

SMART SOLUTIONS

WINTER 2022

Helping contractors save money and enhance productivity

Health System Trusts Brandt and NIBCO Valves and Press Fittings for New Hospital Project

When University Health System in San Antonio, TX, invited **Brandt** to bid on the mechanical and plumbing contract for their new facility, they requested the same systems and products—including **NIBCO** valves—that Brandt had used on a smaller project with University Health a few years earlier. “The best sales tool is performance,” said Kyle Holmes, senior vice president at Brandt. In addition, Brandt welcomed the opportunity to use NIBCO pressed fittings for the job, saving labor and avoiding the risks of welding. NIBCO is a major sponsor of MCAA22.

University Health’s planned Women’s & Children’s Hospital is a 521,000-square-foot, 12-story, 300-bed hospital expansion for women, babies, and children. Construction began in September 2019 and is scheduled for completion in July 2023. The project includes the new structure and renovation to the hospital’s central plant, as well as additional shell space for future growth. When completed, 4,000 fixtures will be installed. Headquartered in Dallas, Brandt has established itself as

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Brandt prefabricated the MEP system in large racks at its fabrication shop, where it could build the racking systems, test them, and tag them in a controlled environment—an approach so efficient that Brandt Senior Vice President Kyle Holmes refers to it as a “magical unicorn.”



Training Gallo Mechanical’s fabrication staff to use MSUITE FabPro software integrated with TigerStop precision cutting machinery was straightforward. As a result, Gallo is increasing productivity, reducing waste, and maximizing efficiency.

MSUITE–TigerStop Integration Helps Gallo Mechanical Automate Fab Shop Operation, Cutting Costs and Increasing Productivity

Gallo Mechanical, the Gulf Coast’s leading mechanical and plumbing contractor, saw an opportunity to eliminate paper and automate its fabrication shop with advanced technology. After a competitive bid, Gallo selected **MSUITE**’s FabPro for its ability to integrate with TigerStop and track time and production in the fab shop. “From the start, the integration between MSUITE and TigerStop saved our firm \$4,000,” said Ray McDonald, Gallo’s general manager and fabrication coordinator.

Gallo Mechanical uses MSUITE’s BIMPro design automation solution to increase design quality, eliminate the bore of dimensioning and tagging, and improve productivity by automating spooling and sheet creation 10 times faster than traditional methods. FabPro automates real-time production and material tracking for Gallo’s fab shop. The productivity software increases visibility, productivity, and accuracy in

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SMART SOLUTIONS

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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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Overcoming Obstacles

MCAA members and our manufacturer/supplier partners work together to overcome obstacles and get the job done. When supply chain disruptions complicated a Colorado hospital project, Olson Plumbing turned to Josam Company for drainage products that filled the bill. To complete a new transplant hospital unit in the midst of the pandemic, Rand Construction relied on ASC Engineered Solutions to deliver Gruvlok® grooved couplings and fittings on time that could be installed quickly and safely.

Nashville Machine Company found that Lochinvar products offered the flexibility they needed to meet a client's tight space and demanding energy efficiency goals. AMS Mechanical Systems resolved repeated pump failures in a new Chicago condominium by installing Metraflex Company strainers with a neodymium magnet to capture the metal debris that was migrating into the pumps.

Choosing the best products and partners can provide a competitive edge. Brandt won the contract for a new hospital on the basis of previous performance—and the outstanding performance of the NIBCO valves they had used, which the client requested for the new hospital. Way Engineering, Ltd. partnered with Victaulic on a new highrise, saving money and time and contributing to LEED® Platinum certification. C.E. Jarrell Mechanical Contracting Co. Inc. finished an extensive project ahead of the fast-track completion date by using Cerro Flow Products LLC®.

**Join me in welcoming our
newest supplier partner:**

- **Enerpac Tool Group**

Contractors are leveraging the power of computer technology to improve the efficiency of fabrication tools. Using MSUITE's FabPro, which integrates with TigerStop, Gallo Mechanical immediately improved productivity, saving thousands of dollars. A&R Mechanical Contractors, Inc. credits PypeServer software with slashing pipe cutting tasks in the fabrication shop from hours to minutes.

New software solutions can significantly streamline business processes. Dormatech Mechanical Systems switched from multiple software platforms to an integrated BuildOps solution and rapidly increased revenue by 50 percent. After implementing the XOi Vision app, Tolin Mechanical improved customer satisfaction, decision making, and repeat business. icon Mechanical said that adding Trimble SysQue to Revit helped them get ahead of schedule on projects. Procure's integrated, mobile management solution puts Auburn Mechanical's voluminous project information literally at the fingertips of craft labor in the field, simplifying processes and reducing the risk of lost, missing, or incomplete data.

Miller Electric, Ridge Tool Company, RWC, and IMI Hydronic all offer tips in this issue to help you increase efficiency and productivity. Sloan describes a new formula for better estimating water demand, which can save costs, reduce water use, and prevent bacteria growth. Be sure to take advantage of the expertise our manufacturer/supplier partners have to offer at MCAA22!

Christopher Catania, Chair

Rand Construction Relies on U.S.-Made ASC Gruvlok Products to Keep Hospital Project on Track During Pandemic

Renovating an active hospital is challenging in the best of times; to complete a transplant hospital's new unit in the midst of a global pandemic, **Rand Construction** needed products that could be delivered on time and installed quickly and safely. Gruvlok® grooved couplings and fittings from **ASC Engineered Solutions** were the perfect fit. ASC is a major sponsor of MCAA22.

In November 2020, Midwest Transplant Network's headquarters in Westwood, KS, began major mechanical renovations and minor additions to create a new Donor Care and Surgical Recovery Unit. The Midwest Transplant Network is a nonprofit organization that provides services for organ donation and procurement in Kansas and parts of Missouri. By providing an onsite recovery facility for organ and tissue donors, the Midwest Transplant Network reduces the reliance on local hospital resources and ensures that donors receive highly specialized care.

Rand Construction worked closely with distributor MKS Pipe and Valve, which recommended Gruvlok ductile iron couplings and cast fittings and carbon steel schedule-40 fabricated fittings for the project. "Some of the major equipment, such as the chiller, was already manufactured and shipped with grooved connections. That made it an obvious choice to utilize Gruvlok,"

said Fred Thorpe, vice president of Rand Construction. "Gruvlok products were also very helpful in some of the more restricted areas and/or where welding was not an option or permitted," Thorpe added.

MKS Sales Manager Kevin Aylward noted, "What really makes [ASC] stand out is the large breadth of their product offering, great customer service, and quality products with dependable deliveries." MKS made sure that the Gruvlok products for the transplant center met the required specifications for mechanical couplings, achieved savings compared with competitive brands, and were available on the requested delivery timeline.

The complete Gruvlok order was delivered on time, in one shipment, boxed and tagged to indicate what materials were enclosed. Thorpe pointed out, "By utilizing Gruvlok products, we were also able to install products made right here, at home in

the USA." Because ASC has domestic manufacturing locations, Gruvlok products were less affected by the prevalent delays in production and shipping that happened throughout 2020 and 2021.

Another key selection criteria that helped secure Gruvlok as the build choice was ASC's extensive building information modeling (BIM) catalog. All Gruvlok products can be used in digital design projects; ASC provides Gruvlok BIM content in multiple file formats and design program compatibility, including Revit®.

"We were confident the products would work when we incorporated them into our preliminary planning, layout, design, and fabrication," said Thorpe. "All of the data needed to make an educated decision was readily and promptly available, so that's clearly why we chose Gruvlok."

Thorpe added, "MKS and ASC Engineered Solutions were excellent strategic partners on the Midwest Transplant Network project," citing their cooperation with Rand as a key factor in this project's success. The Midwest Transplant Network Donor Care and Surgical Recovery Unit is expected to begin taking patients in late spring or early summer of 2022.

For more information, visit www.asc-es.com. MCAA thanks ASC Engineered Solutions for being a major sponsor of MCAA22.



Using ASC Gruvlok grooved couplings and fittings for the piping system of a major mechanical renovation, Rand Construction got products delivered on time, despite all the production and shipping delays many experienced throughout 2020 and 2021.

icon Mechanical Gets Ahead of Schedule by Adding Trimble SysQue to Revit

After losing a large project because they did not work in Revit, **icon Mechanical** made the switch to Revit in 2014, later adding **Trimble SysQue**. Tim Riedle, vice president of engineering for icon, credits the addition of SysQue with helping icon get ahead of schedule on their projects. (Trimble is a benefactor of MCAA22.)

In an industry more pressed than ever to deliver jobs on time and on budget, up-to-date technology solutions are no longer a “nice-to-have” extra but a requisite for maintaining competitive advantage. Losing a project made clear to icon that while transitions can be challenging, the design/build industry demands them.

Over the course of several years, Riedle has participated in icon’s evolution from Trimble EC-CAD to Autodesk CADmep to Revit. Although Revit is a powerful tool for engineering design, icon needed the ability to fabricate from their models, which led them to Trimble SysQue for use with Revit. Riedle said the benefits far outweigh any risks. “SysQue [combined with Revit] gives us everything we need and allows us to

leverage the full capacity of Revit and all of its design functionality, with real-world content and constructability,” he noted.

“[Trimble] SysQue gives us everything we need and allows us to leverage the full capacity of Revit and all of its design functionality, with real-world content and constructability.”

— Tim Riedle, Vice President of Engineering, icon Mechanical

The SysQue content in particular has been a game-changer for icon. Built for consistency by a dedicated Trimble team, SysQue includes a catalog of Revit families from over 680 manufacturers, all button-mapped and built to manufacturer’s cut sheets. Riedle estimated that it would take two icon employees working full time to build and manage a similar database. Such an expense makes no sense when content experts are available to help set up

systems, train staff, and field requests for additions when something is missing.

How often has SysQue’s catalog lacked a part that icon needs? “In the year and a half we’ve had Trimble’s catalog, we’ve requested [only] one item,” Riedle said, adding, “It was a very specialized pharmaceutical valve.”

Transitioning to SysQue and its managed content catalog added a level of efficiency and accuracy that Revit could never offer alone. For icon Mechanical, the evolution beyond Revit has meant an evolution in streamlined workflows and efficient collaboration. As Riedle looked toward icon’s future, he was excited by the additional efficiencies that can be achieved using the newest functionality introduced in SysQue, including model-based estimating and collaboration workflows.

For more information and to request a personalized demo, visit mep.trimble.com. MCAA thanks Trimble for being a benefactor of MCAA22.

Way Engineering Partners With Victaulic to Meet High Expectations for Houston Highrise

Way Engineering, Ltd. partnered with **Victaulic** to provide the HVAC mechanical work for a new Houston, TX, highrise, saving the contractor money and time throughout the complex project. Thanks in part to Way Engineering and Victaulic, the 1.14-million-square-foot Texas Tower successfully achieved LEED® Platinum status, WiredScore Platinum Certification (for digital infrastructure), and WELL™ Building Standard certification. Victaulic is a major sponsor of MCAA22.

In 2018, Hines, a privately owned global real estate investment, development, and management firm, began planning

construction of a 47-floor office building in downtown Houston to house their global headquarters. The location (the former site of the Houston Chronicle newspaper) sits at the confluence of the city’s Central Business District, Theatre District, and Historic District. Construction took place throughout 2020 and 2021, with COVID-19 pandemic restrictions in place.

Reliable Partners

Way Engineering already had a long history of working with Victaulic. “Victaulic partners with you in a way that’s more than a vendor selling a catalog number,” said Derrick Williams,



By using Victaulic mechanical connections, Way Engineering was able to install the HVAC in a new downtown Houston office building without the extra safety steps required for hot work.



Building the 1.14-million-square-foot Texas Tower in the middle of downtown Houston posed challenges, but Way Engineering overcame them—for example, by using Victaulic products that were easy to transport and install.

executive vice president of operations at Way Engineering. “They partner with you to make the job a success and take an interest in the project, not just an interest in the sale of a product.”

Way Engineering and Victaulic started preparation right away, working together on engineering, planning, and scheduling. The timing of this collaboration was fortunate, because it meant the bill of materials was finalized before the industry was affected by pandemic-driven supply chain challenges.

“Victaulic was active in bringing options to the table; not just waiting to receive the order,” said Williams. “Because we used building information modeling [BIM], we knew early on what would be needed for the job. Victaulic took the initiative to review the advanced bill of material and coordinated scheduled, bagged-and-tagged deliveries. This meant when we required material, it only took two to three days to have it onsite, not four to eight weeks. This made a big difference because you need the flow of a job to never stop; you’re always pushing to meet the schedules set by the general contractor.”

Anticipating Challenges Together

The chilled water system for Texas Tower includes four chillers, four cooling towers, 12 pumps, two heat exchangers, fans, filtration systems, duct systems, piping up to a 20” diameter throughout the building to serve the air handling units (AHUs), and risers from the basement to the cooling towers. On the risers, all branches were isolated with Series 761 Vic-300™ MasterSeal™ Butterfly Valves. Then, Series 732 Wye Type Strainers and TA Series 789 Grooved End Manual Balancing Valves accompanied the AHUs to optimize energy efficiency throughout the tower and for ease of installation.

Having enough pressure is critically important for highrise buildings like Texas Tower. Victaulic’s off-the-shelf Series 761 Vic-300 MasterSeal Butterfly Valves eliminated the need for a specialty high-performance butterfly valve, saving costs and allowing more lead-time. “The planning process across the board, through all parties, was exemplary. Since the inception of the project, Victaulic took on a role as a specialized engineering resource in response to high-performance valve requirements,”

confirmed Stan Whitfill, Way Engineering’s executive project manager. “They get involved in the BIM process, and they bring value-engineered options to the table. A lot of companies don’t put in that time and risk until they have a purchase order in hand,” added Williams.

In addition to meeting Hines’ high-performance butterfly valve requirement, Way Engineering eliminated flex connectors at the pumps, using three flexible couplings in a line instead. Mechanical connections also allowed Way Engineering to cost-effectively install a temporary loop on the 27th floor to hydro-test part of the system early and eventually connect the higher floors.

“Being in the middle of downtown Houston is always a struggle for contractors for many reasons, including limited staging and storage areas,” said Corbin Best, territory sales manager at Victaulic. “Aside from a reduction in specialized equipment needed onsite while utilizing mechanical connections, one of the biggest advantages seen at Texas Tower was the ease of mobility and installation when there was one service elevator that all trades had to share to access 47 stories.”

Because of the COVID-19 pandemic, there were limits on how many people were allowed in the building at one time. Way Engineering found that Victaulic products required fewer field connections, and the contractor could fabricate spool pieces offsite, cutting down labor onsite.

Despite the obstacles, Way Engineering and Victaulic’s collaboration upfront and consistent communication—with each other and with Hines—facilitated a successful project.

For more information, visit www.victaulic.com. MCAA thanks Victaulic for being a major sponsor of MCAA22.



Way Engineering and Victaulic collaborated closely on engineering, planning, and scheduling for the new Houston, TX, highrise. Their partnership helped the project meet some of the industry’s highest building standards.

Sloan Scientist Crafts New Formula to Better Estimate Peak Water Demand

For decades, engineers have relied on a formula dating from 1940 to estimate peak water demand, a key factor in specifying the smallest pipe size that will provide sufficient water pressure for every fixture in a building to function normally. Sloan's chief scientist, Kay Herbert, Ph.D., has developed a new formula that yields more accurate water demand estimates—which can save costs, reduce water use, and prevent bacteria growth. (Sloan is a benefactor of MCAA22.) The new formula is ideal for modern engineers grappling with green technology, touch-free fixtures, and hygiene concerns in the post-COVID-19 era.

Why Estimating Water Demand is So Important—and So Difficult

Pipes that are too large increase cost unnecessarily and can collect excess water that may breed pathogens. Pipes that are too small do not allow enough water volume for fixtures to operate properly under peak demand. Engineers are charged with specifying the right sized pipes—not just for the main building intake, but for every pipe in the building. That specification depends on an accurate estimate of peak water demand—the maximum average load on the system in one hour.

If a building only had one fixture, estimating peak water demand would be easy. But estimation is complicated:

- Even small buildings have several faucets and flushometers, and large buildings can have thousands of them.
- Faucets and flushometers do not run continuously—only when people use them.
- The number of people in the building may vary widely from

one time of day to another or from one day to the next.

- Fixtures in different parts of the building may be set with different flow rates.
- Multistory buildings must employ mechanical pumps to overcome the loss of water pressure as water rises in vertical pipes.

Roy Hunter's ground-breaking paper in 1940 took these variables into account and became the standard for estimating plumbing system loads for generations of engineers. While Hunter's system has greatly contributed to plumbing applications, it leaves some gaps for modern plumbing systems.

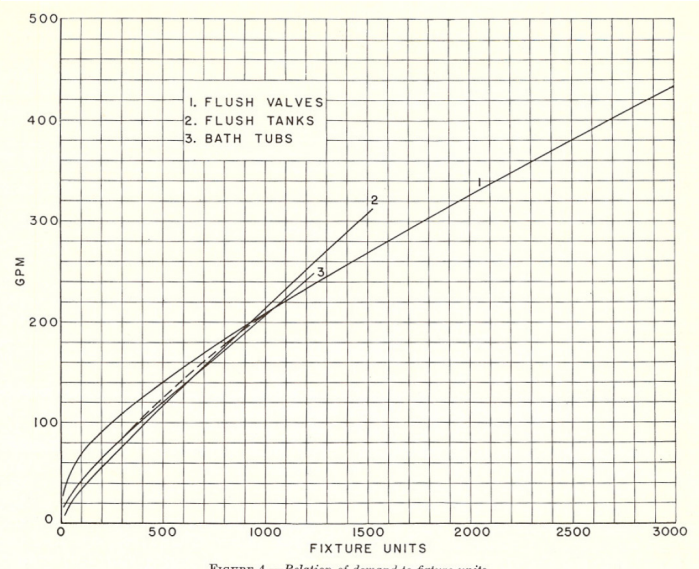
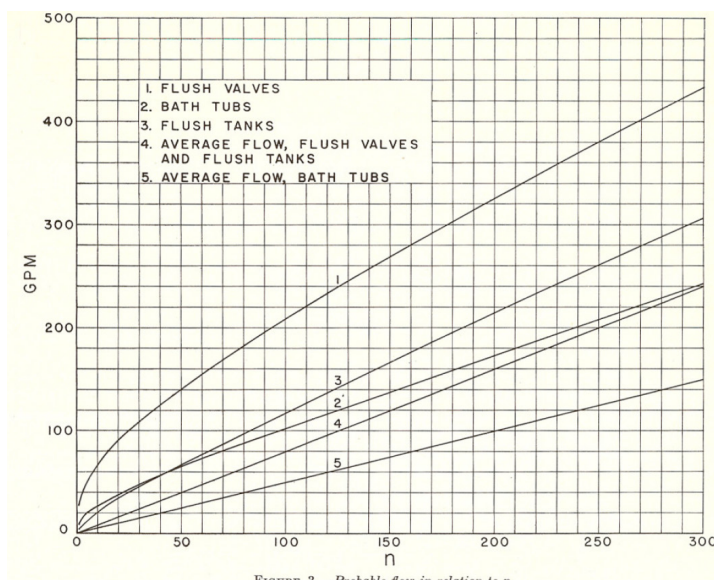
Many engineers use the International Association of Plumbing and Mechanical Officials (IAPMO) calculator, based on Hunter's curve, which does not account for different water pressures or fixture flow rates.

Hunter's Curve Explained—Without Calculus

Hunter's curve assumes that every plumbing fixture has an expected on-time, during which it draws water at a specific flow rate for a specific duration of time. Every fixture also has a minimum expected time between uses, impacted by the number of people in the building, their behavior, and the properties of the fixtures. Estimating peak demand takes into account the following variables:

- Fixtures
- Flow rate
- Duration
- Time between uses

On the left is Hunter's original 1940 calculation of 99th percentile curves to determine the probable flow in relation to the peak number of fixtures in use. On the right is his clever rescaling of the calculation, estimating demand in relation to the number of fixture units.



Hunter's Curve:

$n = 1000$ fixtures

2^n calculations

A number with **302** digits

Requires **massive computer capacity**
not available even today

Dr. Herbert's Method:

$n = 1000$ fixtures

n^2 calculations

1 million, a number with only **7** digits

Requires a **laptop**

Herbert's method for estimating peak water demand is more accurate than Hunter's and easier to obtain, as the calculations can be achieved on a laptop computer. With more accurate estimations, engineers can specify the right sized pipes, which translates to lower costs, less likelihood of pathogens breeding in pipes, and more efficient use of water.

- Number of people in the building
- Fixture characteristics

Because several of these variables change drastically over time, estimating peak demand becomes a probability problem. Hunter proposed using the 99th percentile of each fixture's likelihood of being in use—in other words, the most fixtures running at the same time—to create his probability curve.

However, Hunter had to assign arbitrary values to each fixture to account for multiple fixture types with different flow rates. That's why Hunter's method can be off by more than 20 percent in estimating peak demand with modern fixtures.

How Convolution Conquers Complexity

When you account for all the probabilities for each variable, the complexity of accurately estimating peak water demand is truly staggering. For instance, as water is pumped higher in a tall building, water pressure varies from one floor to the next. A flush valve set to a given flush volume will open for a shorter duration at higher pressure, translating to a lower probability that the valve is open, which impacts the demand calculation. You can have a different calculation for every floor in the building.

According to Herbert, exact enumeration of all the variables in play requires $2n$ calculations—with n being the total number of fixtures in the building. A building with 1,000 fixtures would require $2^{1,000}$ calculations, which would require NASA-level computational power. Other methods are more accurate for large buildings but less accurate for smaller buildings.

Herbert's formula is the most accurate yet. It involves convolution—a mathematical operation on two functions that expresses how the shape of one is modified by the other. For non-mathematicians, Herbert describes convolution as “a fancy type of multiplication.”

With convolution, the number of calculations required to account for all the probabilities in a peak demand estimate is only n^2 , where n is the total number of fixtures in the building. In a building with 1,000 fixtures, that's 1000^2 , or one million calculations, which is a much lighter computational load.

How much lighter? Dr. Herbert runs it on a laptop.

Three Reasons to Use Herbert's Formula

More accurate peak water demand estimates are important for three reasons.

1. **Cost.** Most engineers specify larger pipes than needed, knowing their estimates can be off by as much as 20 percent, said Herbert. They reason that it is better to spend too much than to risk the pipes failing to deliver enough water during peak demand.
2. **Hygiene.** Too-large pipes are more likely to retain standing water, which can breed *Legionella* bacteria (that cause Legionnaire's disease) and other pathogens.
3. **Sustainability.** Modern faucets and flushometers deliver optimal water-saving performance when they are adjusted to the right flow rate. To estimate peak water demand more accurately, engineers need more accurate flow rates—so they are more likely to inform installers of the correct flow rates to set.

Finally, estimating accurate peak water demand is just good engineering. With Herbert's formula, there is no excuse for anything less.

For more information, visit www.sloan.com. MCAA thanks Sloan for being a benefactor of MCAA22.

NIBCO

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the largest MEP contractor in Texas. The firm's in-house capabilities range from build/design, construction, and commissioning to service.

Time-Saving Systems

At Brandt, Holmes is responsible for planning, purchasing, and maintaining relationships with manufacturers and vendors. He also has been instrumental in Brandt's business practices and has worked to establish standards, such as the installation matrix, which ensures that everyone on the Brandt team, from estimation to installation, knows what products are used for different systems, whether domestic water, heating, or chilled water. These time-saving standards are particularly critical for health care projects, which typically have more MEP systems per cubic foot than other types of projects.

The installation matrix details the specific items required for each system. For example, instead of saying a ball valve will be installed, the matrix specifies a NIBCO PC-585-NS valve.



Using pressing tools and NIBCO fittings, Brandt made most of the joints inside the racks, which range in size from 20' to 30' long so they could be transported. Pressing is especially useful for connecting the joints in a rack system, where insulation can easily catch on fire.

Everything is documented, not only so the building owner can feel comfortable with what is being purchased, but also to ensure that the Brandt team is installing the right items in the right places.

For the Women's & Children's Hospital, NIBCO valves were specified for a majority of valves, ranging in size from 1/4" to 20", from very large butterfly valves to smaller valves spread throughout the building in the various MEP systems, including hydronic systems, domestic water systems, steam systems for sterilization, and chilled process water systems. A valve matrix was created to designate every valve to be used in every size, in every system.

"Valves are really important, but especially in health care," explained Holmes. "Valves are actually very complex and have an important job to perform in the MEP system. Often, if you have problems in a system, the valve is likely the issue, whether it is leaking or a function of users not understanding proper use."

"NIBCO does a great job of ensuring that they provide a product that is safe (NIBCO valves are lead-free), high quality, and to spec. They are valve experts!" said Holmes, who has been with Brandt for 22 years and has used NIBCO valves the entire time. "What matters to me the most, is that I know if I have a problem and I call someone at NIBCO, they are going to take my phone call. The relationship is important, so if we need training, I know that NIBCO's got my back."

A Pressing Approach

Holmes' trust in NIBCO led him to choose NIBCO pressed fittings for



University Health Systems was so pleased with Brandt's work on a previous project they invited Brandt to bid on their new facility and requested the same systems and products—including NIBCO valves—be used again.

the Women's & Children's Hospital project. Brandt recognized that pressing would help the company save on labor. Also, pressing technology is especially useful for working in existing hospital buildings, where fire watches are required when flames or soldering are involved.

"I was already very interested in NIBCO's pressing products for the labor savings, but then to not have to deal with flames was a bonus," explained Holmes. "I knew the buy-in from our organization would be easy if we were working with the same company that provided us with high-quality valves. It also reduced paperwork and increased efficiencies by not having two different suppliers."

For the Women's & Children's project, the general contractor, J.E. Dunn Construction, requested that Brandt prefabricate the MEP system in large racks. The two companies had successfully developed the racking system for a smaller, previous project.

"In essence, we were building the 'spine' of the hospital before the concrete was even poured," said Holmes. "The racking system is the magical unicorn for us."

Using the racking system enabled

Brandt to prefab the MEP systems in the Brandt Fab Shop, located less than 20 miles from the project site. In coordination with the general contractor and other trades, thousands of hours were invested to build the racking systems efficiently, test them, and tag them in a controlled environment that is not affected by weather or inhibited by working off of a ladder.

Using pressing tools and NIBCO fittings, Brandt made most of the joints inside the racks, which range in size from 20' to 30' long so they could be transported. Once the racks were moved to the project site by flatbed trucks, each rack had to be connected, which was done via pressing. More than half of the NIBCO fittings are pressed fittings used on the prefab systems.

"Every time we can, we want to press a fitting," said Holmes. "Especially in the rack system, where insulation can easily catch on fire."

Having a high-quality supplier that provides Brandt with efficiency and confidence has been instrumental on this high-profile project—particularly because Brandt's service division will eventually service the building. "We're going to get the call when something goes wrong, so for Brandt, using very high-quality products that the manufacturer stands behind is really important to us," said Holmes.

For more information, visit www.nibco.com. MCAA thanks NIBCO for being a major sponsor of MCAA22.

Olson Plumbing Saves Time, Cuts Costs with Josam Drainage Products for Hospital Installation Project

Tight timelines are a constant in building, but supply chain disruptions triggered by the COVID pandemic have complicated matters further. Olson Plumbing turned to Josam Company for drainage products that could meet the specifications and timing required for a new Colorado hospital. Josam's packaging, labeling, and shipping method saved Olson Plumbing time onsite, cutting labor costs.

St. Clare is a new, 140,000-square-foot, state-of-the-art orthopedic hospital located in Colorado Springs, CO. The building features 72 beds with 10 operating rooms; a full emergency center with 14 treatment rooms; an imaging department that includes radiography, magnetic resonance imaging, computed tomography, and ultrasonography; a helipad; a laboratory; sterile processing facilities; a full kitchen; and a parking garage with a rehabilitation field on the upper level.

Pivot to Josam Products

Olson's project manager met with the design team to determine the best drainage solutions and assisted through the design phase to get the drainage products selected and approved, coordinated, and procured in time for installation. The project schedule was expected to be fairly fast-paced, with the material required onsite quickly. Disruptions to the supply chains complicated the original procurement plans given the demands of the project.

Working closely with Olson Plumbing, Josam and its manufacturing representative, RKR, stepped in to provide the required drainage products on time to meet the project's schedule requirements. The design team was satisfied with Josam's drainage product selections and the various options available to them. Josam provided approximately 250 drains and carriers for the project, ranging from floor sinks, drains, and cleanouts to specialized drains for the rehabilitation field.

Packaging Improves Productivity

Olson Plumbing was impressed with Josam's superior packaging, labeling, and shipping method, offered at no extra charge. Josam recognizes that receiving, identifying, and matching up incoming products on a jobsite can take a considerable amount of time and typically increase labor costs. In particular, drains and carriers often require multiple components, so they are time-consuming to assemble and parts can easily be lost. Olson Plumbing saved time and labor costs because each item was individually wrapped and tagged with specific product designations for easy on-site identification and transportation.

Olson Plumbing also took advantage of Josam's prefab carriers before on-site delivery. Josam's carriers are available in a standard 500-pound prefab package, with load capacities also available in 750 and 1,000 pounds.

Because they are among the first products required on the jobsite, time is of the essence when it comes to drains. Josam had the right products for Olson Plumbing right when they needed them.

For more information, visit www.josam.com.



Olson Plumbing saved time and labor costs during construction of a new orthopedic hospital because Josam individually wrapped and tagged each item with specific product designations for easy on-site identification and transportation.

MSUITE

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the facility, so Gallo Mechanical can better manage production and materials logistics. “FabPro helps us automate production tracking, mitigate schedule risks by predicting whether due dates are realistic the moment our work is loaded and if materials are available,” said McDonald.

The TigerStop machine accurately positions and cuts various materials, including copper, PVC, Aquatherm, and Uponor pipe and other plastics for Gallo Mechanical’s prefabrication division. “With the BIMPro-to-FabPro-to-TigerStop integration, the automation and workflows replaced several manual steps and take a quarter of the time,” said McDonald.

Before adopting MSUITE solutions, Gallo was facing a number of business challenges:

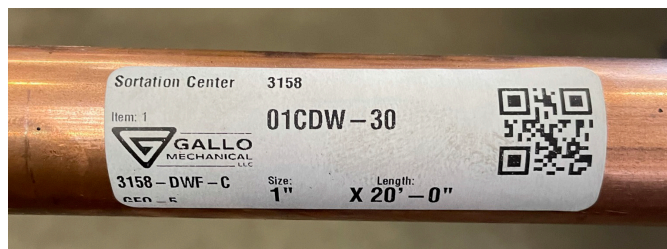
- Manual processes (in the fab shop and across departments)
- Substantial paper and material waste
- Administrative time involved in using paper timecards
- Fab shop staff’s lack of familiarity with new technology

“We are saving 10 percent on every single job. The integration between [MSUITE] BIMPro to FabPro to TigerStop helps Gallo Mechanical save money, increase productivity and efficiency, and reduce risks in the shop.”

— Ray McDonald, General Manager and Fabrication Coordinator, Gallo Mechanical

Now, the efficient flow of information is transforming metal fabrication. Before Gallo Mechanical implemented

Gallo Mechanical is streamlining its fabrication processes by using MSUITE FabPro integrated with TigerStop, creating efficiencies that save money on raw material purchases and reduce scrap and waste.



MSUITE and TigerStop, paper ruled the day. Employees would transfer paperwork orders to the programmer, attach physical nest reports, set up the fabrication book, and carry it to the shop floor. Upon finishing a job, the machine operator completed a job report to update inventory. If any stakeholder (for example, a supervisor, customer, or executive) wanted to know where a job was in production, staff needed to walk to the floor, talk with operators, and continue hunting until they found the work.

Since implementing MSUITE’s BIMPro, along with FabPro’s integration to TigerStop, Gallo’s design team automatically uploads designs and manufacturing data to FabPro for nesting. FabPro creates the nesting layout built on the sheet inventory as directed but analyzes several available sheet sizes to select one for optimal material utilization. FabPro nests material by company, job, package, drawing level, and sequence to cut materials in the most effective manner—virtually eliminating waste.

Scheduling jobs in FabPro offers superior production workflows. If an urgent request comes in at the last minute for the fab shop, slipping priority jobs into the schedule is much easier for Gallo Mechanical. Notifications are automatically sent to operators to keep them in sync with workload changes.

“I was printing and delivering books the entire day and built up a massive library,” said Byron Sharp, fab shop foreman. “The MSUITE

FabPro-to-TigerStop integration helps me focus on more important priorities.”

Gallo has a family atmosphere and many long-time, committed employees. Those employees are familiar with tackling complex problems, but the fabrication staff never used any software before. McDonald explained, “I was deeply concerned how our team was going to react to implementing the monitors and tablets at each workstation, but it was for naught. MSUITE and TigerStop were straightforward to train on and use. I would be hard-pressed from the team to ever pull them out.”

“With the BIMPro-to-FabPro-to-TigerStop integration, the automation and workflows replaced several manual steps and take a quarter of the time.”

— Ray McDonald, General Manager and Fabrication Coordinator, Gallo Mechanical

McDonald and the team mapped out every manual step in the fab shop to be configured in MSUITE’s FabPro. Spreadsheets and paper were eliminated and replaced with automated production management software and monitors set at each station.

“We worked closely with MSUITE’s exceptional client success team to eliminate unnecessary steps, and how to set up an organized process for optimizing our workflows and tracking

employee time,” said McDonald. “TigerStop took two days to turn on, and we started seeing results, as well.”

Gallo’s shop-controlled environment enables them to maintain high quality and constant productivity levels regardless of project site conditions. FabPro automates real-time production and material logistics from the shop floor to take their fabrication capabilities to a new level.

Gallo is at the forefront of using MEP manufacturing technology to gain

strategic advantages. The MSUITE–TigerStop integration connects model data to shop floor cut stations to automate the cut list creation and optimization and nesting processes. No longer do staff have to create and manage CSV files. With this integration, MSUITE and TigerStop eliminate multiple tedious steps and maximize efficiencies of the cutting process.

“Not only is our MSUITE FabPro-to-TigerStop helping us save on scrap, but it has also saved us an incredible

amount of money on raw material purchases,” said McDonald. “We are saving 10 percent on every single job. The integration between BIMPro to FabPro to TigerStop helps Gallo Mechanical save money, increase productivity and efficiency, and reduce risks in the shop,” McDonald concluded.

For more information, visit www.msuite.com.

AMS Mechanical Solves Mysterious Pump Failures with Metraflex Magnet System

Called on to help a Chicago condominium that was having repeated pump failures, **AMS Mechanical Systems** determined the cause to be metal debris in the pumps. **Metraflex Company’s** LPD Mag, a high-efficiency, low-pressure-drop Y-strainer with a neodymium magnet, proved to be the perfect solution. AMS found the new, low-cost strainers were easy to install and effectively fixed the problem.

Pinpointing the Problem

First, the pumps in the residential downtown building began making excessive noise before starting to leak or seizing up. The building had a new, closed-loop system that consisted of

11 individual pumps with electronically commutated motors (ECMs), 11 LPD Y-strainers, and boilers that used copper heat exchangers.

Since the system was put into service in 2017, AMS was brought in to replace 30 pumps with ECMs caused by pump failures within the first two years. Having to replace a pump is no easy or cheap task. “In just one year alone we replaced more than a dozen pumps,” explained John Lueder, client manager at AMS.

Looking at the pumps, it became evident that the powerful magnets in the ECMs were attracting iron oxides and other magnetic particulates into the wet rotor of the pump. The buildup on the rotor either wore through the housing, resulting in a leak, or the pump seized up.

“It is a brand-new system,” said Lueder, “so it was weird when the pumps kept failing.” The source of the iron oxides causing the trouble was the carbon steel pipe. Further analysis determined that the copper heat exchanger was causing galvanic corrosion of the carbon steel pipe, which resulted in additional iron oxides that ultimately found their way into the ECM pump wet rotor and caused failure.

Lueder consulted with Dan Watkins, vice president of Bornquist, the local manufacturer’s representative for Metraflex, who also assisted in the initial design of the system. Watkins is very familiar with the LPD Mag Y-strainer from Metraflex and knew it would be the perfect solution.



AMS retrofitted existing Y-strainers with Metraflex’s LPD Mag Y-strainer, which has a neodymium magnet that attracts metal particulates before they reach the pumps—an easy solution to the persistent pump failure problem. This photo shows the cover plate before blow down.

According to Watkins, “Almost every single pump failure was due to excessive debris; the iron oxides were definitely causing issues.”

A Simple Solution

Because this system already had 11 standard LPD Y-strainers supplied by Metraflex, the solution seemed simple: the LPD Mag Retrofit Kit. With the kit, the contractor simply removes and replaces the standard LPD cover plate with the retrofit cover plate that includes a dry well for the powerful neodymium magnet.

“It was like a no-brainer,” Lueder said. “We felt better about trying something with minimal effort and a low price point after we have spent thousands replacing failed pumps. The installation was easy, and there was no drawback to using them.”

Dave Smolen, service technician with AMS, had the same opinion. “The kit was simple to install and intriguing. I was willing to do anything to help me in not having to replace these pumps so often.”

Smolen continued, “These LPD Mag cover plates have been installed for nine months now, and I have had no troubles with the ECM pumps.”

Seeing Is Believing

The next step was to blow down the LPD Mag strainers to clean out any debris or iron oxides. The LPD Mags were blown down in accordance with the instructions provided with the product. The pumps were on and pressurized and 150° F, at 25 psi. The magnet was pulled halfway out, the valve was opened, then the remaining length of magnet was pulled out. This process pulls the metallic particles down into the blow-off port, allowing for a clean blowout.

One of the unique advantages of the LPD Mag strainers is that you can blow them down with the pumps running, as well as with the system shut down. Lueder explained, “The blow-down process went well. We needed to be more prepared and ready for the rush of water, but the magnet held the particulate really well. The instructions made sense, and it worked to remove the metal particulate in the line.”

When blown down, the first strainer released a large cloud of black sediment followed by relatively clear water. For the second strainer, the system was shut down and the cover plate was removed completely to get a sense of what was being attracted to the magnet.

After seeing the large accumulation of sludge and iron oxide that the magnet had attracted, it was time to reinstall the cover

plate and blow down the second strainer. The system remained on and the engineers held a large bucket to capture debris from the blow down.

The third strainer to be blown down was installed at a higher elevation and required a hose to direct the water into a container. After hooking up the hose to the blow-down valve, the blow-down process was the same as for the other strainers.

The LPD Mag works around the clock. Using the formula for exponential decay and knowing the volume of water circulating, users can predict when 95 percent of the magnetic particles will be captured.

Since the installation of the LPD Mag Retrofit Kits, there have been no more pump issues. “We did not find any additional pumps with an issue related to that. So, so far so good!” said Lueder, three months after the first blow down. Nearly a year after installation, it is evident that the new LPD Mag Y-strainers with neodymium magnets have brought the mechanical room a (silent) sigh of relief.

For more information, visit www.Metraflex.com/lpdmag or call Metraflex at 312-738-3800.



AMS solved a Chicago condominium's recurring pump failures with Metraflex's LPD Mag Retrofit Kits—an easy-to-install, low-cost fix that keeps metal debris out of the pump motors.

Auburn Mechanical Overcomes Process Pitfalls With Procore Mobile Solution

Founded in 1975, **Auburn Mechanical** of Auburn, WA, has decades of experience taking on large, complex projects, but internal processes—communication, documentation, record keeping, and information sharing—can pose the biggest challenges. Justin Pritchett, construction division manager at Auburn Mechanical, points out that the more manual steps involved in such processes, the higher the risk that those steps will not be completed. **Procore**'s integrated, fully mobile digital construction management solution puts Auburn Mechanical's voluminous project information literally at the fingertips of craft labor in the field, streamlining processes and reducing the risk of lost, missing, or incomplete data.

"The amount of information that we need in order to build our projects can be overwhelming at times," Pritchett said. With Procore's mobile solution, "you can have it all on a mobile platform that literally fits in your pocket. We definitely believe our adoption of technology is a competitive advantage for our organization."

Enhancing Collaboration

For example, Auburn uses a daily construction report (DCR) to record details of a project's evolution. A cloud-based DCR produces a much more granular record than its manual paper predecessor.

Pritchett explained, "Our previous process used Microsoft Office Suite to do our daily construction report—a Word file. We're a full mechanical firm, so we could have plumbing, sheet metal, refrigeration, and pipe-fitting forepersons on the jobsite, and all of them need to participate in the DCR. When it's a Word file,

it's either this awkwardly shared document, or it's, 'Hey, I did my portion. Now, you all do your portions.' Everyone drags photos off their phones to a desktop and uses a snippet tool to cut the photo and place it in the DCR. That's a heavily manual process. The biggest risk is that it doesn't happen."

Procore makes collaboration easier. "Everybody can simultaneously work in the DCR in real time, so when you take that quick photo to document progress and site conditions—that gets into the DCR very quickly and easily, and multiple forepersons can do that concurrently," Pritchett pointed out.

Information at Hand

"Our firm's operations group has this mission of perfection at the point of connection," said Pritchett. "This means perfect information in the hands of our craft labor." Procore's mobile solution makes all project information available right there in the field. There is no roaming the jobsite in search of an answer. Pritchett stated, "We want our specialized craft labor to focus on production and quality and safety, and not have questions about how the building comes together."

In fact, Pritchett continued, "From a field-specific perspective, the usability from a mobile device was hands-down the reason why the field wanted to use it. We pulled up Procore on an iPad, showed it to our field leadership, and they were ready to make the decision right there."

Mobile technology has changed the landscape. "On our major projects, our project engineering team is linking the submittal data, the installation manuals, and our spool drawings to the



Justin Pritchett, construction division manager at Auburn Mechanical, said the amount of information needed for massive construction projects "can be overwhelming at times." With Procore's mobile solution, "you can have it all on a mobile platform that literally fits in your pocket."

various documents in the shop drawings—all of it accessible on their mobile devices. Today our field can very quickly pull up the shop drawing and look at the submittal—to understand precisely what they’re supposed to install,” Pritchett said. “And then through the Procore Model module, they’re able to look at the 3D model for precise comparison—again, right there in the field.”

“We pulled up Procore on an iPad, showed it to our field leadership, and they were ready to make the decision right there.”

— Justin Pritchett, Construction Division Manager, Auburn Mechanical

Partnering for Success

Pritchett also praised Procore’s certification process for training. “We had all of our major project forepersons, our project managers, and all of our field leadership go through

Procore’s certification classes. They were immediately up to speed.”

Pritchett looked forward to the promise that new technology brings to the field. Recent engineering graduates who are very familiar with new technology are working alongside veterans with decades of experience and institutional knowledge. “When you team those two people together, you’ve got the technology expert learning from the building expert. That’s a natural partnership. At Auburn Mechanical, we’ve been able to pair those project engineers with master builders. This is a digital solution, a people solution, and a process solution.

“We can leverage technology to build more economical buildings, to produce more affordable housing for those in need. We’re an industry that can leverage technology for the common good,” Pritchett observed.

For more information, visit www.procore.com.

Dormatech Sees Explosive Growth Fueled by BuildOps Cloud-Based Software Solution

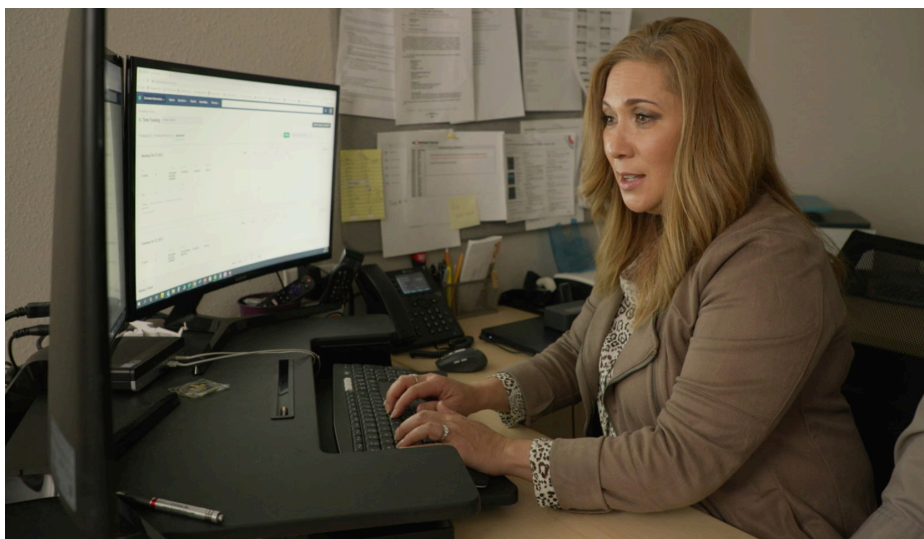
Dormatech Mechanical Systems of Northern California faced a familiar litany of challenges using multiple software platforms to manage its business. After switching to an integrated **BuildOps** software solution, Dormatech rapidly increased revenue by 50 percent.

The multiple systems were impossible to fully integrate, leading to inefficiencies and redundancies that inhibited the company’s ability to grow. Spotty Wi-Fi and cellular connections frequently interfered with technicians’ ability to communicate with the office, delaying new work orders and slowing other paperwork.

In response to these ongoing difficulties, Mark Mulholland, Dormatech’s president, and Dorothy Natividad, chief financial officer, made the adoption of an all-in-one, cloud-based software solution a top priority for the company. Over the course of a year, the Dormatech team tested several different platforms. Dormatech ultimately selected BuildOps, a fully integrated solution that empowers commercial mechanical, plumbing, and electrical contractors to effectively manage operations and field service on a single platform while maximizing efficiency and driving profitability.

“We went through a few different software systems,” said Mulholland. “There were multiple platforms that we tried

“The most surprising thing about using BuildOps was how user-friendly it is,” said Dorothy Natividad, Dormatech’s chief financial officer. “It’s definitely improved our business.”



unsuccessfully to integrate, which created many challenges.”

Technicians frequently could not send reports into the office or receive updated assignments because of software that relied on wireless or cellular connections instead of operating through the cloud. Disparate disconnected systems meant repeated effort and increased risk of human error across workflows, from dispatch and scheduling to quoting, invoicing, and accounting.

“What made BuildOps stand out was that it was cloud-based,” Natividad said. “Because it’s an all-in-one software platform, it encompasses and integrates every function, including quoting, dispatch, administration, and purchasing. The bundled package means BuildOps is more efficient and accurate than relying on multiple separate platforms.”

In addition, Natividad said, the onboarding process and integrating BuildOps with Dormatech’s existing digital infrastructure were efficient and intuitive. The increased transparency and accuracy provided by BuildOps streamlined workflows and dramatically enhanced customer experience.

“The most surprising thing about using BuildOps was how user-friendly it

is, and how easy the flow is working through each module,” said Natividad. “It’s definitely improved our business. We’re able to track jobs, track quoting and deploy field resources more efficiently, allowing us to protect revenue.”

Because of the ease of operability

“We’ve seen an increase in day-to-day operations efficiencies that’s going to add up to significant savings in time and energy over the course of a year. I would strongly recommend BuildOps to other companies in field service.”

— Mark Mulholland, President, Dormatech Mechanical Systems

and accessibility, technicians readily adopted BuildOps in the field. “Our field team loves the BuildOps product,” Mulholland said. “It only took a few days for them to get up to speed. They’ve expressed appreciation for the ease of use and the ability to transition from smartphone to tablet, depending on the job. That functionality is an important feature in optimizing efficiency.

“BuildOps has also provided unparalleled support compared to other companies we’ve worked with,” Mulholland continued. “They worked with our team extensively to configure the software specifically for our needs and worked closely through onboarding. It’s been refreshing to have a team that supports us and answers our calls and emails in a timely manner.”

The results speak for themselves: In the company’s first quarter using BuildOps, Dormatech increased revenue by 50 percent compared with the same period the previous year and increased quoting output by 80 percent.

“It’s been an amazing experience,” Mulholland said. “We’ve seen an increase in day-to-day operations efficiencies that’s going to add up to significant savings in time and energy over the course of a year. I would strongly recommend BuildOps to other companies in field service. We see BuildOps as a strategic partner that can provide a backbone for our company and a platform for growth.”

For more information, visit buildops.com.

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Installing Hydronic Systems in Health Care Facilities: Tips from IMI Hydronic

The performance of any health care building is linked to the HVAC ecosystem, as accurate indoor temperature and air quality are critical in health care settings. However, each project comes with its own set of challenges. **IMI Hydronic Engineering** has over 300 years of combined experience on hydronic systems.

Renovation Projects

Renovating health care facilities requires finding solutions for individual system problems and also improving the system performance. Some of the most common HVAC problems involve system noise, temperature fluctuations, and power disruptions.

System Noise

Disruptive system noise is the result of vibrations across valves and pipework. Noise can come from air and dirt circulating in pipes, high flow speed, or a too-high pressure drop in valves.

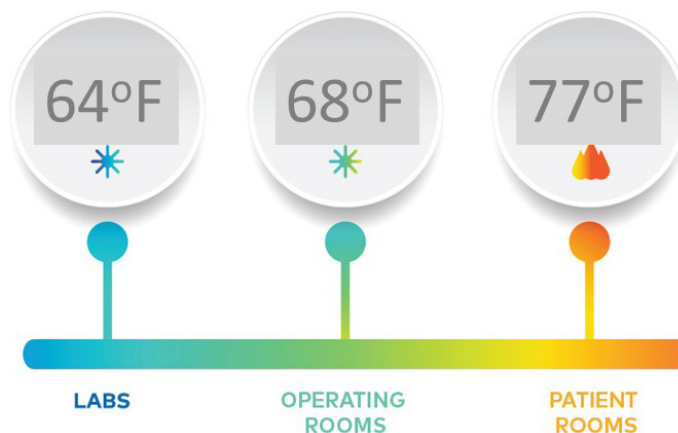
Air vents, dirt separation, and degassing solutions help keep the system “clean” and avoid air bubbles that lead to system noise. They also increase system efficiency. Oxygen in the system can significantly reduce the efficiency and durability of equipment.

Installing differential pressure (DP) controllers on the floor circuit helps control the available pressure and, if needed, rectifies the pressure interval entering that specific zone. Controlling the pressure helps avoid overflows that lead to large pressure drops, vibration, and noise. Proper balancing is also critical to prevent overflows. Installing a pressure independent balancing and control valve (PIBCV) can perform both balancing and DP control.

Air Temperature

Different areas of a health care facility have different temperature requirements. A difference of 2° F too hot or too cold can increase energy consumption by 6 to 11 percent. Hospitals have five to seven times higher annual consumption than conventional office buildings. Ensuring the right temperature can have a significant impact on energy bills.

Most buildings operate under 20 percent of flow during 80 percent of the heating or cooling season. Switching from constant to variable flow allows delivery of just the right amount of flow required at a given time. Valves with the equal percentage characteristic (known as EQM) ensure precise control even in low-flow conditions. A PIBCV adjusts the design flow independently of the DP variation, so complex calculations and commissioning are no longer necessary.



Different areas of a health care facility have different temperature requirements. Installing the right equipment can help facilities better maintain ideal temperatures and cut energy costs.

Power Disruptions

Power disorders or outages can sometimes be inevitable. Installing actuators with a fail-safe function, like IMI's TA-Slider, a digitally configured actuator, mitigates the consequences. With the fail-safe feature, the actuator moves to a predefined position in case of a power failure, ensuring that a safe power flow is achieved.

New Build Projects

Building a new health care facility requires meticulous system design. The correct selection and sizing of products ensures accurate performance, reliability, and durability. Also, diligent follow-up during the installation and commissioning ensures that the system startup matches design conditions. Following are some critical considerations for a good hydronic system design and smooth operation.

Smart HVAC System

A smart HVAC system offers multiple benefits, including easy access to critical system parameters, remote troubleshooting, and automation. IMI's digital actuator connects the controls' system to any building management system, where operation can be monitored and analyzed and equipment can be controlled.

The IMI connected valve (TA-Smart) takes smart systems to a whole new level with internal control feedback. It continuously measures the flow, delta temperature, and power, and logs this information in a smartphone app even without a building management system. In addition, it communicates those data to its own actuator to change its input signal, ensuring the desired conditions for smart autonomous control. TA-Smart can also be used for energy metering purposes by zone.

Good Design

Well-designed controls have fewer variants and more installation possibilities and can adapt to on-site conditions, saving time and mitigating risk. IMI's solutions are fully configurable via a smartphone app, HyTune, so you do not have to climb into dark ceilings with screwdrivers to set dual in-line package switches.

Confidence in Commissioning

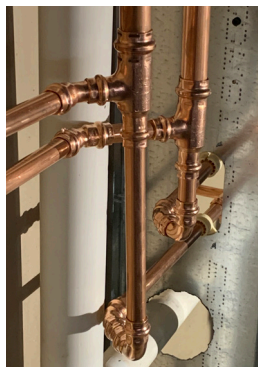
System start-up is a lot smoother if the system design and

product sizing are properly done. IMI's software tools simplify this process. For example, system information can be uploaded to TA-Scope, a diagnostic measuring instrument, to validate system conditions. IMI's centralized technical team, the Engineering Support Center, is available to review your HVAC drawings and support you with hydronic calculations, product selection, and sizing.

For more information, visit www.imi-hydronic.com.

Jarrell Beats Completion Date With CerroPress Fittings

Missouri's C.E. Jarrell Mechanical Contracting Co. Inc. finished an extensive project ahead of the fast-track completion date by using CerroPress® press-to-connect domestic water fittings and CerroTube™ copper plumbing tube from Cerro Flow Products LLC®. Press fitting saved time and labor compared with sweating or soldering joints. Without a need for flame, Jarrell did not need a fire watch or special permits. They installed CerroPress copper fittings in sizes 1/2" to 2 1/2" throughout the facility.



Jarrell elegantly solved conflicts of the domestic water system with sanitary drains by using CerroPress 45-degree elbows and reducing tees.

The client was Rapid Locking Systems (RLS) LLC®, a manufacturing company that has been growing dramatically and urgently needed to expand. They selected a location near Lambert International Airport in St. Louis, MO, and set an aggressive construction schedule of five months to convert an 80,00-square-foot white box into a space for manufacturing, warehousing, offices, research and development, training, and a showroom. Jarrell was contracted to install rooftop units, ventilation, compressed air piping, and plumbing.

RLS President Paul Schubert said he was "very excited to have manufacturing, office staff, and training all under one roof." Moving to such a large space, with a fast-track schedule, required a lot of design/build mechanical systems.

Jarrell Vice President Greg Harty, pointed out, "It's a great project for us. Something that we specialize in is the design/build process, keeping everything under one roof so that when there is a need, it can be done in-house and not outsourced."

The RLS project has several single-user and shared bathrooms that all share wet walls with kitchens and break rooms, creating congestion in 3 1/2" and 5 1/2" studs. Jarrell elegantly solved conflicts of the domestic water system with sanitary drains by using CerroPress 45-degree elbows and reducing



Jeff Howard, Jarrell general foreman and journeyman plumber, connected CerroTube copper tubing with CerroPress fittings in much less time than joint soldering would have required, helping Jarrell beat the aggressive timeline for a new combination manufacturing and office space.

tees. Press-to-connect fittings offer the advantage of achieving watertight joints in tight spaces.

The domestic water system design for this project required a tee with the branch leg larger than the inlet or outlet legs. This particular size is not standard in the fittings industry. The challenge was solved by using CerroPress bushing reducers to accomplish the engineer's design.

Jarrell's installation of CerroTube™ and CerroPress fittings was "a work of art," according to Bob Dienstbach, Cerro product development manager.

More professionals each day are choosing to join ASTM B88 seamless copper water tubing (K, L, and M) with press fitting technology. CerroTube can be connected with CerroPress fittings to create a system quickly and economically. Manufactured

to precise dimensions for perfect fit, CerroPress fittings use high-performance, chloramine resistant O-rings and hard-tempered, 99.9-percent pure copper to achieve best-in-class test results and performance.

For more information, visit www.cerroplumbing.com.

Advice from Ridge Tool Company: Look for Tools That Help You Work Smarter, Not Harder

In today's high-tech world, when people talk about tool timesavers they tend to focus on the latest Bluetooth technology or the newest gadget. Yet, technology is not the only way to cut down time on a jobsite: tools that allow you to work smarter, not harder, can help any professional get to the next jobsite more effectively and efficiently. Here are a few questions to consider when evaluating the timesaving merits of a tool:

- **Can the tool do more than one job?** The best tools seem to help you do more with less: less gear, less time, less looking around. Anytime you can rely on a tool to perform more

than one task, that is a win. You will reach in your toolbox less and have less to haul onto a jobsite. For example, some wrenches provide multiple surface wrench sizes on one side and have an open box-end for line nuts. This type of wrench has you covered for straight stops, appliance legs, shower heads, faucet nuts, stool bolts, and more.

- **Are you maximizing the tool's versatility?** Knowledge of a tool's full ability is also key to saving time and limiting redundancy in your toolbox. Pressing tools are a good example. Plumbers appreciate press tools because they save time on connections and eliminate the need for soldering. Some press tools can do more than just press pipe connections. For example, Ridge Tool Company has designed their RIDGID press tools to be multipurpose.

Understanding that no two jobs are created equal, Ridge Tool built the RP 342-XL for them all: Its versatile design packs major power and boasts the widest range of applications of any press tool. It can press 1/2" to 4" copper, stainless steel, and carbon steel pipe and 1/2" to 2" PEX—in less than 10 seconds. It is also compatible with the full line of RIDGID Standard 32kN press tool accessories, including the StrutSlayr™ Strut Shear Head, Press Snap™ Soil Pipe Cutter, and all MegaPress jaws.

- **How reliable are the tools you buy?** Any tool is a timesaver if it is reliable. Think about the tools you have owned the longest. Which tools push through a hard job without breaking? What brand is a one- or two-year tool versus a lifetime of performance? When you are constantly having tools break down and you are investing time and money to replace or repair them, that is a waste. Buying reliable, proven tools is the best timesaver (and moneymaker). A strong warranty program is nice, but if the tool is always



Versatile tools save you time and money on the job. For example, Ridge Tool's RP 342-XL press tool, shown here with the StrutSlayr Strut Shear Head, works with all of the RIDGID press tool accessories.

breaking—even if the repairs are free—that downtime will cost you money every time.

- **Are you buying tools for today or tomorrow?** This question builds on the issue of reliability. Sometimes cost is a hard line that you cannot cross. But when you can, always consider your long-term plans. You might buy a smaller drain cleaner because it costs less. Yet, you know that the larger commercial drain cleaner will allow you to do 10 times as many jobs and build your business in the future. Which is a better investment? Tool redundancy has its place, but for higher-cost items, it can be a drain on expenses and a sore spot if your small drain cleaner is collecting dust in a warehouse a year from now.
- **Will I have to start from scratch when I need to upgrade?** When you buy equipment to meet your immediate needs, consider whether there are products designed to complement the equipment as you upgrade. For example, RIDGID reels, imaging cameras, monitors, locators, recorders, and drain cleaning equipment are designed to work together, so setup time is fast and compatibility is a given. Along with faster setup time, purchasing tools that integrate with each other can save you money and minimize downtime for training.

Saving time equals more jobs, and that means more income. There are many ways to adjust your tool inventory so you can work smarter, not harder.

For more information, visit www.ridgid.com.

Tips for Increasing Productivity in Today's Construction Environment

By Joe Ryan, Corporate Account Manager, Miller Electric Mfg. LLC

The construction industry continues to feel the ripple effects of the COVID-19 pandemic.

Many jobsites fell quiet in 2020 as projects were delayed or cancelled due to uncertainty in the immediate aftermath of the pandemic. And while things are rebounding, ongoing supply chain and project timeline issues continue to be challenges for many companies.

This makes it more important than ever for contractors to find ways to improve efficiency and make up for lost time on projects. While that has always been a priority, it's especially critical in today's construction industry. Read more about ways to improve productivity and save time on projects.

Improving Productivity

As contractors look for ways to improve efficiency and productivity on projects, investing in new technology or making a change to processes or techniques can deliver results. Here are three factors to consider that can help your operation save time and money:

Invest in new technology to save time. When operators have the ability to make welding adjustments remotely, it can deliver significant time savings, not to mention reduce safety risks. The time spent walking between the weld joint and the welding power source to change parameters and processes can add up—resulting in hours wasted every day. This is especially true on large jobsites where the operator may be hundreds of yards or several stories away from the machine and needs to make frequent adjustments. If an operator makes the trip to the power source four times a day and takes an



Converting to wire welding processes is one change that contractors can make to improve productivity and efficiency.

average of 15 minutes each time, that's 250 wasted hours per year—totaling \$11,250 in lost productivity. With ArcReach® technology from Miller Electric Mfg. LLC, operators have complete control at the weld joint using a wire feeder or stick/TIG remote. This allows them to reduce or eliminate the time wasted by walking back to the power source. Wireless Interface Control on Trailblazer® and Big Blue® welder/generators is another technology from Miller that provides full front panel access from wherever operators are working on the jobsite, so they don't have to go back to the welder/generator to adjust parameters, change welding processes, or turn the machine on and off.

Streamline steps in the process.

When contractors can complete parts of the construction or welding process with the workers they already have on

the jobsite—rather than hiring a third party for those tasks—it helps them reduce costs and gain better control over the schedule. One example of this is welding preheat, which is required in many welding applications on construction jobsites. If the contractor pays a subcontractor to come to the site and use resistance heating for this work, it can add significant time and cost to the process. Setup time can be up to three hours per weld joint, and preheating contractors may charge up to \$2,000 per joint. With the new ArcReach Heating Systems from Miller, contractors can do the preheating work in-house, with the operators they have—and often using the welding power sources they already have onsite. This eliminates the need to bring in more subcontractors by enabling welders to do the welding preheat quickly and easily.

Consider making a process change.

Converting to wire welding processes is another change that contractors can make to improve productivity and efficiency. More companies are transitioning from stick welding to wire welding on construction jobsites, due in part to the significantly higher deposition rates and travel speeds that wire processes can deliver. These gains can be realized while still meeting high weld-quality requirements and also improving jobsite safety.

Efficiency Gains Through Technology

As the construction industry deals with many challenges—from supply chain issues to labor shortages and strict timelines—contractors are looking for more efficient ways to do business. There are solutions available to make up lost time and keep ahead of schedule. New welding technologies and more productive processes can help deliver results to improve efficiency and quality.

For more information, visit www.millerwelds.com.

PypeServer Software Saves A&R Mechanical Hours Every Day

A&R Mechanical Contractors, Inc. credits PypeServer software with dramatically improving efficiency in its fabrication shop; pipe cutting tasks that used to take hours can now be done in 10 minutes or less. Justin Powers, A&R's virtual design and construction (VDC) and fabrication business unit manager, oversees work across the spectrum from contract award to field installation. He described his company's typical workflow and tools and the impact of integrating PypeServer software.

A&R's VDC projects are detailed by tradespeople using Revit with Fabrication components. These VDC designers work closely with project superintendents to ensure that the model is accurate, constructible, and efficient. A coordination manager compiles clashes, runs meetings, and keeps the schedule, while also maintaining a single point of contact for a project. After sign-off, spooling is completed using BIMPro (from MSUITE), and exports are sent to PypeServer for nesting and pipe inventory. Lastly,

spools are uploaded to FabPro (from MSUITE) for shop data and schedule tracking. A&R Mechanical uses a TigerStop cutting table for hangers and small-bore piping and an HGG machine for larger-bore steel piping.

A&R selected PypeServer software for its interface and usability. Powers explained, "For us, the most crucial aspect of the software is usability. If the operator in the shop cannot operate the software reliably and without frustration, no amount of efficiency gained will be worth it in the long run."

Powers noted that installing PypeServer was easy, but the learning curve was steep. "I believe this was due to being one of the first to utilize PypeServer with an HGG



A&R Pipe Shop Foreman Jim Spencer uses PypeServer software integrated with an HGG cutting machine; the integrated approach substantially improved efficiency and speed in the fabrication shop, in part because the operator no longer has to enter pieces into the profiler manually.

“With PypeServer, ... tasks that took a couple of hours before can now be done in 10 minutes or less.”

— Justin Powers, VDC and Fabrication
Business Unit Manager, A&R Mechanical

Machine,” he pointed out. With support from PypeServer’s staff, A&R got everything working as promised. “I have complete confidence that as new ideas and solutions are suggested, the PypeServer team will work with us to ensure that our machine is operating at peak efficiency and precision,” said Powers.

The effort has already paid off for A&R. “With PypeServer, the shop operator is no longer manually entering the pieces into the profiler,” Powers explained. “Instead, our exports are done efficiently and are stored on the machine for use at any time. Now, we can nest multiple spools and even whole

projects on one piece of pipe. Tasks that took a couple of hours before can now be done in 10 minutes or less.”

PypeServer has proven to be an excellent value for A&R’s fabrication process. Powers pointed out some specific gains:

- The efficiency and speed with which the operator can begin cutting following spool assignment
- The availability of custom parameters, such as negative root gap (allowing A&R to lengthen a piece to account for a land being ground onto the pipe)
- The efficiency of nesting across multiple projects and spools

Powers acknowledged that being one of the first shops to integrate HGG machines with PypeServer software came with many bumps and challenges. Still, he credited the PypeServer team for putting in the extra time and effort to get A&R’s machine working as efficiently as possible. “PypeServer is a true innovator and leader in the space, and we couldn’t have done it without them,” said Powers.

For more information, visit www.pypeserver.com.

Nashville Machine Company Conquers Tough Task With Lochinvar’s Flexible, Efficient Products

Nashville Machine Company took on the complicated task of removing and replacing an aging water heating system so large it would not fit through the mechanical room doors. Installing a new system from Lochinvar went smoothly thanks to the flexibility of the Lochinvar products, which also promised excellent energy efficiency, making them the ideal choice for the project.

Vanderbilt University has made great strides toward sustainability thanks to its SustainVU program to improve the university’s impact on the community and the environment. When its Student Recreation Center needed a new water heating system, Vanderbilt’s Plant Operations team worked with Ferguson in Nashville, TN, to find an efficient solution. Having had extensive experience with high-efficiency Lochinvar equipment, the Ferguson representatives invited Chris Dickerson of Lochinvar to check out the existing equipment and provide a recommendation for a retrofit system.

After inspecting the equipment and the size of the mechanical room, Dickerson recommended replacing the 2.4-million-Btu/hr water heater and its 1,000-gallon storage tank with four 500,000 Btu/hr ARMOR® Water Heaters

Nashville Machine Company upgraded the water heating system at Vanderbilt University’s Student Recreation Center to energy-efficient Lochinvar products, saving the university an average of 26 percent on monthly gas bills and moving it closer to its sustainability goals.



(AWN501PM) and five Lock-Temp® Round Jacketed Storage Tanks (RJA200). Space constraints influenced the recommendations; the five 200-gallon storage tanks were the largest units that would fit through the mechanical room doorway.

The Vanderbilt and Ferguson teams had great confidence in the Lochinvar ARMOR water heaters, which offer thermal efficiency up to 98 percent, and they agreed that this was the ideal replacement system for the recreation center.

When it came time to remove the old equipment, Nashville Machine Company had to cut the old, large water heater into pieces to get it out of the mechanical room. Despite the complex piping arrangement, the expertise of the installation team and the flexibility of ARMOR's venting options allowed for a smooth, successful installation.

Since installing the Lochinvar ARMOR Water Heaters and Lock-Temp Storage Tanks at the Student Recreation Center, Vanderbilt University has seen an average savings of 26 percent on monthly gas bills because of the significant increase in efficiency. "We're continuously working towards improving sustainability on campus, and projects like this one help us to greatly reduce our impact on the environment," said Samuel Hirt, director of campus recreation at Vanderbilt University. "The Lochinvar equipment has been operating perfectly since day one, and the energy savings are incredible."

For more information, visit lochinvar.com.



Nashville Machine Company had to cut Vanderbilt University's old water heater and storage tank into pieces to get it out of the mechanical room. They replaced it with four Lochinvar ARMOR water heaters and five storage tanks small enough to fit through the mechanical room doors. The flexibility of ARMOR's venting options allowed for a smooth, successful installation.

Tolin Mechanical Improves Business, Increases Transparency With XOi Vision

Tolin Mechanical of Denver, CO, adopted the XOi Vision app to streamline data capture and communication among its technicians and customers, improving customer satisfaction, decision making, and repeat business. Tolin is a full-service facility management company that works with commercial, industrial, institutional, and government organizations to maintain safe, healthy, and energy-efficient building operations. Tolin selected XOi Vision after observing the success that its sister companies had with the

"XOi is more valuable than I could have imagined. I think the access to information and the ability to send that information directly to a customer is really valuable."

— Kurt Bocim, Director of Operations, Tolin Mechanical

app. The move has resulted in a new level of transparency through visual documentation and work verification.

"XOi gives our techs the ability to really show the value that they're providing to the customer—what they're doing when they're

onsite," said Michael Clement, Tolin's chief operating officer. "That level of transparency is especially helpful to a customer that's not super technical. It gives them a better understanding of what's going on with their equipment."

In addition, Tolin has used the app to streamline quoting through remote diagnostics, increase close rates, decrease call backs, and increase repeat business. Tolin's senior technicians also use Vision to better share knowledge with the incoming workforce.

"XOi is more valuable than I could have imagined," said Kurt Bocim, director of operations. "I think the access to information and the ability to send that information directly to a customer is really valuable. Especially when you see a really good XOi workflow that a technician just nails from start to finish in a very short period of time. It's short, concise, and complete."

For more information, visit www.xoi.io.

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RWC Outlines How to Select the Right Cast-in-Place Sleeve

When working on multistory apartment complexes or other large commercial buildings, you may be tasked with installing firestop products or materials around service penetrations, which can be a daunting task involving dozens or hundreds of units and a plethora of floorplans. You will also likely encounter a wide variety of pipe types and sizes along with slab heights. You will need versatile, efficient, and reliable options to cover the range of pipe penetrations for the job, while also keeping in mind firestop and building codes. Here are some tips for selecting the best cast-in-place firestop sleeve for the job.

Versatility

As buildings are constructed, many penetration types and sizes may require a cast-in-place sleeve. Each application could need a different sleeve size, and with a versatile product, such as **Reliance Worldwide Corporation's** HoldRite HydroFlame Pro Firestop Sleeves, you can make simple adjustments through its telescoping feature or with its adjustable cap option that eliminate the need for small cuts within a 7-1/4" to 8" range.

With an adjustable and versatile product, you will have the right size available without having to make additional cuts to the sleeve on the jobsite. As an added benefit, you only need to buy one type of sleeve to complement all applications rather than purchasing different iterations that might not end up working at all.

Efficiency

Look for a product that speeds up the installation process while maintaining reliability. An adjustable telescoping design and adjustable cap feature not only enable versatility on the jobsite but also minimize time spent cutting sleeves, and you can meet specification changes when needed, as the height can be set as you work. Furthermore, with an adjustable sleeve, there is no need to stock multiple precut sleeve sizes or halt work because you do not have the right sleeves on hand.

At times, there may be a chance of mixing up the cast-in-place sleeves at the jobsite, so it is important to find a

product that comes with prefabricated locator whiskers to easily identify in-slab penetrations. That way you can minimize mistakes or lost time while installing.

Also look for a product that already has a W rating. For instance, HoldRite HydroFlame Pro Firestop Sleeves come prepackaged with a UL Class 1 W rating, which saves time, as there is rarely a need to go back to the penetration later and add watertight products or accessories. By selecting a product that is efficient in many areas, you will save time and labor costs, helping you complete the installation on time.

Reliability

Select a product that provides peace of mind, both in its installation and in the quality of the product itself. To avoid having to fix an issue that arises after installation, consider durability, strength and functionality when selecting the firestop sleeve for the project. Look for a firestop system that does not require a lot of installation steps, which can increase the chance of errors. You want a product designed and manufactured by a reputable company.

By using an efficient, versatile and reliable product, you will be able to complete a large-scale commercial building job successfully and efficiently, furthering your company's reputation as a dependable provider of excellent plumbing services.

For more information, visit www.rwc.com.

Choosing an efficient, versatile, and reliable cast-in-place sleeve, such as RWC's HoldRite HydroFlame Pro Firestop Sleeves, saves time and money during installation and afterward by preventing the need for callbacks to fix firestop penetrations.



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