several heavy lifts along the downtown lakefront of Chicago, IL, in one day. They also shortened their project timelines considerably.

Beginning at 9:30 a.m., Erickson crew safely and quickly carried two 18,600-pound chillers to the top of a building across the street from Maggie Daley Park using an S-64F Airplane, a heavy-lift helicopter. After quickly refueling at Vertiport Chicago, the Airplane lifted two more cooling towers, weighing 10,000 lb. each, to the top of another building in less than one-and-a-half hours. The total project was completed by 10:50 a.m.

The Erickson Airplane has a lift capacity of 25,000 lb. and is used for a variety of infrastructure and construction needs. In addition to flying and installing heavyweight ventilation and air conditioning units onto rooftops, the Airplane is capable of raising electrical transmission towers, transporting timber, and fighting substantial forest fires with a 2,600-gallon

hydrotank. The versatile S-64 aircraft was chosen by The Hill Group for its lifting capacity, which shortened the project timeline by reducing the number of lifts and avoiding the need to assemble the sections of the units on the roof.

“The Hill Group would like to thank the entire Erickson team for their efforts on this project, especially Steve Reavis. Steve’s expertise was

an invaluable asset through all stages of planning this helicopter lift,” said Owen Putman, Project Engineer at The Hill Group. “The lifting capacity of the helicopter allowed The Hill Group to avoid disassembly of the chillers and cooling towers, which led to increased profitability and an improved construction schedule.”

*For more information, visit [ericksoninc.com](http://ericksoninc.com).*



The Hill Group saved thousands of dollars and shortened its project timeline by relying on Erickson Incorporated to place heavy cooling equipment on the roof of a Chicago skyscraper.



Erickson Incorporated’s Airplane makes short work of rooftop installations, completing two heavy lifts for The Hill Group in less than two hours.

# Icon Mechanical Streamlines Inventory Management and Cuts Costs with Milwaukee Tool's ONE-KEY™ App

In search of way to track equipment efficiently, **Icon Mechanical** took advantage of **Milwaukee Tool's ONE-KEY™**, the first digital platform for tools and equipment. Now, it has a full picture of the company's allocation and location of equipment and has experienced a noteworthy increase in tools being returned. "It's made our jobs so much easier," said Frank Dickerson, warehouse operations director for Icon.

## Game-Changing Technology

When Dickerson first heard about ONE-KEY from his Milwaukee Tool sales representative, he was a bit skeptical. "You just never know if what you're hearing about is just a sales piece or the real deal," said Dickerson. "I've been in warehouse operations all my life, and sometimes you run into situations where you've been oversold."

Dickerson is responsible for managing and maintaining the company's growing list of equipment. The company specializes in the design, fabrication, installation, modification, and ongoing service of process piping, power piping, boiler making, industrial equipment installation, and HVAC for health care, laboratories, pharmaceutical, educational, and commercial buildings—so the equipment list is extensive.

First introduced little more than a year ago, Milwaukee Tool's ONE-KEY combines tool and software technology into a tool management solution that provides a better way for work to get done for any size company. This technology can help solve user problems and frustrations the industry has never before been able to address.

The application offers a variety of functionalities to increase company and user productivity—including the ability to track tools in real time, customize M18 FUEL™ ONE-KEY-compatible products, and generate reports for electrical terminations with key electrical products. In getting started, Dickerson was particularly interested in ONE-KEY's simplified tool and equipment management function.

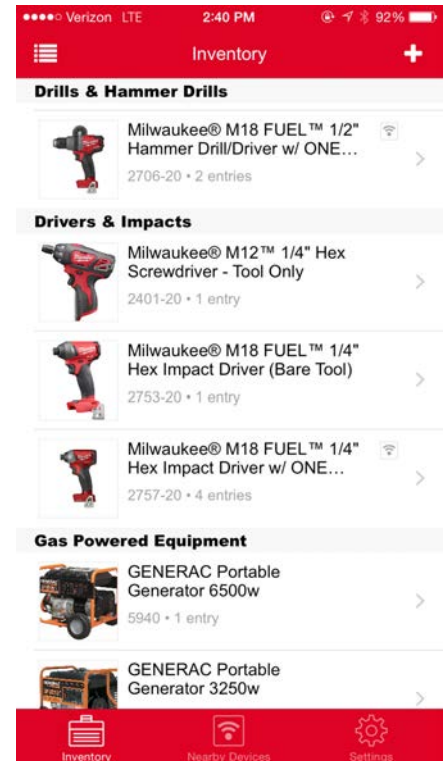
Through the ONE-KEY inventory management functionality, a user can create a central place to manage all of their tools and equipment across their network of jobs and operators—all through the free-to-use web and mobile app. Putting information where it can be easily accessed allows users to keep track of the location of their tools and equipment at all times.

"At the time, we really didn't have any system in place to track our equipment, so the idea that ONE-KEY would allow me to do this all in one place—and for free—was incredible," said Dickerson.

## Up and Running

In February, Icon began working with Milwaukee Tool and implementing the inventory management functionality of ONE-KEY. "It wasn't hard to get started with, and we received a really positive response right away for how streamlined it made our entire inventory process," said Dickerson.

When tools and equipment are brought to him after job completion, Dickerson is able to bring up the ONE-KEY app on his phone, confirm a tool came from the correct jobsite, verify the serial number, log it back into the system, and receive it back into the warehouse. When equipment is ready to be allotted to



Icon Mechanical streamlined its inventory process dramatically with Milwaukee Tool's ONE-KEY, a free digital platform that allows users to track all their tools and equipment in real time (among other features).

the next jobsite, he just needs to go into the app, add the person and what jobsite it is going to, and close the app. And this process works with every tool he has—not just Milwaukee tools.

"I can't say enough how easy it is to learn and use," said Dickerson. "Just to see how easy it would be for my staff to use, I equipped them with some smartphones and got them up and running with ONE-KEY. The adoption of the system has been received very well.... My entire staff is now using it on a daily basis. It's that simple—anyone can use it."

Before using ONE-KEY, Dickerson had a hard time locating tools. Tools

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## Sloan Offers Low-Maintenance, High-Tech Approach to Commercial Restrooms

Knowing when to service or replace aging plumbing equipment is critical to maintaining a clean, operational commercial restroom. Like regularly changing the oil in your car, consistent preventive maintenance helps avoid critical, costlier repairs down the road.

To streamline restroom maintenance and reduce downtime in either new construction or retrofit projects, a best practice is to choose a flushometer that fits the facility and its occupants. When updating existing flushometers, consideration should be given to new, water-efficient models as well as battery-powered options that can provide a more hygienic restroom experience.

Schools and other high-traffic commercial restrooms often benefit greatly from updates or retrofits. In one case of school district renovation project, designers convinced facility owners to retrofit restrooms equipped with over 20-year-old parts. The buildings had not been updated since the late 1990s, before sensor-operated equipment became popular. The building owner was reluctant to install automatic fixtures, but eventually chose Sloan Flushometer Retrofit Kits to update the manual flushometers to



This dual-flush retrofit converts a manual flushometer to a sensor-activated flushometer. It provides hands-free capability while maintaining unparalleled water conservation and energy efficiency.



**Top:** Battery-powered, sensor-activated flushometers like this one not only improve water conservation performance but also improve hygiene across the board.

**Bottom:** Upgrading to a high-performance, sensor-activated flushometer will save money down the line with minimal maintenance.



battery-operated. As a result, the owner is satisfied with the high-quality, serviceable products and the new touchless environment.

Retrofits are growing in popularity in the commercial restroom area. A high-tech, hands-free restroom is becoming more standard, reflecting the increasing expectations regarding hygiene, convenience, aesthetics, and water conservation.

The restroom may be one of the first places occupants see in a commercial building but one of the last places

they expect to see new technology. To eliminate the potential spread of disease-causing bacteria and improve overall restroom cleanliness, electronic sensing technologies enable touchless activation and make pushing the flushometer handle with your foot a thing of the past. Because they dispense water only once per use, they also help conserve water and energy. Whether retrofitting a restroom or maintaining existing parts, in the end, it pays to be proactive.

For more information, visit [www.Sloan.com/parts](http://www.Sloan.com/parts).

## ZURN

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- The Zurn Z1201 EZCarry® High Performance Water Closet Carrier System is 30-percent lighter than conventional carriers, making it ideal for prefab projects where fast installation is a priority. The Zurn EZCarry carrier delivers industry-leading line carry, ensuring waste evacuation for standard and low-flow installations, a significant lifecycle benefit for building owners.
- Custom built lavatory and urinal carrier banks (Z1231-CB and Z1222-CB) designed to fit predetermined spaces meant that U.S. Engineering only had to do “quick adjustments” rather than building and setting each carrier.
- Zurn custom-packaged all components together for each work area, eliminating the time-consuming (and sometimes confusing) steps of organizing and assembling the parts from different boxes.

- The Z1035-Q stabilizer held floor drains in place during construction and concrete installment, keeping the drain placement and orientation correct to the desired height and pitch to the finished floor. This solution removed the need to “box out” to prevent the drain from moving.

By consulting with U.S. Engineering during the design phase, Zurn had exact dimensions, allowing them to devise customized, engineered solutions where the carrier banks and stabilizer plates were going to be installed. In addition, prefabrication reduced installation time and made installation easier. With prefabrication, systems can be tested before shipping, so the contractor is less likely to spend time fixing problems onsite.

“It was very helpful to have Zurn as a partner for a project of this scale,”

said Barnett, whose firm has worked with Zurn many times in the past. “They are the front-runner for many reasons, and it’s always really good to work with them.”

Colorado State University’s new stadium will be an on-campus, multipurpose facility. It replaces the current 32,500-seat Sonny Lubick Field at Hughes Stadium, located about four miles off campus. The new stadium will also be named after Sonny Lubick, the university’s famed football coach who led the Rams to six Mountain West Conference titles and nine bowl games from 1993 to 2007. In addition to football games, the new stadium also will host other sports, entertainment, civic, cultural, and commercial events. It will also serve as the home of additional athletic offices and training spaces.

*For more information, visit [www.zurn.com](http://www.zurn.com).*



Zurn custom built lavatory and urinal carrier banks (Z1231-CB and Z1222-CB) designed to fit predetermined spaces, so U.S. Engineering only had to do “quick adjustments” rather than building and setting each carrier.



## KEY2ACT Outlines Best Practices for Updating Mobile Operating Systems

As more contractors equip their employees with mobile devices, it has become increasingly necessary to develop policies to guide management of those devices. One of the issues that mobile-equipped companies struggle with is how to handle operating system (OS) updates. When an OS update comes along, tech leaders need to decide: Should we update? What other systems and processes could be affected?

### *Updating Existing Devices*

The fact is, during ownership of your devices, there will be many updates available—likely more updates than your business would prefer. When a new update becomes available, you need to determine whether users should apply this update or delay.

Your information technology (IT) team should investigate and

understand what fixes and what improvements are included in these OS updates. It is important to understand very clearly if it is worth the trouble to push the updates out at this time to all devices. Only after IT believes it is useful should users update their devices.

### *The Risks of Updating*

Upgrading your device OS creates the possibility that some apps might become unusable due to incompatibilities. If your team relies heavily on a business-critical app, your IT department should consult closely with the vendors to ensure compatibility before pushing out new OS updates.

Users also face risks when upgrading a device OS in general. In rare cases, performing an OS upgrade can wipe out the device memory or, worse, “brick” the device (that is, make your device unusable). Your IT team

should test any updates to devices that are critical to your business.

### *Quantity and Frequency of Updates*

Why are there so many OS updates? Many OS vendors, like Android and Apple, are not able to do large-scale smartphone and tablet testing on OS versions, mainly because there are so many variables that come into play. There are hundreds of different kinds of devices and tens of thousands of applications (especially with Android) that can be downloaded. A new OS certainly may fix reported issues, but it could also break functionality or apps that your staff use daily. So, these companies often rely heavily on their customer base to test the product and report issues. In turn, this often results in more updates.

For example, iOS 9.0 was released September 16, 2015; iOS 9.1 was released

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## Getting the Best Performance From Your Evaporative Cooling Equipment

### *Tips from Baltimore Aircoil Company*

Building owners and property managers have a lot at stake in their investments, so they look to their MCAA contractors for solutions. When evaluating mechanical equipment, hassle-free operation and long equipment life are important parts of the purchase equation. Here are five ways to enhance the performance of evaporative cooling equipment and save on energy costs.

- 1. Add a variable frequency drive (VFD):** Adding a VFD can reduce energy costs by 30–40 percent, providing a more efficient method of operating a cooling tower while extending the life of the motor and mechanical drive system. This 30–40-percent reduction also

results in a payback of less than a year.

- 2. Replace nozzles:** Replacing broken or clogged nozzles will restore proper water distribution and decrease the leaving water temperature by 1° F—providing an energy savings of 3 percent. Damaged nozzles can also cause uneven water distribution over the fill, resulting in scale build-up while decreasing capacity, so it is important to fix such problems quickly.
- 3. Replace fill:** Replacing scaled or clogged fill—for example, with Baltimore Aircoil Company’s (BAC’s) patented, state-of-the-art fill technology—can not

only restore your tower to its designed capacity, but in most cases the new fill can increase the capacity of the unit by 7–10 percent versus the original fill. Additionally, new fill can also decrease temperature of the leaving water by 2° F on average, increasing efficiency and offering a 5-percent energy savings. New fill can yield payback in two to three years.

- 4. Install a fan system retrofit kit:** For example, the BAC ENDURADRIVE™ Fan System Retrofit Kit is a direct drive motor system that provides 100-percent reliability on transmission components and a 90-percent reduction in

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## DAIKIN APPLIED

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by existing McQuay (now Daikin Applied) fan coils (many of which were replaced in the late 1990s), student life, showers, and the variable Minnesota climate meant the existing rooftop units that supply dedicated outside air had to work extra hard to keep pace.

### *Energy-Efficient Solution*

Selecting the highly efficient Rebel rooftops allowed the university to bypass using large amounts of chilled water from its central chiller plants in a two-pipe system to take advantage of the direct expansion (DX) technology in the new Rebel rooftop units. “One of the biggest reasons we selected the Rebel units was to get, from the DX side, significant efficiency while being able to put in the reheat air with very little moisture content,” Broz said.

The seven-ton Rebel rooftop units provide high part-load efficiencies at 20.6 IEER (integrated energy efficiency ratio), which surpasses ASHRAE’s 90.1 standard by 84 percent. “Rebel has some of the highest IEER ratings in the rooftop market because of the inverter compressors.

In combination with the energy recovery wheels (ERWs), these units are 60 percent more effective at removing moisture from the air,” said Matt Dodds, applications engineer at Daikin Applied.

Broz credits the mechanical installation services by Egan Company along with the Daikin Service Group as critical to the success of the project. “Everyone’s level of effort—including installing new curbs, pulling the old equipment off, and installation of the electrical and hot water lines—made this a very efficient and well-done installation job,” Broz said.

In addition, two of the Rebels—one on each of the buildings—feature Daikin’s Intelligent Equipment® control solution for real-time data that benchmarks performance and monitors system operation. “Our energy managers use Intelligent Equipment to gather data, and we use it to see the detail of operational data and monitor the units. We also appreciate that we can connect remotely to the units on laptop or smartphone,” Broz said.

### *A+ Results*

Bethel University administrators and its students are pleased with the comfort levels. Broz said the difference in humidity levels across the two buildings was dramatic in the early operation of the new Rebels in one residence hall versus the other that still operated with the original rooftop equipment. “We’ve maintained everything below 55-percent humidity with the Rebel unit. With our existing equipment, we were well over 80-percent humidity throughout the building space, even with the fan coils in the dorm rooms, because various doors are left open.”

Quiet, unimpeded operation adds additional quality to the student’s studying and living conditions. Broz noted that the extremely-low-audible output of the Rebel units goes unnoticed by students. “The Rebel units are very quiet due to the inverter compressor technology,” he said.

Energy savings are significant given reduced natural gas consumption with less reliance on the chiller plants that serve the complex as well as the reduced electrical consumption of the Rebels versus existing rooftops.



**Left:** Egan Company installed Daikin Applied’s highly efficient Rebel rooftop units to meet the dehumidification challenges faced by two Bethel University residence halls due to showers, open doors, and a variable Minnesota climate.

**Right:** Egan Company managed time constraints and space restrictions for Bethel University’s HVAC upgrade with Daikin Rebel units, which are a big improvement over the old units, according to Chuck Broz, HVAC technician supervisor at Bethel.





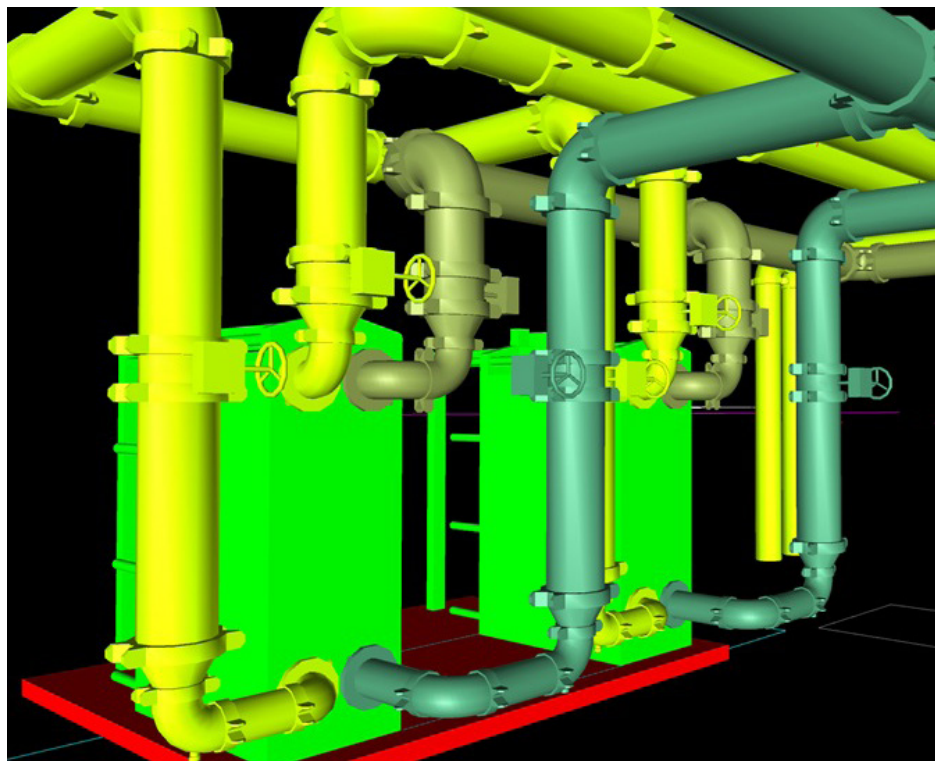
Daikin's Intelligent Equipment control solution allows Bethel University to gather data remotely and monitor performance and operation 24/7.

Notably, the ERW technology on the Rebels (which heats up outside air) provides significant energy savings, especially during Minnesota's cold winter months.

"In the winter, we'll use Intelligent Equipment to look at the energy side to optimize use of the energy wheels, instead of using building heat, especially as it relates to the restrooms and showers. In the summer, we use Intelligent Equipment to see if we're doing an effective job of keeping the dewpoint and humidity at low levels," Broz said.

Broz recommends Daikin for not only HVAC equipment, but also service solutions, adding, "The Daikin Service Group crew is very good, and we appreciate that they call to make sure the equipment is running well." Bethel University was so pleased with the performance of its Rebel units that it ordered a new four-ton Rebel rooftop unit to serve its new, state-of-the-art wellness center, which houses its fitness center and exercise science program and opened in fall 2015.

For more information, visit [www.DaikinApplied.com](http://www.DaikinApplied.com).



A.T. Chadwick took advantage of drawing services from Victaulic CPS, which modeled the penthouse mechanical room and strategically placed equipment such as the plate-and-frame heat exchangers around the existing elevator equipment. Victaulic's speed and coordination helped A.T. Chadwick meet the project's tight timeframe.

## VICTAULIC

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per the drawings," Brian O'Kane, A.T. Chadwick project manager, explained. "It took the guesswork out of it."

CPS also coordinated bag-and-tag product delivery to A.T. Chadwick's fabrication shop, where pipe spools were cut to length and grooved. Materials and equipment were then consolidated and transported to the jobsite, which allowed the contractor to ensure materials arrived on site perfectly organized and timed for the crane lift date.

O'Kane described how the day progressed: "We blocked down the street, set the crane up, and towed 30-plus cars to have access. We started at midnight and started picking at 7:00 a.m. the next morning. The materials were put in loading containers and picked up to the roof. We picked all the

prefabricated piping, cooling towers, pumps, and sent them all up to the mechanical room on the top of the building in a single day."

Victaulic couplings, fittings, valves and accessories were installed on the 2 1/2" to 10" mechanical piping systems. O'Kane reported that the installation went smoothly, with the project finishing on time and on budget. The quick installation of Victaulic products helped A.T. Chadwick meet the tight timeframe, as did the speed and coordination advantages of Victaulic's drawing services. "It worked out very well," O'Kane remarked. "CPS is very professional. They're exacting and very reliable."

For more information, visit [www.victaulic.com](http://www.victaulic.com).

## HOLDRITE Products Solve Jobsite Challenges for PAR Plumbing

To incorporate pipes into the walls in very confined spaces of New York City high-rises, PAR Plumbing uses a variety of HOLDRITE® support systems. HOLDRITE products make for a simpler installation while also saving PAR time, as demonstrated by two recent projects.

**Support Systems Get the Job Done**  
When PAR was contracted to provide all of the plumbing for Riverside K, a 32-story luxury condominium on Manhattan's West Side, they knew that space inside the walls would be tight. Installing the drain, waste and vent piping, and domestic water piping in the available space would be a challenge.

HOLDRITE support systems were the answer. "Without HOLDRITE's pipe support systems we would have had to create custom metal supports," explained Brendan McMonagle, PAR Plumbing's vice president of new construction. "It would have taken hours to cut and fabricate metal pieces in the field to equal what came out of the HOLDRITE box. HOLDRITE's pipe support systems got the job done in much less space than field-cut metal. So construction went faster, and we were able to easily solve the problem of tight space within the building's walls."

**Time-Saving and Secure Solutions**  
PAR Plumbing was also selected as the plumbing contractor for an extensive retrofit project, the conversion of the top 20 floors of a building located across the street from the World Trade Center from commercial space to high-end condominiums. A major telecom company has all of its digital equipment systems installed on the ninth floor and wanted to be absolutely certain that the pipes PAR installed on the 10th floor would not come apart, flood the building, and put the systems out of commission.

As with the Riverside K condominiums, space inside the walls where the pipes were being installed was extremely tight. To address both the space constraints and the telecom company's concerns about potential flooding, PAR once again turned

*"HOLDRITE's pipe support systems got the job done in much less space than field-cut metal. So construction went faster, and we were able to easily solve the problem of tight space within the building's walls."*

—Brendan McMonagle,  
Vice President of New Construction,  
PAR Plumbing

to HOLDRITE products, using the HOLDRITE #117 Series No-hub Fitting Restraints. These mechanisms are ideal for restraining hubless cast iron soil pipe joints against separation during high thrust conditions. They are engineered to meet plumbing codes and pipe manufacturers' installation instructions.

For this project, #117 No-hub Fitting Restraints were attached to the base

stack sittings of the sanitary and storm lines. Because PAR installed hundreds of restraints on one floor alone, the product was a significant time-saver when compared with the field-devised alternative of cutting individual threaded-rod pipe clamps, custom cutting all the pieces, and assembling each one with miscellaneous hardware.

"The HOLDRITE No-hub Fitting Restraints installed very quickly in the tight ceiling space we were working in," noted McMonagle. "They saved us a tremendous amount of installed costs. It was just a matter of pulling the restraint out of the box, putting it together with a ratchet gun, and you were done in just a few minutes for each installation. This was the first time we used these engineered restraints in such a mass quantity, and it was a big help for us. It drastically cut our installed costs while giving us the same security of not worrying about the plumbing joints coming apart and flooding the building."

"HOLDRITE is the standard for us now," McMonagle added. "We use their products in all of our jobs."

For more information about HOLDRITE, visit [www.holdrite.com](http://www.holdrite.com).



To fit all the plumbing systems into the walls of a new Manhattan luxury condominium, PAR Plumbing used HOLDRITE's pipe support systems, avoiding the need to create custom supports and saving time on installation.



## CADDY

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DSI Project Manager Denny Gosser said CADDY SLOT LOCK clevis hangers, shown here ready for pipe installation, make the job easier for installers, minimizing fatigue and maximizing safety.

a rigid bar that slides in place to join the two halves of the hanger, rather than threading a long bolt through the hanger halves and into a nut on the outside. Additionally, Gosser noted that CADDY SLOT LOCK makes the job easier for the installers. “It minimizes fatigue and maximizes safety as well,” he said. “The guys spend less time with the pipe on their shoulder, but also less time with their hands off the ladder.”

When asked about the reaction of the installation crew to these new solutions, Gosser said, “The team recommended using the same stuff on the next hospital.” When it comes to applying innovative products and techniques, DSI knows what they want. “We have the set of materials that we like to use, and it’s all CADDY stuff,” said Gosser.

For more information, visit [www.ericom.com/caddy.asp](http://www.ericom.com/caddy.asp).

## TSI Software Solutions Increase Productivity, Spur Growth for Gallo Mechanical

Combining TSI Software’s Autodesk Fabrication and Building Data, along with other TSI solutions, Gallo Mechanical expanded their fabrication operations, increased productivity, and grew their business. Based in New Orleans, LA, Gallo recently expanded to Baton Rouge, LA, and Mobile, AL. To keep up with the pace of the ever-changing construction industry, Gallo turned to TSI for help.

### Software Saves Time, Money

“Drawing with real content in Autodesk Fabrication not only saves time, but it also has saved our organization money,” said Mike Clark, building information modeling (BIM) director at Gallo. “We’ve found that the most successful combination of our purchases is to use Autodesk Fabrication with Building Data. Fabrication allows us to draw, but Building Data allows us to draw with

real-world measurements and manufacturer specifications,” said Clark.

By boosting their use of Fabrication with content, Gallo Mechanical expanded use of their fabrication shop, going from two employees to 20 in the shop. “By pulling a majority of the jobs into the software and the fab shop, we’ve seen a vast improvement in the productivities of our jobs. Boosting our use of these new tools, we’ve been able to get jobs done on time and with more accuracy,” said Clark. “Getting jobs done quicker has allowed us to take on even more jobs.”

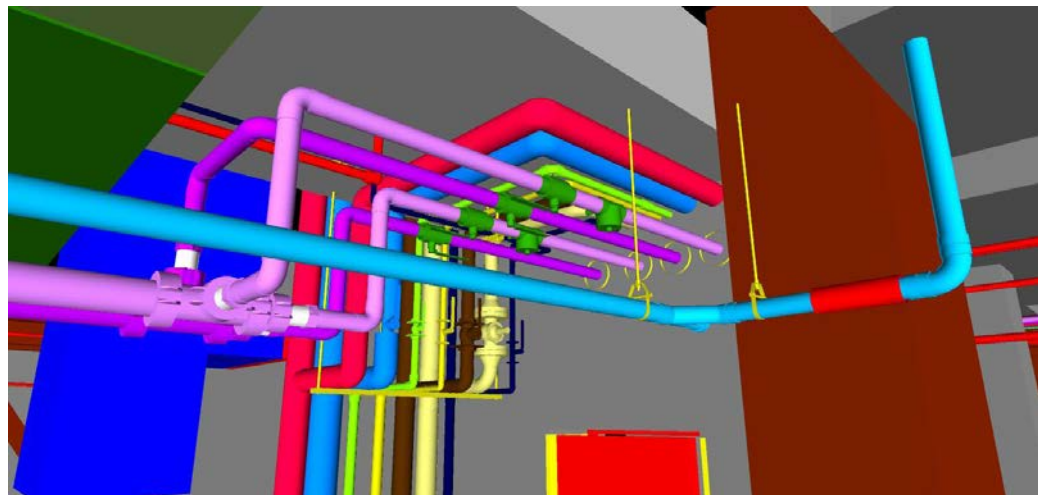
### Precision on the Job

For Loyola University in New Orleans, Gallo Mechanical was tasked with installing all the ductwork for a 12-story laboratory, Monroe Hall, into a small, 8" space in the ceiling.

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*“[Autodesk] Fabrication allows us to draw, but Building Data allows us to draw with real-world measurements and manufacturer specifications.”*

—Mike Clark, BIM Director, Gallo Mechanical



For Loyola University’s Monroe Hall, Gallo relied on TSI’s Autodesk Fabrication and Building Data to install all the ductwork into a small, 8" space in the ceiling without modifying any of the ductwork.

# All Area Plumbing Counts on Josam Company's Stainless Steel Piping to Stand Up to Tough Conditions

All Area Plumbing found that stainless steel waste and vent piping systems from Josam Company were the perfect fit for a restaurant in need of a product that could stand up to just about anything. Stainless steel has a lot of advantages over other materials, such as a low corrosion rate, strength, and durability. It is also recyclable, fireproof, nonporous, and attractive. Moreover, Josam's Push-Fit joining system sped up installation, a plus for All Area Plumbing.

## Costly Mistakes

All Area Plumbing was contracted to supply plumbing for a food service establishment being built on the third floor of a mall, directly above an athletic footwear company. The client wanted a product that could endure employee abuse and certain chemicals and still provide an aesthetically appealing solution in a food handling and preparation environment. Specifically, the product had to withstand an employee jamming a broom handle down a floor sink to unclog it—an incident that occurred and dislodged the P-trap below. A whole weekend passed before the damages were realized by the tenants in the store below. By that time, the store had lost sales and product. The restaurant above never knew that there was an issue.

## Cost-Effective Solution

A common concern about using stainless steel is always cost. All Area Plumbing had to ensure the advantages of stainless steel waste pipe and

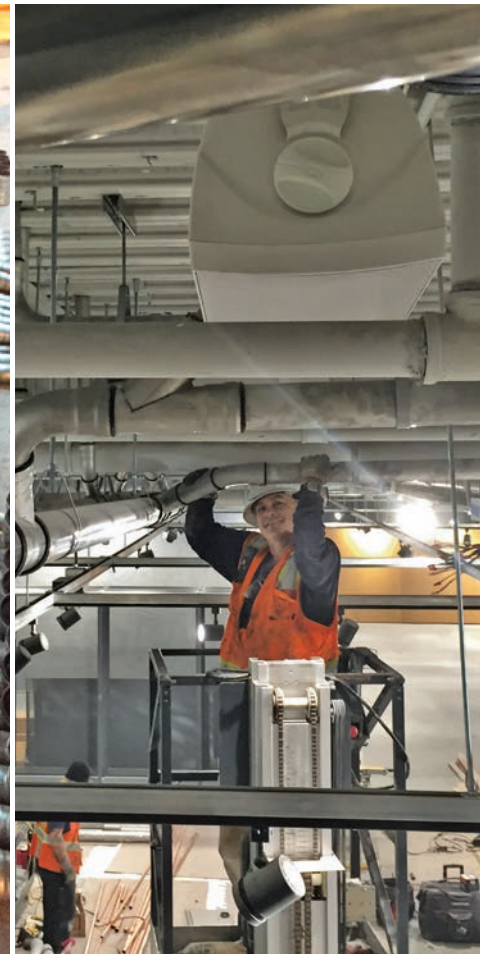
fittings would outweigh the costs of typical materials such as cast iron, PVC, and ABS. So, they called two manufacturers and asked for samples of key fittings (a sanitary tee, wye, long turn 90 [a.k.a., a long sweep], and a P-trap). Josam Company's product was far superior to the other products. The interior waterway was smooth, the fittings were uniform, and the exterior welds were visibly better.

Josam gladly came to All Area Plumbing's offices to provide training and product review. Their system relies on Push-Fit technology. The joining method simply involves lubricating the joint and pushing the

spigot and socket together. While the system seemed effective, All Area Plumbing had to provide their client with a "bulletproof" waste system that could withstand abuse of employees. Fortunately, Josam also offers locking collars that easily clamp around the joined fitting. The collar locks everything together, providing extra security.

Installation went faster than expected, even with clamping the joints. All Area Plumbing's attention to detail and thoughtfulness proved to be a timesaver during installation.

For more information, visit [www.JOSAM.com](http://www.JOSAM.com).



**Right:** All Area Plumbing specified Josam stainless steel waste and vent piping systems for a restaurant because the product could stand up to abuse by employees and corrosive chemicals. **Far Right:** Josam's Push-Fit joining system made installation easy for All Area Plumbing, even when combined with locking collars to provide extra durability.



# Harrell-Fish Inc. Goes Digital with Jonas Construction Software

## Move Slashes Payroll Processing Time, Improves Cash Flow

With their new **Jonas Construction Software**, Harrell-Fish Inc. (HFI) has reduced their billing cycle, enhanced payroll processing, and improved their overall service operation. HFI began looking at software solutions so they could rely less on manual processes. They also plan to transition to mobile technology. Jonas helped HFI realize immediate results, while HFI positioned themselves for a successful transition to Jonas eMobile in the near future.

On the construction side of the business, with the Jonas Purchase Order module, HFI has seen a big improvement. Chief Financial Officer Dave Conner explained, “Prior to Jonas, all of our purchase orders were handwritten, then manually processed and matched with the invoices when they arrived. It was just a very manual process overall. Now, with Jonas, we were able to write 15,000 digital purchase orders within Jonas in our first year alone, allowing us effectively to go from no electronic processing to a completely digital process.”

Over the past three years, HFI has grown from \$9 million to \$13 million on the industrial side. With Jonas, HFI has accommodated that growth without hiring any additional back office staff. Notably, HFI is now able to turn around billings about five days quicker with Jonas, improving their cash flow in the process. They have also reduced their payroll processing time from about four hours a month spread out across three employees to about an hour only with Jonas.

By partnering with Jonas Construction Software, HFI is running a more organized and efficient operation. With the service dispatch

board, they are better able to schedule and manage their technicians through an easy-to-use dashboard view. If any discrepancies occur, they are quickly able to locate and correct them before the problem worsens.

In terms of overall functionality within Jonas, HFI has been impressed so far, “The great thing about Jonas, and this is very important to us, is that they have demonstrated a constant improvement of the product and take the input of their customers very seriously when making enhancements to the software,” stated Conner. “We truly wouldn’t be able to do things we are doing now without Jonas.”

*Jonas Construction Software  
“allow[ed] us effectively  
to go from no electronic  
processing to a completely  
digital process.”*

—Dave Conner, Chief Financial Officer, HFI

HFI also likes the ability to design their own forms with Jonas, which helps to simplify the entire reporting process. Also, with the additional savings they have attained through optimizing processes with Jonas, they

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## MILWAUKEE TOOL

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would not always make it back to the warehouse. The new system has led to full accountability for the entire company.

### *‘A Feature for Everyone’*

ONE-KEY is opening the door to the first-ever fully connected jobsite. It has already started to noticeably and positively affect the productivity and performance of companies taking full advantage of its features.

“Everyone has a smartphone these days anyway,” said Dickerson. “ONE-KEY is free, and it’s simply a no-brainer. With the ability for ONE-KEY to introduce new functionality to tools even well after purchase, I can’t imagine anyone not wanting to use it. There’s a feature in ONE-KEY for everyone—you just need to try it out,” he said.

Given the success he has seen with the inventory management feature, Dickerson plans to introduce other features of the ONE-KEY system to Icon—everything from using the app to configure Milwaukee’s M18 FUEL ONE-KEY-compatible tools to improve the end of line quality control process to keeping a virtual eye on where these tools are in real time.

“Before we started with ONE-KEY, we weren’t a dedicated Milwaukee customer. After our experience here, I’m committed to purchasing Milwaukee,” said Dickerson. “We’ve been going through some growth and we’re going to have a lot more jobs. My goal is to use ONE-KEY for every resource it has. Absolutely.”

*For more information, visit  
[www.milwaukeetool.com](http://www.milwaukeetool.com).*

## Bigger Is Not Always Better

### Tips from Wayne Water Systems on Choosing the Right Sewage Pump for the Job

Contractors who spend their days visiting customers for new sewage pump installations often prefer larger, higher horsepower pumps. The common misconception that bigger pumps equal better performance leads to various issues and callbacks related to pumps' short cycling. Short cycling generally occurs when the pump starts and stops frequently, leading to premature burnout. Use the tips below to educate yourself on properly sizing your sewage pump, which will prevent constant callbacks and, more importantly, dissatisfied customers.

1. Before starting the sewage pump installation or replacement, consider the **system capacity**. System capacity, normally determined by the requirements of the dwelling (number of bathrooms, kitchen appliances, etc.), is extremely important when deciding the horsepower of the pump.
2. Determine the **total dynamic head** for the system. Total dynamic head can be defined as the total height that the fluid will be pumped and is the sum of the static head and friction head. **Static head** is the total change in elevation from the fluid level in the pit to the highest point of discharge in the system. **Friction head** is an additional loss created as water flows through pipes, check valves, elbows, and fittings. Friction is a function of the velocity of the fluid and changes with pipe size, flow rate, and surface roughness.
3. Consider the type of **solids** that the pump may encounter. No two sewage pumps are the same. One may handle solids up to 1" while another may handle solids

up to 2". Improper installations, such as effluent pumps instead of solids-passing sewage pumps, can lead to pump failure and flooding.

4. Select the correct **basin**. After you have properly determined the type (horsepower, construction, switch, etc.) of sewage pump, determine if your basin will discharge from the top or the side. The average basin depth is 24" for standard sewage pumps.
5. Consider the type of **impeller** being used in the application as well. The vortex impeller is recessed inside the pump chamber, and the spinning action creates a swirl that pumps water through the system. The advantage of the design is that the impeller is not in the flow path, which greatly reduces the opportunity for clogging. The centrifugal sewage pump, in comparison, is more effective in moving water. However, the possibility of a clog is increased because all of the water pumped must pass between the impeller vanes.
6. Consider your customers' pumping needs. Will you be installing a **simplex system** or a **duplex system**? A simplex system is a single sewage pump in a standard basin and is the standard system for a level basement of average size in a single-family home. A duplex system includes two sewage pumps in the same basin. Consider a duplex system if the customer has an above-average sized basement or encounters daily instances of high water usage. Duplex systems often require the installation of a

pump controller to allow the homeowner to properly manage each sewage pump individually.

7. Test the new sewage installation to ensure **maximum velocity** is reached. Often times, improper pipe sizing, among other factors, can lead to sewage pumps failing to achieve the advertised gallons per minute. Properly calculating the total fixture units (dishwasher, bathrooms, washing machines, etc.) to find the correct pump capacity will ensure that you've chosen the correct sewage pump for the job.
8. Select your pump system based on the required flow rate and total dynamic head to meet system demands. Most pump manufacturers publish performance curves indicating the flow and head capabilities of their products.

For more information, visit [www.waynewatersystems.com](http://www.waynewatersystems.com).

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## UPONOR

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and fed by 21 Uponor engineered polymer manifolds. The chilled and heated hot water were supplied from the campus central utility plant.

Today, SDSU students enjoy a highly sustainable student union, while school officials are proud to know that nearly 80 percent of the materials from the original student union were recycled or reused in the new Aztec Center.

For more information, visit [www.uponor-usa.com](http://www.uponor-usa.com).



## School District Creates a Comfortable Learning Environment with Rawal's APR Control

The Nodaway Valley School District in Greenfield, IA, installed the APR Control manufactured by **Rawal Devices, Inc.** on all their unit ventilators to prevent the problems they had been experiencing because their direct expansion (DX) air conditioning systems were oversized for the spaces they were servicing. The Rawal controls addressed the immediate problems and also provided protection against other potential malfunctions.

Unit ventilators are designed to provide precise temperature control for classrooms by keeping the air circulating in the room while adding fresh air and maintaining a comfortable temperature. However, like all DX equipment, these units are sized based on peak design conditions (which include variables such as occupancy, solar load, thermal gain, and

ventilation). Changing any of these variables, such as occupancy, or renovating a space can result in the system being oversized. Oversized air conditioning systems create a number of problems, the most important being poor indoor air quality.

Facility renovations at the school district created just such complications with their existing R-22 (DX) unit ventilators. The ventilators began to short cycle, resulting in poor indoor air quality, high humidity levels, and generally an uncomfortable learning environment.

In addition, noise from the unit ventilators exceeded the acceptable ASHRAE standard of noise criterion (NC) 30 (the equivalent of 40 A-weighted decibels [dBA], or conversation volume inside of a home).

To address this problem, fan speed controls were installed to reduce airflow. Reducing fan speed eliminated teachers' complaints about noise in the classroom because the air was no longer whistling through the grates, and it allowed the district to be in compliance with the ASHRAE noise standards. However, the reduced fan speed resulted in a lower discharge temperature off the evaporator coil causing the (inactive) hot water heating coils to freeze and burst.

Replacing the units would have been a large financial undertaking, consuming a substantial portion of the district's renovation budget. Installing Rawal's APR Control gave the system "continuous capacity modulation" and the ability to match the capacity of the system to the changing load conditions in a space.

By installing the APR Control on all of their unit ventilators, the school

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## Xylem's Bell & Gossett Little Red Schoolhouse Teams Up with the UA For Training

**Xylem's Bell & Gossett** Little Red Schoolhouse and the **United Association (UA)** union of plumbers, fitters, welders, service technicians, and roofers have formed a training partnership to equip trade professionals in the HVAC field with the technical expertise to service and repair pumps in an HVAC system.

"Both Bell & Gossett and UA are well respected in the United States and around the world for their comprehensive premier skills training programs," said Larry Konopacz, manager of training and education at Xylem. "This partnership gives us the opportunity to share our industry-leading training with UA craftsmen who are just as dedicated to

delivering the best outcomes for facility owners."

The Pump Service and Maintenance class debuted during UA's 2015 Instructor Training Program, which draws 2,000 instructors from UA locals across the United States, Canada, Australia, and Ireland to Ann Arbor, MI, for weeklong instruction in the latest teaching methods and emerging technologies in the trades. Participants then take their newfound knowledge and expertise back to their UA locals to train journeymen and apprentices.

Little Red Schoolhouse instructor Stan Kutin delivered key curricula to 30 craftsmen from HVAC, plumbing, and other fields on pump selection and

performance, followed by interactive exercises on actual Bell & Gossett pumps in repairing mechanical seals and other service techniques. In addition, UA training specialist John Hopkins visited the Little Red Schoolhouse—a state-of-the-art training facility at Xylem's facility in Morton Grove, IL—for instruction prior to the class.

UA offered the 20-hour course again at its August 2016 Instructor Training Program. "Sharing our expertise in hydronic heating systems with UA's members is a natural extension of our Little Red Schoolhouse classes and our online Little Red Schoolhouse curriculum," Konopacz said. "We are pleased to continue this valuable training with UA in 2016."

"UA is committed to providing its members with the best teaching

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## MILLER

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The process also maintains a consistent arc length regardless of electrode stick-out. This compensates for operators who have problems holding a constant stick-out, and it enables a better view of the weld puddle—making the process easier to learn than TIG welding.

De-Cal made similar improvements as the shop transitioned from stick to flux-cored welding for the fill and cap passes. Flux-cored welding provides a number of benefits over stick welding that help improve productivity and quality. These include faster travel speeds, increased deposition rates, and increased deposition efficiency, which ultimately means that less filler metal is wasted in the process.

In addition to the process advancements, the PipeWorx welding system also provides a number of additional benefits in terms of ease of setup and process changeover. For instance, the RMD process is easily set with the touch of a button, and the selection of the wire type, wire diameter, and shielding gas type helps dial the system in to typical weld parameters for pipe welding. The ability to save weld parameters is also helpful to operators. The flux-cored process sets up with voltage and wire feed speed and can also be assigned to a memory location.

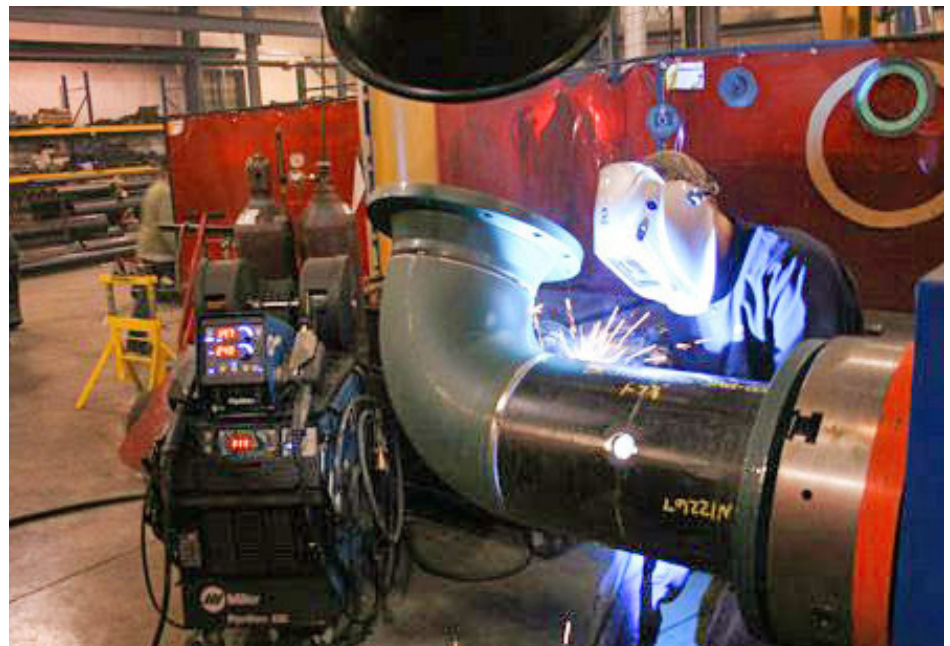


One of the primary contributors to De-Cal's success has been the conversion of most root pass applications to the Miller RMD process. A root pass using the process is shown here.

As De-Cal continues to grow to meet increasing regional demand, the PipeWorx welding system helps shorten the learning curve so the shop can bring welders up to speed faster. The use of advanced welding processes and a system that is optimized for pipe welding helps shops

address critical industry challenges such as the shortage of skilled welders, shorter project turnaround times, and the need to increase quality standards.

*For more information, visit [www.millerwelds.com](http://www.millerwelds.com).*



Taking advantage of the process capabilities of PipeWorx, De-Cal has been able to evolve its pipe welding processes to significantly improve productivity (by as much as 30–40 percent), grow business, and ultimately make welding easier on the employees.

## JONAS CONSTRUCTION

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have been able to put more money into the completion of actual projects. Since becoming a Jonas Construction Software partner, HFI has made great improvements with respect to enhancing and streamlining their business processes. HFI took the time to prepare for the transition to Jonas, which led to a smooth deployment process and put them in a position to succeed from the start. By implementing the software on a gradual basis, they allowed their employees to get acclimated to the

system. Having already provided their technicians with tablets in the field, they are ready to implement Jonas eMobile solutions. With the backing of a fully integrated and automated software solution in Jonas Construction Software, HFI knows they can continue to grow without having to worry about investing in further software.

*For more information, visit [www.jonasconstruction.com](http://www.jonasconstruction.com).*



## KEY2ACT

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October 22, 2015; iOS 9.2 was released December 8, 2015; and iOS 9.2.1 was released January 11, 2016. Notice a pattern? Apple (and other manufacturers) release a new build within their versions roughly every 30 days. This isn't necessarily a bad thing, it just means manufacturers identify bugs and release OS updates to fix them frequently.

### *Deciding When to Update*

Applying updates is not required. If your team is not experiencing significant issues with devices, you may not want to make a change that could cause new problems.

If updates are released every 30 days, your business may never be completely up-to-date with the latest OS version. You should factor in the importance of the update, the cost, and the time it

takes to apply updates. For many businesses, it is simply not worth the time and money to push out OS updates every 30 days. When to update depends on business needs, but you should only push out OS updates if they bring significant value to your business.

For some businesses, this could mean updating only when devices are experiencing incompatibility issues that can be fixed by an update. Others will want to update more frequently. There is value in making sure devices are as up-to-date as possible; therefore, there could be value to pushing out updates once every 90 days, or maybe every six months, as long as your IT personnel has done the necessary homework and testing.

*For more information, call 866-KEY2ACT (539-2228) or visit [www.key2act.com](http://www.key2act.com).*

## RAWAL

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district extended the units' runtime while keeping the active portion of the coil below dew point for better dehumidification. The APR Control stabilized the discharge air temperature, preventing the inactive hot water coils from freezing and bursting. Furthermore, the APR Control prevented the evaporator coil frosting that was caused by the fan speed

controls (which were installed to meet ASHRAE NC requirements). The APR Control is expected to prevent a broad spectrum of possible complications that can arise from using DX unit ventilators, such as coil frosting, liquid slugging, and system failure.

*For more information, visit [www.rawal.com](http://www.rawal.com).*

## XYLEM

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tools available, and this partnership with the Bell & Gossett Little Red Schoolhouse helps achieve that goal," said Chris Haslinger, UA director of training. "Demand for HVAC service technicians is growing, and the field is becoming ever more technical in nature, [so]

making partnerships with manufacturers like Xylem is essential to enhancing our members' knowledge of the scientific and technical aspects of the trade."

*For more information, visit [www.xylem.com](http://www.xylem.com).*

## BALTIMORE AIRCOIL

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maintenance costs, all while providing an increase in energy savings of 10 percent versus a typical gear drive system. By eliminating drivetrain components like gears, pulleys, belts, and shafts, the need to maintain and replace old parts is eliminated. That means no more downtime for alignment issues or money wasted on oil changes and lubricants.

- 5. Do regular preventive maintenance:** Proper preventive maintenance is paramount for consistently achieving desired temperature and flow rate, and it plays an important role in maximizing the operational life of evaporative cooling equipment. To perform preventive maintenance properly, all tower components must be kept clean and free of obstructions. Maintenance frequency depends primarily on the condition of the circulating water and the environment in which the tower is operating. Refer to the operating and maintenance manual for your recommended maintenance schedule.

In summary, today's building owners are constantly being challenged to keep operating costs down. Therefore, owners are motivated to purchase equipment that is energy-efficient, reliable, and maintenance-friendly. However, even with the most advanced systems, "set it and forget it" is not a viable option. Your evaporative cooling equipment needs routine inspection and maintenance for optimal performance.

*For more information, visit [www.BaltimoreAircoil.com](http://www.BaltimoreAircoil.com).*

## TSI

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The team had to design and fabricate carefully to avoid any mismeasurements or delays on the job. By using Fabrication and Building Data, Gallo completed the job without modifying any of the ductwork.

Attention to detail was also crucial in rebuilding the University Medical Center New Orleans after it was destroyed by Hurricane Katrina. The job consisted of three towers and 21 stories. “In order to complete this large and complex job, we started out designing in Fabrication with Building Data content,” Clark stated. “A main focus of this job was to fabricate the hangers with the software so that it would be easier to install in the field. With the amount of ductwork and pipe that we were installing, it was imperative that the project was designed with precision. There was no room for error.” Thanks to the right software, Gallo was able to complete their portion of the project on time, and the medical center now serves

thousands of people in the New Orleans area.

### *Tools for Growth*

Gallo Mechanical has become a leader in using software to advance processes and efficiencies within the company. “TSI is a one-stop shop for us. We started out with Fabrication products,

*“Getting jobs done quicker has allowed us to take on even more jobs.”*

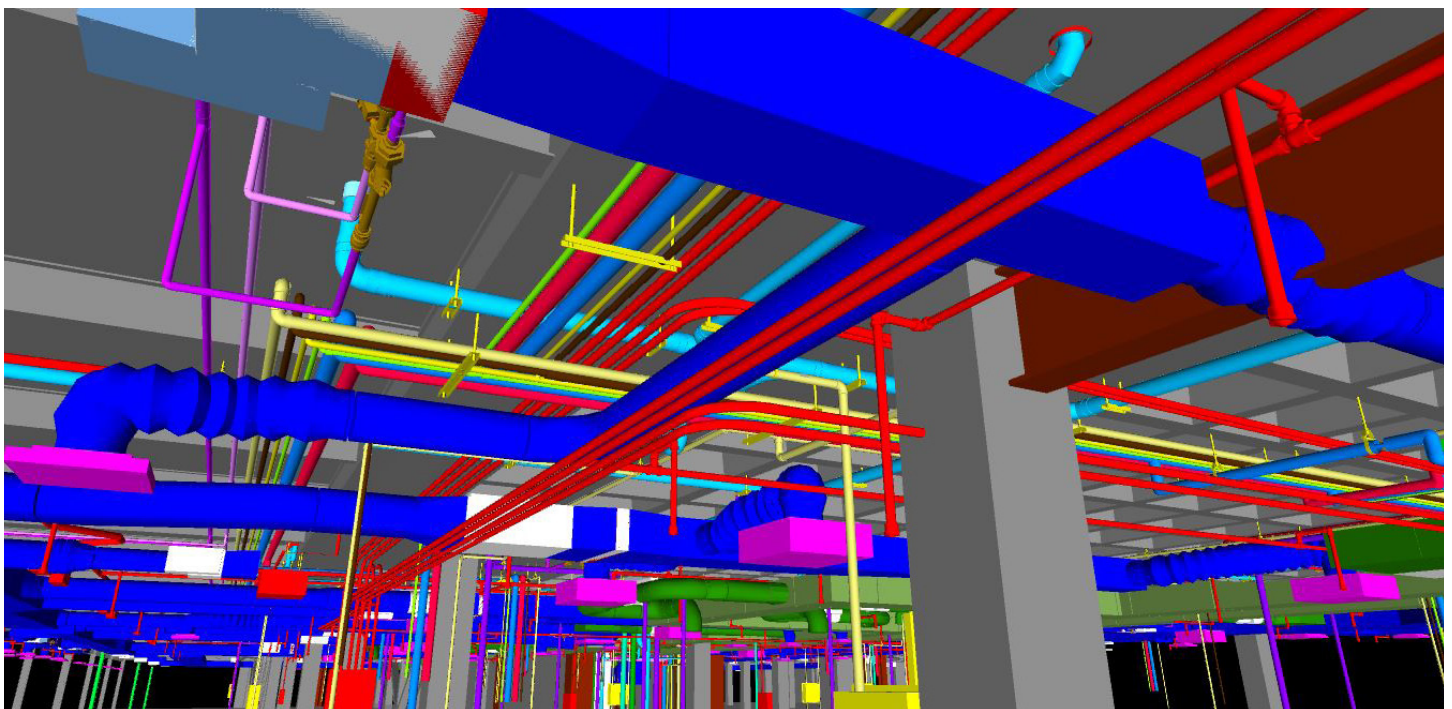
—Mike Clark, BIM Director,  
Gallo Mechanical

expanded our portfolio to include Autodesk Revit, and with it all we use Building Data to make our designs come to life,” said Clark. “Being able to come to one company for our construction software needs has allowed us to stay on track with subscriptions and new product releases.” By employing

new and evolving construction software, Gallo Mechanical has boosted their workforce to over 200 people while expanding into new sectors.

Clark said a main focus of the organization in the future is to stay ahead of the competition when it comes to the progression of construction software and tools. “We want to ensure that we are using the right tools for our organizations, and I’d stress that to other construction companies who are looking to expand their portfolio of software tools,” said Clark. “In order to stay up to speed with competitors, it is important to use all the tools you can, as long as they are right for your organization.” Along with Autodesk products and the Building Data content library, Gallo Mechanical has now acquired Trimble machines to complete on-the-job scanning that works in conjunction with the software in-house.

*For more information, visit [www.tsi.com](http://www.tsi.com).*



Gallo Mechanical had to design and fabricate carefully to avoid any mismeasurements or delays on the job at Loyola University's Monroe Hall. They succeeded by using TSI's Autodesk Fabrication and Building Data software.