

SMART SOLUTIONS

WINTER 2016

Helping contractors save money and enhance productivity



Built in 1923, the T.W. Patterson Building was the first multistory U.S. building to install air conditioning. To upgrade the system, NESM chose the compact Daikin Magnitude chiller to fit the tight spaces of the historic building.

New England Sheet Metal Works Sees Daikin Chiller as Perfect Fit for Historic Building

New England Sheet Metal Works, Inc. (NESM) chose a Daikin Magnitude® chiller to upgrade the historic T.W. Patterson building in downtown Fresno, CA, because its compact design fit the tight spaces of the 93-year-old building. NESM provided temporary cooling, engineering design of the new water-cooled applied system, and services that included the installation of the Magnitude chiller, related piping, and a cooling tower.

“Both NESM and Patterson building ownership are passionate about

downtown and have long histories here in Fresno,” said Jim Boone, president of NESM. “Our firm is very familiar with Daikin and has the experience required to bring the historic Patterson building this state-of-the-art chiller technology.”

State-of-the-Art, Then and Now

The Patterson building was the first multistory building to feature air conditioning in the United States back in the 1920s. The recent HVAC upgrade was a chance to show advanced technology and problem-solving at its

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Henson Robinson Elects Carrier for Comfort at Historic Lincoln Home

Called on by the National Park Service to modernize the HVAC system of the home of Abraham Lincoln in Springfield, IL, Henson Robinson relied on its expertise with historical sites and on Carrier HVAC products to upgrade the system without disrupting visitors or disturbing the site. Despite the challenges, the project went smoothly.

The Lincoln Home National Historic Site has a mission to preserve, protect, and interpret the house where Lincoln and his family lived for 17 years prior to his election to the presidency of the United States. The Lincoln Home, which emphasizes the relevance of Lincoln’s life to people living today, provides an educational experience for more than 200,000 visitors a year, in addition to preserving numerous historical furnishings and artifacts associated with Lincoln. Historical accuracy and period-appropriate appearance are important goals for the facility, which replicates the home’s appearance in 1860, when the Lincolns moved to Washington, DC.

Because Willis Carrier did not invent modern air conditioning until 1902,

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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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Rising to the Challenge

From preserving historic landmarks to completing cutting-edge projects, contractors rely on suppliers to meet the challenges they face every day. In this issue of *Smart Solutions*, read about Henson Robinson's upgrade of the HVAC system in Abraham Lincoln's home using Carrier products. To modernize a 93-year-old building in downtown Fresno, CA, New England Sheet Metal Works, Inc. installed a compact Daikin chiller that fit the tight spaces, swapping out the old system through an underground garage with a 15° ramp.

Other stories highlight new building challenges, such as those posed by the SolarCity solar panel manufacturing plant in Buffalo, NY. The "design-on-the-fly" approach to building the plant means Mollenberg-Betz, Inc. does not always know which products it will need and when, so they partnered with F.W. Webb Company to provide engineered process piping solutions as they need them. To meet tight timelines, John W. Danforth Co. employed Erickson Incorporated's aerial services to place 44 sections of rooftop HVAC units on top of the plant in less than seven hours.

Learn how contractors managed difficult design specs. When Humphrey Company Ltd. saw that the sleek design of a new medical research building specified "no downspout nozzles," they called on Jay R. Smith Mfg. Co. for a custom drainage solution to get the job done. Because hospital systems often have limited storage space and complex plumbing and electrical systems, Dynamic Systems, Inc. counts on engineered secondary pipe support and alignment bracket systems from HOLDRITE® to reduce costs, save time, and increase storage space. Facing space constraints, design restrictions, and a one-week schedule, EMCOR Services Northeast, Inc. replaced three failing cooling towers using SPX Cooling Technologies products specially configured and manufactured to fit the tight space and meet the client's requirements.

Be inspired by examples of contractors coming to the rescue. With careful planning and support from Lifting Gear Hire, Hayes Mechanical rapidly installed new ductwork required by the Environmental Protection Agency for a Midwest power plant facing closure. The Stroh Corporation overcame an unexpected roadblock during an urgent sump pump installation but stayed on schedule, thanks to the ease of installing Blue Angel Pumps from Wayne Water Systems. With a school renovation well behind schedule, General Temperature Control shaved months off its timeline by using Anvil International's Gruvlok® products and support, so the school could open on time.

These are just some of the stories in this issue that highlight how MCAA Supplier Partners are helping contractors stay profitable while meeting new and changing challenges. Learn more by visiting them in person at *MCAA 2016*.

Jim Allen, Chairman

Join me in welcoming our newest supplier partners:

- Automated Integration
- Bes-Tech, Inc.
- Conex Universal Limited
- LG Electronics USA, Inc.
- Lincoln Electric
- Powers Fasteners
- YANMAR America Corporation

Anvil's Gruvlok Couplings Speed Up GTC Installation Time

GTC Completes Work Months Ahead, Behind-Schedule School Project Finishes on Time

With Anvil International's Gruvlok® products and support, General Temperature Control (GTC) shaved months off its timeline for a school building project that had been behind schedule. Thanks to the swift installation time, the school opened on time.

From GTC's point of view, Anvil's Gruvlok products and the company's continuing support through field visits and behind-the-scenes logistics planning were critical to the project's success. "So many vendors today are poor at supporting products after the sale," said GTC's project manager, Bob Billings, adding that Anvil's help was "critical to contractors."

Starting Out Behind Schedule

The renovation of Franklin Heights High School in Columbus, OH, was one of the larger new construction projects ever attempted by the South-Western School City School District. In July 2014, the approximately \$45-million project was facing schedule issues. Bad weather and other complications had put the project behind by three to four months—enough that the new 250,000-square-foot, three-story building would not be ready when students arrived on August 18, 2015.

HVAC installer GTC of Canal Winchester, OH, was one of the last trade contractors to enter the project. On July 1, 2014, Billings watched his first trucks enter the campus and wondered how he could shave two to three months from his 13-to-14-month schedule. That would give painters, flooring contractors, and ceiling installers the time they needed to get the school ready for occupancy.

New Approach Needed

For 25 years, GTC had relied almost exclusively on welded pipe, using grooved pipe only occasionally for specialized, boutique-type undertakings. But this project, with a budget of around \$5 million, called for approximately 2,000 feet of pipe to be jammed into a mechanical room only 30' x 40' in diameter, with an 18' ceiling.

The Columbus area is an active geothermal zone. In an innovative use of natural resources, two multistack chillers would produce both hot and cold water from 128 wells in a geothermal field under the school's parking lot and softball field. But the water source also complicated the piping design because of an intricate balancing act in which bypass pumps would prevent excess cold water from being sent back into the geothermal field, which would have cooled the water there. All in all, Billings described the mechanical room as "intense," and the piping as "enormous."

With the relatively small space and large volume of equipment and pipe, working conditions were so cramped that



Top: Because Anvil's Gruvlok pipe and couplings were easier to install than welded pipes and required half the labor, GTC was able to shave months off the installation time, which helped the behind-schedule school renovation finish on time.

Bottom: Given the relatively small mechanical room at Franklin Heights High School, welding would have been very difficult, so GTC used Anvil's Gruvlok grooved pipe and couplings, which also saved a lot of installation time.

welding—although possible—would have been highly difficult. Even so, it was mainly the economics that sold Billings and GTC estimator Bill Detillion on grooved pipe. Along with its associated fittings, the grooved product was about 5 to 10 percent more expensive than welded pipe. But as he punched through the numbers, Detillion found it would create a labor savings of around 25 to 30 percent—more than enough to offset the grooved system's higher cost.

The savings came from 1) reallocating a worker who otherwise would have been needed as a fire watch on a welding project

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Compact Footprint, Snug Fit of BAC Cooling Towers Makes Installation Easy for Ideal Consolidated

In selecting new cooling equipment for a university laboratory, **Ideal Consolidated Inc.**, chose **Baltimore Aircoil Company (BAC)** cooling towers because they would stand up to harsh winters, but also for their ease of installation. Tim Stuver, project manager at Ideal Consolidated, said the small footprint of the BAC towers made installation and rigging more efficient and cost-effective than other options.

When the University of Notre Dame Turbomachinery Laboratory needed cooling equipment for their new testing facility, multiple factors made BAC the best option. BAC's counterflow, closed-circuit cooling technology was the ideal fit for the South Bend, IN, winters. The Notre Dame team also trusted BAC with the job because of the attention to detail, industry knowledge, and attitude of John McGlynn, BAC's sales representative. McGlynn, a veteran of the cooling industry, noticed both environmental and technical factors that, while not

part of the original request for quote from Notre Dame, ultimately made a measurable difference both to the technical success of the project and its adherence to community regulations.

McGlynn's local experience made him aware of strict South Bend sound ordinances, a factor when selecting cooling equipment. He conducted measurements of A-weighted decibel (dBA) levels in increments of five feet, starting 100 feet from the property line, to ensure that the Turbomachinery Laboratory would be compliant once the new equipment was installed. Armed with this information, the Notre Dame team selected 12 BAC PF2 Closed Circuit Cooling Towers for their dry operation capability, ease of installation, counterflow process, low sound, and best installation cost.

The 12 units were delivered on nine trucks, broken down into 36 total components for installation. The units were shipped in multiple sections to optimize the size and weight of the

heaviest lift, allowing the use of more cost-effective cranes. The InterLok™ System aligned the casing and the basin, allowing for a smoother, faster rigging process. Because the PF2s have a compact footprint and fit snugly into the enclosure, the crane remained in one position for all 12 units, making installation even faster.

The combination of experience and commitment from the BAC team helped Ideal Consolidated install the cooling towers swiftly and efficiently, saving time and money. Partnering with BAC and engineering firm Karges-Falcounbridge, Inc. in advance on the selection of the cooling towers ensured that the university complied with local ordinances that might otherwise not have been anticipated.

For more information, visit www.baltimoreaircoil.com. MCAA thanks Baltimore Aircoil Company, Inc. for being a major sponsor of MCAA 2016 and for cosponsoring the Annual Dessert Party featuring Andy Grammer.

BAC shipped 12 PF2 cooling towers in multiple sections to optimize the size and weight of the heaviest lift, allowing Ideal Consolidated to use a crane to lift the units in place. The PF2s have a compact footprint and fit snugly into the enclosure, so the crane remained in one position for all 12 units, making installation even faster.



Humphrey Satisfies “No Downspouts” Design Specs with Jay R. Smith Custom Drains

The sleek design of a new medical research facility specifically prohibited downspout nozzles, so Humphrey Company Ltd. called on Jay R. Smith Mfg. Co. for a custom drainage solution. Accommodating state-of-the-art design challenges is just part of the job for Humphrey. They believe that when you take the time to plan for unusual requests, you can always find a solution—an approach that proved valuable in the construction of one of the country’s leading cancer research and treatment facilities.

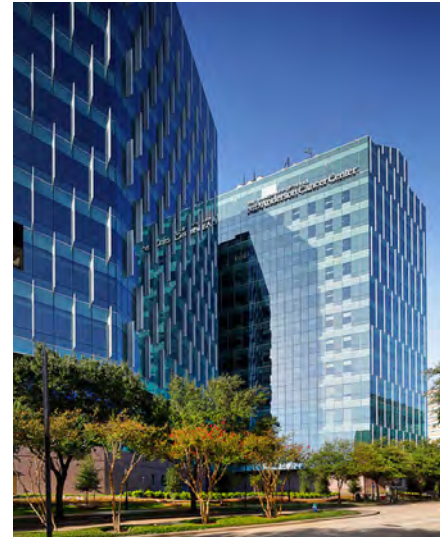
In 2011, MD Anderson received a \$150-million grant that funded, in part, the building of the new 626,000-square-foot Zayed Building for Personalized Cancer Care, which

houses the Institute for Personalized Cancer Therapy and the Center for Pancreatic Cancer Research.

Chris Humphrey, vice president of Humphrey Company, said that one of the challenges was accommodating the overflow drainage for the building. The design of the building required the overflow to be drained straight off the 12th and 13th floors of the building. The architect specified “no downspout nozzles.”

Humphrey Company turned to Jay R. Smith Mfg. Co. Sales Representative Randy Stephen to come up with a custom solution that would complement the building’s sleek design and meet the architect’s

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The sleek design of the Zayed Building for Personalized Cancer Care specified “no downspout nozzles,” so Humphrey Company Ltd. called on Jay R. Smith Mfg. Co. for a custom drainage solution to get the job done.

Herman Goldner Credits KEY2ACT Signature Software with Improving Efficiency, Cash Flow

Herman Goldner Company, Inc., took its first steps toward a paperless workplace in 1998 with KEY2ACT and cites their continued partnership as the basis for improved cash flow and increased efficiency. Goldner points to the KEY2ACT Signature solution suite as part of the reason they have become a company with annual revenue figures of over \$80 million and a staff of 250 employees.

“Before using Signature we had a 10-day waiting period before we could close out the month,” said Tony Le, Goldner’s system administrator. “It slowed everything down and affected the overall cash flow. Now we can close right on the last day of the month and we know

“Before using Signature we had a 10-day waiting period before we could close out the month. It slowed everything down and affected the overall cash flow. Now we can close right on the last day of the month and we know what our numbers are before we close.”

—Tony Le, System Administrator, Herman Goldner

what our numbers are before we close.”

Based in Philadelphia, Goldner has been serving customers for more than 125 years, providing mechanical construction services and maintenance to commercial, industrial, pharmaceutical, and health care companies. The company wanted a system that would

help them keep up with the times in a very competitive environment, so they partnered with KEY2ACT.

“Historically, we have grown and adapted with the times,” said Le. “There was a time when we did most everything by hand. Now, we have migrated in the past 15 years to being almost a paperless

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Erickson's Aircrane Lift Saves JW Danforth Weeks of Installation Time, Costs

To keep on track with its project timeline, **John W. Danforth Co.** turned to **Erickson Incorporated**, a global provider of innovative aerial services, to place 44 sections of rooftop HVAC units securely in place in just one day. Erickson flew a Sikorsky S64 Aircrane helicopter above SolarCity's 1.2-million-square-foot factory in Buffalo, NY. The Aircrane has a 25,000-pound lift capacity and easily carried the HVAC units—weighing between 14,000 and 18,000 pounds—in less than seven hours.

“Partnering with Erickson and strategizing on this unique delivery method saved the project many weeks of installation time, as well as substantially lowered total install cost of the units. Utilizing a traditional method of land cranes and rail systems posed a much higher safety risk and ultimately may not have supported the required construction completion dates,” said Rich DeLotto, project manager with JW Danforth.

In late September, Erickson met with all parties at the job site to review operational details, such as rigging, flight path, and roof delivery. To ensure efficient operations the day of the lift, Erickson suggested that the ground crew rig have

“Partnering with Erickson and strategizing on this unique delivery method saved the project many weeks of installation time, as well as substantially lowered total install cost of the units.”

—Rich DeLotto, Project Manager, JW Danforth

two units rigged so that loads would be prepared ahead of the helicopter at all times. Empty rigging was then hauled back from the roof by the helicopter. Metal bump stops and guides were also used on the dunnage to act as mechanical assistance for precision placement of each set.

In the first week of November, the HVAC units and equipment arrived at the jobsite by truck. A land-based crane off-loaded the units. The Aircrane and support equipment arrived a day ahead of schedule to avoid heavy winds forecasted later in the week. Last, a prelift walk to check of all areas was performed on the day before flight.

On the lift day, a safety briefing was held at 6:30 a.m. and flight activity began at 7:30 a.m. With three pilots aboard the helicopter and a 26-member crew on the ground and roof, all 44 units were lifted in just six-and-a-half hours. The crew



JW Danforth coordinated with Erickson to airlift 44 sections of rooftop HVAC units into place in less than seven hours, saving weeks of installation time and cutting installation costs.

on the ground included JW Danforth employees, plumbers and steamfitters from UA Local 22, and sheet metal workers from UA Local 71. The flight path was a direct route between the materials pick site to the rooftop set site. Flight activity ended at 1:30 p.m.

JW Danforth was very thorough in communicating plans to the ground crew. That close coordination with Erickson resulted in a safe, efficient project.

For more information, visit ericksoninc.com.

With F.W. Webb Support, Mollenberg-Betz Meets Demands of Massive Manufacturing Plant Project

Because of the “design-on-the-fly” approach to building a solar panel manufacturing plant, **Mollenberg-Betz, Inc.**, does not always know which products it will need and when, but it does know that **F.W. Webb Company** will provide just what they need when they do. The two have teamed up to provide engineered process piping solutions throughout the 1.2-million-square-foot SolarCity facility under construction in Buffalo, NY.

“Finding a PVF supplier in the region who could handle our extensive needs for the SolarCity installation was a top priority,” said Brenda McGinnis, purchasing manager at Mollenberg-Betz. “With F.W. Webb we found a partner with the right solutions and customer service approach to execute this complex project successfully.”

Project Poses Multiple Challenges

At the site of the former Republic Steel complex in South Buffalo, NY, a herculean effort is underway to build the SolarCity manufacturing plant. The sheer size of the \$900 million project—with its footprint equivalent to approximately 17 football fields—presents every imaginable type of construction challenge, such as finding enough skilled workers and securing the right materials in manageable amounts. To compound matters, the Buffalo-Niagara area is experiencing an unprecedented commercial construction boom of epic proportions, putting additional pressure on the availability of talent and building supplies.

There are no idle contractors in the Buffalo area. Most are working on the Riverbend Commerce Park project, where the SolarCity facility is under construction, or a host of other large-scale projects transforming Buffalo

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Top: Mollenberg-Betz credits F.W. Webb with helping the contractor establish a Class-1000 cleanroom to fabricate high-purity lines for the SolarCity facility. Metal tradesman Mike Runfola works outside the cleanroom, while journey pipefitter Ryan Smith fabricates a GF high-purity pipe inside.

Bottom: SolarCity's design/build approach prevented Mollenberg-Betz from ordering all products up front or establishing a regular delivery and installation schedule, so F.W. Webb ordered all of the GF inventory specified in the original job takeoff, stored it nearby, and provides it as needed. Here Mollenberg-Betz Foreman Justin Takas (left) inspects the latest delivery of GF pipe with F.W. Webb Industrial Plastics Manager Jim Matthews.

Mechanical Solutions Halves Installation Time with Parker Hannifin's Transair Piping

For a new production facility in St. Louis, MO, Mechanical Solutions found they could install Parker Hannifin's Transair piping for the compressed air system with about half the number of workers needed for a black iron system. Mechanical Solutions also found that with

Transair piping, they could pre-assemble parts in the shop, saving even more time on site.

High Expectations, Short Timelines
When SKF of Sweden designed the North American flagship for its Lubrication Business Unit (LBU),

they dubbed it Project SOTA (State of the Art). The 313,000-square-foot, \$26-million building includes manufacturing space for machining and assembly, a distribution center, and two floors of office space. It is one of 13 locations worldwide that produces lubrication distribution systems, from handheld grease guns to automated industrial lubrication systems for mobile and stationary machinery.

Construction began on October 22, 2014, and employees were moving in on October 19 of the following year. Deadlines to get internal systems up and running were tight, and a lot of the design and engineering was done concurrently with construction, said Bryan Stanford, SKF's continuous improvement manager of the LBU.

"Our compressed air system started going in around June or July, and we only had about a three-month period to get it done," Stanford said. "We needed something that was lightweight and easy to assemble to help us meet the tight schedule. This was a very tight-budget project, and any cost-savings ideas had to be examined and taken very seriously."

New Space, New Solutions

The compressed air system is connected to some 190 pieces of equipment at SKF's facility, including handheld tools and large pieces of equipment in the machining and assembly areas, such as metal cutting and turning equipment. Compressed air is also vital to the operation of assets in its distribution center, with air-powered lifts in the warehouse.

This new building was an opportunity for SKF to improve on its old location. Rather than install another black iron compressed air piping



Top: Mechanical Solutions appreciated the lightweight Transair piping when workers had to assemble piping fixtures in the air of SKF's North American flagship production facility. Transair's quick-connect design made this work much easier and less time-consuming to install than a black iron pipe system.

Bottom: Because Transair's quick connections eliminate the need to thread, solder, or glue pipe, Mechanical Solutions could assemble parts for SKF's new compressed air system in the shop, saving installation time on site.

system, SKF opted for an aluminum piping system, which is easier to work with and resistant to corrosion, said Stanford.

“The previous place was an old building with a lot of black iron compressed air piping,” Stanford said. “We knew that we had to be state-of-the-art, and with black iron piping you get corrosion that eventually leads to performance loss and pressure drop over the years. That’s something that we won’t see with an aluminum product.”

After considering several products, SKF chose Parker Hannifin’s Transair piping for its new compressed air system. Cost-effectiveness was the main driver in that decision, Stanford said, explaining that although the material costs are higher with aluminum, the installation costs were reduced by 15 to 20 percent. That savings can be attributed to Transair’s lightweight, quick-connect design, so it takes fewer workers less time to assemble and install the system.

Using Transair would also help SKF save money in the long run by preserving its equipment. Transair’s smooth interior and full-bore design promote constant airflow and corrosion-resistance, ensuring extended longevity of equipment and fewer changes of filter elements.

Typically, 10 workers would be needed to size, assemble, and hang black iron pipe, but Mechanical Solutions only needed four to six workers at any given time to do the work using Transair, said its general foreman and pipefitter, Jeff Fox, a member of the St. Louis Plumbers & Pipefitters UA Local 562.

Lightweight Piping Easy to Install Though the work was done quickly, Fox said, he was initially skeptical of the aluminum pipe. Mechanical

Solutions has done multiple compressed air installations in the past, primarily using copper, sweat copper, and schedule-40 black iron piping.

“When I first saw it, I didn’t care for it,” Fox said. “I’m old school and I don’t like a lot of change. Transair is a lot lighter than black iron and seemed too easy to install.”

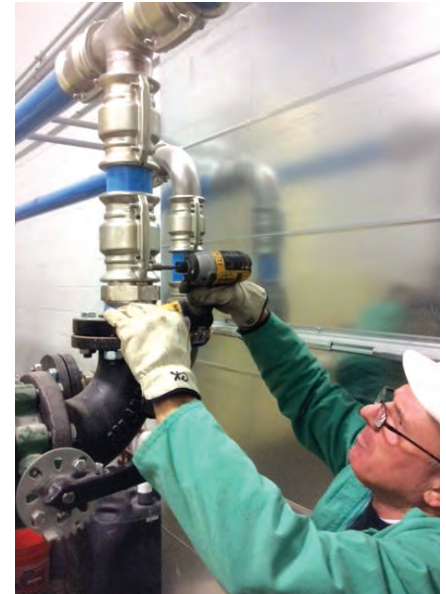
The first thing Fox noticed was how much cleaner Transair was compared with black iron pipe, he said. While black iron requires threading and oiling the pipe, Transair’s quick connections eliminate the need to thread, solder, or glue pipe. Workers could assemble parts of the installation on the shop floor and raise them in place when finished.

Lightweight piping also helped when workers had to assemble piping fixtures in the air, Fox said. Ceilings throughout SKF’s facility are 32’ high, and piping is held in place by nearly 700 pieces of metal framing struts about 20’ off the ground. Mechanical Solutions installed about 11,000 linear feet of piping throughout the building in 3”, 2”, and 1” diameters, with 1” and 7/8” diameter drops. Transair’s quick-connect design made this work much easier and less time-consuming, said Fox.

“When you’re using threaded pipe in the air, you have to level the pipe before you put it in,” Fox said. “With Transair, it’s like screwing in a light bulb. You don’t have to level it until it’s already in place. It’s also a very good-looking system.”

Flexibility for the Future

Ease of use also lends itself to quick changes and flexibility, which was a major selling point for SKF, Stanford said. Both the building and its utilities were designed and built with expansion in mind. With compressed air, coolant, electric,



Typically, 10 workers would be needed to size, assemble, and hang black iron pipe. Mechanical Solutions only needed four to six workers at any given time to install the Parker Hannifin’s Transair aluminum piping in SKF’s new, state-of-the-art facility.

and water lines all hanging from the same infrastructure, SKF will need Transair to be flexible and easily modified as the facility changes through the years, he said.

“We need the flexibility to change our manufacturing process quickly to adapt to our customers’ needs,” said Stanford, “whether that means installing a new line or revamping our current lines.”

Workers met the three-month deadline and got the work done within budgetary constraints, Stanford said. Since SKF began operations of the facility, Stanford has seen very few issues with the Transair installation.

“So far, only one connection came apart, but it was easily fixed and hasn’t given us any trouble since,” Stanford said. “Other than that, it’s performing great.”

For more information, visit promo.parker.com/promotionsite/transair/us/en/home. MCAA thanks Parker for being a supporter of MCAA 2016.

Trimble Technology Proves Vital to Success of Prout Boiler, Heating & Welding, Inc.

Coordination Across Trades Made Possible by BIM

Prout Boiler, Heating & Welding, Inc. relied heavily on Trimble's AutoBid Mechanical and PipeDesigner 3D® to plan out a multitrade prefabrication approach during the bidding process for a hospital expansion project and take charge of multitrade coordination throughout the expedited construction schedule.

"On many jobs, the mechanical contractor is the prime trade coordinator, bringing together all mechanical, electrical, plumbing, and sprinkler systems," explained Mike Savko, construction manager with Prout. "3D technology, and PipeDesigner 3D specifically, is very familiar to the industry. From a coordination standpoint, everything we do is clear to the other trades. The fact that we can coordinate with people we work with is a big plus."

Building information modeling (BIM) solutions are keeping Prout competitive in a field with increasingly frequent demands for fast-track, multitrade coordination and prefabrication that begins long before the structural framework is in place. In the past 10 years, Prout has invested

in 3D tools that have helped the firm deliver ever-more-complex piping solutions with greater efficiency, while also setting the stage for emerging business opportunities.

Take, for example, the Salem Regional Medical Center's patient private room tower in Salem, OH. Savko explained, "This project, among many others, demonstrates just how much our business has changed in recent years and the importance of technology to meet expectations. Technology in the way of bidding and 3D detailing software is a game changer for us—and our clients."

Youngstown, OH-based Prout Boiler, Heating & Welding is a commercial and industrial plumbing, HVAC, and process piping company, with emphasis in the construction and renovation of health care and education facilities primarily in the state of Ohio.

Synchronized Workflows

The Salem Hospital tower project was the first project in Northeast Ohio to use multitrade prefabrication. The \$42.5-million project includes three floors of private patient rooms, guest

and visitor amenities, and a two-level, underground parking structure. The owner stipulated an 18-month construction schedule, with completion in 2014.

"AutoBid Mechanical has allowed us to generate full labor and material reports fast enough to turn bids around in as little as a day or two. ... In the old days without the software, we would already be behind."

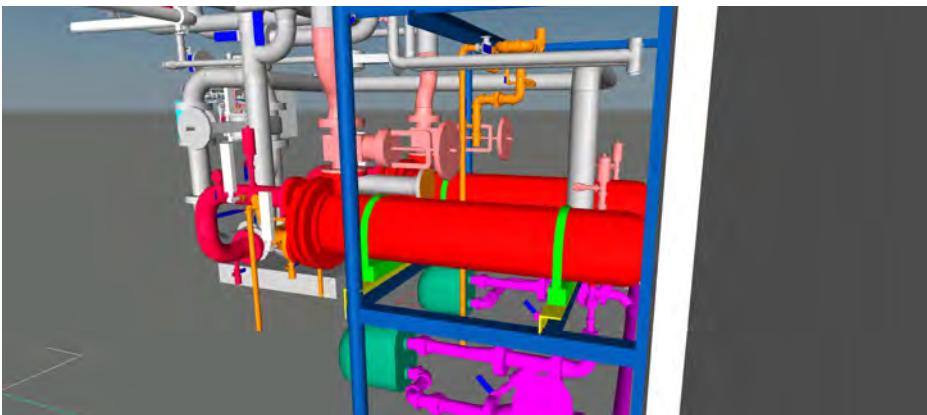
—Mike Savko, Construction Manager, Prout Boiler, Heating & Welding, Inc.

To facilitate the fast-track schedule, the overhead corridor rack systems, patient room bathroom pods, and medical gas headwall units were prefabricated in parallel with the structural work.

Savko said, "Most new building construction puts the MEP trades on hold until at least the structural framework is available. With the expedited schedule on the Salem project, the owner could not afford for that type of sequential construction. Instead, we used our in-house design team to coordinate the plumbing, HVAC, fire protection, and electrical work with BIM and began prefabrication at an offsite warehouse in parallel with the tower shell erection."

Tools of the Trade

Savko noted, "It wasn't that long ago that our legacy pipefitters used pencil



By using Trimble's PipeDesigner 3D, Prout successfully coordinated the work of multiple contractors for the first multitrade prefabrication project in Northeast Ohio.

and paper to take measurements in the field and draw things up by hand. That's not something that we can do anymore and stay competitive. Owners won't pay for that. They expect work to be handled with technology for improved accuracy and less waste. We agree—though not just any technology will do.”

Prout first invested in Trimble AutoBid Mechanical in 2000 as a

the software, we would already be behind.”

The biggest benefit of PipeDesigner 3D, according to Prout detailers, is the ability to create pipe fabrication drawings. Detailers take advantage of PipeDesigner 3D's extensive database with over 36,000 items with representation from 34 manufacturers every day to create drawings. Savko said, “It's easy to pick pipe

along with installation information and fabrication points for welded projects.

Another big advantage to PipeDesigner 3D for Prout is coordination. Savko added, “Many of our competitors sub out their coordination tasks to an engineering firm. With this technology, we are able to do it all in-house.”

Prout also implemented Trimble DuctDesigner 3D in 2014—even though they are not a duct supplier. “We're a piping contractor,” emphasized Savko, “but because we are often the model coordinator for trade subcontractors, we needed the ability to draw duct accurately in our drawings with speed so that we get truer as-built conditions. We're saving time doing coordination with the DuctDesigner 3D.”

The company's use of PipeDesigner 3D came in particularly handy on the Salem tower project.

Racks and Tracks

As part of the Salem tower project, Prout detailed all the mains and branches and designed and fabricated 60 corridor racks. The corridor racks were each 20' long by 8' wide by about 27" high. Bathroom pods were roughly 6.5' square by 10' tall.

Savko explained, “We own the corridor rack design, so I drew the structural racks from scratch, placed our piping, duct, the sprinkler fitter's piping, and the electrician's conduit using PipeDesigner 3D to verify fit. The other subs did not have PipeDesigner 3D available, but because we were able to lay everything out for them, it wasn't necessary. We accounted for everyone's line sizes and number of conduits in various areas to designate 'zones' that belonged to each sub.”



Prout used its in-house design team to coordinate the plumbing, HVAC, fire protection, and electrical work with BIM, followed by offsite prefabrication that began while the building shell was being built.

way to generate labor/material quotes quicker than by hand. Savko said, “AutoBid Mechanical has allowed us to generate full labor and material reports fast enough to turn bids around in as little as a day or two. When there are multiple projects to estimate week after week, or if another subcontractor asks us for a last-minute price, we are able to meet the deadlines. In the old days without

and fittings from the library. If it's not readily available, or it's a special item, PipeDesigner 3D's Data Editor makes it easy to create or revise an existing similar object. We can do anything with the software.”

Detailers also appreciate the automatic creation of a bill of materials from the 3D model, a list that includes cut links and fittings tags,

“Thanks to 3D technology, we keep finding efficient ways to expedite the whole piping process from layout to design to fabrication and enhance our multi-trade coordination capabilities. ... Since implementation in our company, it's paid for itself tenfold.”

—Mike Savko, Construction Manager, Prout Boiler, Heating & Welding, Inc.

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Picciano Boosts Its Bottom Line with MobiliForms

Goes Mobile without Changing Software

By transitioning from paper forms to iPad-based MobiliForms from **iBusiness Technologies**, “the time we save on paperwork is tremendous, and that translates directly to significant overhead savings,” said Marty Quarella, vice president of **Louis N. Picciano & Son, Inc.** The company also improved the quality of information recorded and saw a quick ROI.

“Our model is different from many mechanical contractors in that we have a fixed contract for our jobs,” said Quarella. “So any cost savings we pick up goes directly to improving our bottom line.” Picciano is located in Vestal, NY, serving industrial, commercial, and institutional clients.

Quarella heard about the successes other MCAA member companies had replacing paper forms. What caught his attention was the fact that MobiliForms did not require any change to his backend software and that all of Picciano’s forms would appear identical on their devices. Work orders, time sheets, reports and other paperwork are all now electronic and sent instantly to the home office when completed. The MobiliForms automatically calculate labor and materials costs and also capture site photos, signatures, and mechanical sounds.

“Before implementing MobiliForms, it was hit-or-miss whether we got the forms on a daily basis. Now we receive them every day, which is a

great way to keep track of progress and costs,” said Quarella. “We have also found that our team members include more detail on MobiliForms than they did on the paper forms because it is much faster and easier. Our guys love using iPads, while the subcontractors and general contractors appreciate easily creating requests for information without having to head into the office.” MobiliForms are emailed or stored in the cloud to immediately share with foremen, subcontractors, and customers, which has improved communications, allowing team members to collaboratively resolve problems quickly as they arise.

For more information, call 877-565-3261 or visit MobiliForms.com.

Chiller Systems Service Boots Up Jonas Software, Cuts IT Expenses and Billing Time

Since implementing **Jonas Construction Software, Chiller Systems Service, Inc.** has reduced their billing cycle from three weeks to just one week, which gets them a faster turnaround on their invoices, improving cash flow. Using Jonas’ eMobile module, Chiller reduced their IT expenses by 50 percent, replacing laptops with more cost-effective tablets in the field. Jonas has also helped Chiller streamline their service operation and improve customer service.

Chiller offers HVAC repairs, retrofits, and maintenance service in Denver, CO. The company realized they needed to upgrade their software system and wanted one that understood the intricacies of their

HVAC business and could provide a complete, all-in-one solution.

“I can’t imagine life without mobile technology, and using Jonas eMobile for that technology has worked well. It’s a huge advantage for us that our technicians are working in ‘real-time’ for our customers’ benefit. There are just so many time- and cost-savings associated with having eMobile, it’s been great for us,” said Scott Tracy, president.

During the initial transition to Jonas Construction Software, a test company was set up—a standard process for all new Jonas clients. As Tracy said, “With the test company, we were able try the software out and vetted a lot of the issues prior to going live

without having to worry about the impact on our business. This was a really powerful tool and a huge advantage for us, as we were able to really train and learn the software, which gave us a great deal of comfort knowing we would be ready once the we went live with Jonas.”

With the dispatch scheduler from Jonas, Chiller is now able to easily schedule their service tickets, as well as forecast much better and schedule service jobs in advance. The Digio document management system allows Chiller to locate documents quickly and easily, from anywhere and at any time, which has proven quite useful to their business.

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Hayes Mechanical Employs Creative Solutions, Lifting Gear Hire Equipment to Meet Crucial Deadline

Success of Duct Replacement Project Prevents Power Plant Closure

Without careful planning and support from **Lifting Gear Hire (LGH)**, **Hayes Mechanical** might not have been able to install the new ductwork required by the Environmental Protection Agency (EPA) for a Midwest power generation company, which would have caused the power plant to close. Thanks to high-quality LGH equipment, backed up by a strong commitment to customer service, Hayes Mechanical finished the project on time, and the unit was released back to the customer ahead of schedule.

Powerhouse Duct Conversion Faces Barriers

For the “hot to cold duct conversion” project, Hayes Mechanical installed new ductwork to reverse the flow of gases going through an existing electrostatic precipitator using air chain hoists, trolleys, MODULIFT® modular spreader beams, and rigging supplied by LGH. The project involved changing the flow of gases going through the precipitator to reduce the operating temperatures, which would in turn reduce mercury

emissions. According to Bill Bluis, the vice president of industrial construction at Hayes Mechanical, the boiler flue gas duct modification project required the removal of over 625 linear feet of existing ductwork to be replaced with a new reconfigured design.

“With as many pieces as we needed, we knew we’d be getting the commitment and dedication that we needed for our equipment from Lifting Gear Hire.”

—Bill Bluis, Vice President of Industrial Construction, Hayes Mechanical



Top: Hayes Mechanical said high-quality LGH equipment enabled them to build a complex rigging system to install new ductwork when a crane was not feasible. LGH even provided spare chainfalls in advance, allowing Hayes Mechanical to return the unused parts at no charge.

Bottom: Equipment from LGH played a crucial role in Hayes Mechanical’s success installing new ductwork in a Midwest power plant in time to prevent the plant’s closure. Seventy-two duct modules complete with insulation and lagging were prefabricated, shipped by barge, then trucked the last few miles to the plant.

The existing precipitator structure was directly over the ductwork that required replacement, which prohibited the use of a heavy lift crane. Moreover, staying on schedule was paramount to the success of the project. The plant faced closure if the work was not completed and the EPA emission parameters were not met by the end of the year. These challenges also impacted the way the new ductwork would be built.

Bluis added, “This was an outdoor project, with the plant being located right on Lake Michigan, so weather was definitely a factor. Additionally, we were working around an operating facility with the second boiler on line during the course of the work.”

Design Is Key

The biggest key in implementing the project plan was developing concepts

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P1 Group Gains a Competitive Advantage with Victaulic

BIM Services Win Bid for Hospital Expansion, Grooved Piping Saves Installation Time

Victaulic's Construction Piping Services (CPS) division helped P1 Group, Inc. win the bid for a major hospital expansion project by creating a 3D model of the mechanical systems, electrical systems, and ductwork. In the bid, P1 Group also made the case for Victaulic grooved mechanical piping systems for the project to save time and costs on installation.

"We view Victaulic as labor-saving and project cost-saving, so we propose it on many jobs because we believe it gives us a competitive edge," said Eric Affolter, project manager at P1 Group.

More Than One Hurdle

As the Kansas-based mechanical contractor began work on its proposal for the Overland Park Regional Medical Center (OPRMC) project, a \$110-million hospital expansion, the contractor speculated that a 3D model could help tip the scales in its favor. Although P1 Group has in-house detailing services, the availability of resources was limited at the time of the proposal. Even more

daunting, the specifications called for welded piping systems. P1 Group would need to make the case for grooved systems in its bid package.

Located in Overland Park, KS, the OPRMC has been serving the health care needs of Johnson County and surrounding areas since December 1978. Part of HCA Midwest Health, Kansas City's leading health care provider, the hospital is a licensed 343-bed facility offering acute medical care services. The OPRMC campus features four medical office buildings, two pharmacies, and the offices of more than 100 physicians.

In 2011, HCA began planning a sizable expansion to handle growth in the geographic area, resulting in increased patient volumes. The plan called for the addition of a three-story patient tower and a new parking garage, as well as renovations to the emergency department and trauma center. A walking trail was also added to the grounds. In total, 127,000 square feet of space was added to the medical center.

Mechanically, plans called for the addition of two boilers and a deaerated tank, two chillers, three chilled-water pumps, and three condenser water pumps in the central plant, plus seven air handling units. Two heating-water pumps and two heat exchangers were added to the remote central plant.

Standing Out from the Crowd

When the OPRMC project entered the bid stage, the mechanical systems were not fully designed; the conceptual design represented only about 20 percent of the job. As one of the pre-selected mechanical contractors for the project, P1 Group was focused on formulating a creative solution to help win the job.

P1 Group is one of the nation's premier mechanical, electrical, and service contractors, with more than 1,000 employees. Incorporated in 1998, P1 Group's founding companies have been in business since 1919. The Lenexa, KS-based company provides a variety of specialty contracting services through its commercial, industrial, and health care divisions, with offices in Kansas, Missouri, Iowa, and Nevada.

Temporarily unable to meet the demands for 3D modeling in house, P1 Group looked for alternatives to offload some of the modeling work and turned to Victaulic for assistance. The manufacturer also offers drawing and coordination packages through its CPS division. Dedicated project teams work with contractors prebid to produce 3D, proposal, or first-pass precoordinated models. In the preconstruction phase, services are tailored to meet the contractor's needs, from basic drafting services to full business information modeling (BIM) coordination packages.

Although P1 Group had not previously worked with the Victaulic



Using Victaulic grooved pipe and couplings, P1 Group prefabricated most of the piping for the OPRMC because of space limitations at the fully functioning medical center, saving time onsite as a result.

CPS team, it was well acquainted with the company's products and the services and support that back them up. Despite reservations about outsourcing the prebid modeling work, Affolter reported that the project team went into it open-minded. "We work quite a bit with Victaulic, so we felt confident they knew what they were doing," he said. "Evaluating the cost, it looked like it would be comparable or there would be savings, to some degree, to what we would have done."

The Victaulic CPS team adhered to the BIM execution plan and developed a 3D model of the piping and equipment layout based on the portion of the project that had been designed. In addition to serving as a selling tool, proposal models offer contractors a head start on mechanical space design and coordination upon being awarded the project.

Making the Case for Grooved Piping

With the detailing resources challenge solved, the next step was to ensure the proposal would be the lowest bid. "It was a competitive preconstruction proposal, so we needed to have the lowest number in order to secure the project," Affolter said. "We were trying to utilize any advantage we could."

One of the advantages P1 Group employs is Victaulic grooved mechanical piping systems. The P1 Group preconstruction team prepared a cost comparison for welded versus grooved piping as part of their proposal submission. Victaulic systems were offered as a voluntary deduct. HCA accepted the proposal and awarded the mechanical and plumbing system coordination and construction to P1 Group.

The design work that had been started prebid continued after the contract was awarded in early 2012. To complete the fully coordinated BIM drawing, the Victaulic CPS team modeled the central and remote central plants while the P1 Group detailing team modeled



P1 Group managed the space constraints of the existing mechanical room by installing Victaulic grooved piping. Jordan King, field foreman on the OPRMC project, explained that Victaulic was the only viable option. "Trying to weld in some of those places just wasn't feasible."

the systems in the new patient tower. A majority of the mechanical systems were designed using Victaulic components, including hot and chilled water, condenser water, pumps and boilers, plus some of the domestic plumbing. Victaulic QuickVic™ and AGS couplings were used to join piping systems from 2.5" to 24" in size.

With the models complete, CPS generated fabrication drawings, shop drawings, and spool sheets tailored to P1 Group's installation plan to jumpstart fabrication. P1 Group began mobilizing onsite in late 2012, and by early 2013, fabrication and installation of the mechanical systems was underway. Most of the piping was prefabricated in P1 Group's shop and sent to the jobsite for installation as the lay-down area and work space was limited at the fully functioning medical center.

Space constraints also created challenges in the existing central plant, but the use of Victaulic systems helped overcome them. "We had to run some new services—chilled water, condenser water, large-diameter steel pipe services—through an existing mechanical room," Jordan King, field foreman on the OPRMC project, explained. "Really, Victaulic was the only way to go. Trying to weld in some of those places just wasn't feasible."

Mechanical and plumbing system installation was completed and fully functional by March 2014. The grand opening ceremony celebrating the completion of the overall project was held later that year on August 19.

The OPRMC expansion was the first HCA project that used Victaulic piping systems, but it will not be the last. The successful installation resulted in a mindset shift; the owner now accepts the pipe-joining method, and grooved systems have been used in another HCA facility.

The project was a success, with P1 Group crediting the help of Victaulic. Affolter recounted that it would have been hard to handle all the work in-house. "It helped manage our resources and talent internally with outsourcing it to [CPS]," he said of the modeling and BIM coordination. Overall, Victaulic CPS services and grooved piping systems helped P1 Group win the project and deliver an on-time, on-budget completion.

For more information, visit www.victaulic.com. MCAA thanks Victaulic for being a major sponsor of MCAA 2016 and for cosponsoring the Annual Golf Tournament.

Stroh Corporation Finds Wayne Water Systems Pumps Stand Up to Harsh Weather and Hard Deadlines

Even as the **Stroh Corporation** crew ran into an unexpected roadblock—actually, a mud-filled pit—in the midst of an urgent installation effort, they stayed on schedule, thanks to the ease of installing Blue Angel Pumps from **Wayne Water Systems**. Stroh was able to clear the mud and install reliable new pumps in the few days it had to meet its customer's expectations.

Based out of Des Moines, IA, Stroh has made a name for itself as a company businesses trust when it comes to mechanical and electrical contracting. Stroh prides itself on quick, quality work that leaves the customers satisfied. Providing their customers not only the best service but also the best products on the market has been a main priority of Stroh's since day one.

By making the switch to installing Blue Angel Pumps, Stroh found that areas such as pre- and postplanning for jobs, installation times, and call-backs related to pump failure



The ease and speed of installing Blue Angel Pumps proved to be especially important when Stroh workers saw how much mud from previous flooding they had to clear before they could install the new system. Stroh chose the T50E for Helena Industries because it can handle very cold weather and pass up to ½" solids, keeping their drains clear in the future.

had dropped dramatically. "They've crafted a rugged, professional pump," said Dan Whalen, mechanical project sales member at Stroh. "Often times, we're called out to large businesses that require our immediate attention. We need products that offer us the ability to supply our customers with the most durable, job-ready products on the market, at a moment's notice."

Never has this been more relevant than on a recent call to a jobsite at Helena Industries. As heavy rain hammered Des Moines, Helena expe-

"Because of prior experiences, we knew getting the basin and pump installed would be a breeze; it's one of the reasons we choose the T50E."

—Dan Whalen, Mechanical Project Sales Member, Stroh Corporation

rienced flooding at their shipping and receiving dock. With shipping and receiving sidelined, Steve Kloewer, maintenance manager at Helena Industries, put in a call to Stroh. "We had experienced flooding at this particular loading dock location in the past, and as a direct result of the inability to ship, we've had to apologize to quite a few customers," said Kloewer. "When we put the call in to Stroh, we made it very clear that we needed the job done quickly, and we needed a product that could withstand heavy rain and the harsh winters."

With under a week to assess the jobsite, excavate, and install the new effluent pump and basin, Stroh got to work planning immediately. "Typically, we take our time during the planning phase; however, it was made abundantly clear that this loading dock needed to be drained and cleaned up as soon as possible," said Whalen.

Picking a product that would be durable enough to last 10 years, heavy-duty enough to pass solids, and easy to install would prove easy for Stroh. Whalen selected Blue Angel Pumps' T50E ½ HP Submersible Cast Iron Effluent Pump for the job. "We've had great success partnering with Blue Angel Pumps in the past," said Whalen, "When we took into account how positive feedback has been from past clients in regards to their Blue Angel Pump, including the fact that it is assembled in the U.S., it was a no-brainer for us."

The T50E ½ HP Submersible Cast Iron Effluent Pump checked all of the categories that Helena Industries had required. It included ½ horsepower (HP) performance, with a max flow of 78 gallons per minute, a cast iron motor housing to extend the life of the pump, and the capacity to withstand below-freezing temperatures. It also included a corrosion-resistant thermoplastic impeller and the ability to pass up to ½" solids, which would keep the shipping and receiving dock at Helena free of water.

Once Stroh had picked the product they would use, it was time to get to work. Planning as efficiently as possible, work was started to drain the loading dock of the existing water. After draining the standing water, Stroh began to excavate the area and hit a roadblock. Because of the heavy rain the week before, mud had filled the existing sump pit. "We had no

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SPX's Customized Cooling Towers Meet Space, Design Constraints

EMCOR Installs New Towers in Just One Week

Facing space constraints, design restrictions, and a one-week schedule to replace three failing cooling towers, EMCOR Services Northeast, Inc. managed the tough project by installing two Marley NC[®] Cooling Towers from SPX Cooling Technologies without a hitch. The two towers were specially configured and manufactured to fit the tight space and meet the client's requirements.

Finding the Right Fit

The project took place at Boston University's medical campus, in an early 1990s, 10-story university laboratory research building that uses 100-percent outside air. Because of tight clearances of mere inches on all sides that made replacing the three towers incredibly difficult, EMCOR needed an option that fit the space. The location would not allow room for ladders or fan deck extensions.

Replacing older cooling towers can be challenging because of differences in footprints, other dimensions, and product options. Because the two Marley NC towers chosen were close to the same size as the three aging towers, making them fit was a tall order. The project team measured multiple times to make sure they got it right. Nonetheless, everyone on the team agreed that performance was a much more critical concern than any space-related struggles that would come with their tower choice.

As it turned out, the weight of the chillers proved to be even more difficult than the fit. Complicating things further, the installation needed to be completed during the college inter-session between Christmas and the new year.

The two Marley NC Cooling Towers installed on top of the building in



EMCOR replaced three failing cooling towers with two quieter, more efficient SPX cooling towers configured to fit the tight space in just one week, thanks to teamwork and planning. Fortunately, the snow held off during installation week.

late December of 2014 required special modifications to make them fit in such a tight space. The towers had to have handrails on all four faces and ladder openings on one side only.

The team worked out a smart rigging plan, dropped in the cooling tower modules, and slid them into position. The installation required a 600-ton crane to place the chillers and cooling towers during the one-week installation period. The roads were required to be closed, which minimized disruption, and good weather helped—the temperature remained around 40° F with no snow in Boston during that week.

Novel Approach Avoids Temperature Spikes

Traditionally, the university's maintenance staff would winterize their cooling towers by shutting them off

and draining them, so from approximately mid-September through mid-March, there was no cooling available. Therefore, on the occasional higher temperature days in October or March, the temperature inside the building could rise by more than 10° F above ideal conditions.

The project team developed a new scheme. In winter, the tower would run water through the cooling coils and to the heat exchanger—in essence, the load that was on the process tower would be cooled by recovering heat from it and using it to preheat the 100-percent outdoor air required for the building. In doing so, the team was able to recover heat from the process cooling loop, which also had the side benefit of circulating water to eliminate potential cold spots in the cooling

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Dynamic Systems, Inc. Relies on HOLDRITE Products to Increase Efficiency, Save Costs on Hospital Projects

Dynamic Systems, Inc., an Austin-based mechanical contractor, uses engineered secondary pipe support and alignment bracket systems from HOLDRITE® to help them reduce costs, save time, and increase storage space—a win/win for Dynamic Systems and its clients. Storage space is a particular concern for hospital projects, where construction sites often have limited material storage space and complex plumbing and electrical systems that make it challenging to fit all needed components into a wall or ceiling space. For mechanical contractors like Dynamic Systems that specialize in fabricating and installing sophisticated medical gas and



Top: “The 114-C copper toilet bracket [shown here] just bolts to the carrier, so it’s all in one package. This really helps with our prefabrication work,” Dynamic Systems Project Superintendent Denny Gosser explained.

Bottom: For supporting domestic water risers and medical gas risers inside the walls for hospital projects, Dynamic Systems depends on HOLDRITE Stout Brackets [shown here], a telescoping galvanized bracket, because their compact design fits perfectly between the studs and within walls.

process piping systems, HOLDRITE products address these unique challenges.

Eliminating the Hassle of Making Trapezes

Before they discovered the HOLDRITE EZ-Strut™ telescoping galvanized trapezes, Dynamic Systems made their trapezes out of strut. Strut typically comes in 20’ lengths and takes many hours to cut down to the one- to four-foot lengths that are needed.

“When we’re working on a hospital project with multiple floors,” explained Dynamic Systems Project Superintendent Denny Gosser, “we really don’t want to bring in 20’ lengths of anything. There’s just no room for it. With HOLDRITE EZ-Strut, we get an easy telescoping trapeze that comes pre-manufactured in a box of 25 brackets. Two models provide telescoping options from 12” to 40”. It’s easy to store these types of products in a building that’s already having problems with overstorage of material during the construction process.”

Making Medical Gas Lines Easier to Install

Hospitals depend on their medical gas piping systems to deliver piped oxygen, nitrous oxide, medical air, and more. When installing these gas lines, Dynamic Systems uses the HOLDRITE Silencer™ #250 and #280 variable-size isolation clamps to attach the medical gas line to the HOLDRITE EZ-Strut trapeze. The clamps prevent dissimilar metal contact by working as an isolator between the galvanized bracket and the copper tubing. The two clamp models support 1/2” to 2” tubing and piping, thus simplifying needed inventory from nearly 20 strut clamp sizes down to just two.

“We’ve been using the HOLDRITE clamps for about 12 years,” said Gosser. “They install quickly without any nuts and bolts—one piece just slides over the top of the other. It’s very fast and efficient. Plus they’re easy to store and a lot less expensive than the isolated strut clamps that we used in the past.”

Saving Valuable Space in the Wall

Dynamic Systems also increases the efficiency of their hospital projects by using HOLDRITE’s specially engineered brackets and clamps that easily fit inside the wall while leaving room within the walls for other necessary contents. These brackets save both space and valuable construction time.

For supporting domestic water risers and medical gas risers inside the walls, Dynamic Systems depends on the

“In general, we’ve found that HOLDRITE products go in faster, are already premanufactured, come in boxes that are easy to store on the project, and are installer-friendly.”

—Denny Gosser, Project Superintendent, Dynamic Systems

HOLDRITE #SB1 Stout Bracket®, a telescoping galvanized bracket that spans from 10" to 18". Gosser likes the way its compact design not only fits perfectly between the studs, it also fits inside a 3 5/8" wall much easier than a piece of strut with strut clamps, with room to spare.

The firm also uses HOLDRITE #SB3 Stout Brackets for bathroom fixture rough-ins. As part of their high-efficiency approach to construction, Dynamic Systems builds entire bathrooms in their offsite warehouse, right down to the tile and paint. They then ship the completed pods to the site, set them in place, and install the overhead pipes.

“The HOLDRITE #SB3 Stout Bracket is another telescoping galvanized bracket,” noted Gosser. “It mounts inside the wall studs so we can anchor the drop-eared 90s for shower heads. The #SB3s provide the stability we need, while saving much-needed space inside the wall.”

Speeding Up Installations

HOLDRITE brackets help Dynamic Systems install fixture stub-outs more efficiently. The HOLDRITE #107-18 copper-bonded brackets are used to support domestic water stub-outs, while the #114-C copper toilet carrier brackets are used to hold the stub-outs for the flush valves. Gosser finds that both are

faster and easier to install than other options.

“The HOLDRITE #107-18 copper-bonded bracket takes just two screws and two solder joints to install,” Gosser said, “and you don’t need to put any clamps on it because it’s already copper-plated so the tubing solders right to it. The 114-C copper toilet bracket just bolts to the carrier, so it’s all in one package. This really helps with our prefabrication work. In general, we’ve found that HOLDRITE products go in faster, are already premanufactured, come in boxes that are easy to store on the project, and are installer-friendly.”

For more information about Dynamic Systems, Inc., visit www.dynamicsystemsusa.com. MCAA thanks Dynamic Systems, Inc. for hosting a tour of its fabrication facilities during the MCAA Fabrication Conference in May.

The Impact of Safety on Profitability

What is the first thing that comes to mind when the word “safety” is mentioned in a meeting or on a jobsite? Perhaps you imagine superintendents reminding employees to wear their personal protective equipment (PPE). You may picture a checklist of all the necessary precautions to be completed prior to starting a job. It is often perceived that safety slows an operation down, when safety should be associated with profitability. In an *Engineering News-Record* survey, 63 percent of contractors believe safety has no effect on profitability.

Why Invest in Safety?

Safety impacts profitability in ways that too often get overlooked. Without an effective safety program,

the following ramifications may occur:

- Insurance costs can sky rocket.
- Productivity can be lessened.
- Efficiency can lack.
- Corporate reputation can be damaged.
- Bidding opportunities can be fewer.

A study sponsored by the Construction Industry Work Force Foundation has shown proactive implementation of safety and training systems in construction firms results in a:

- 17-percent increase of productivity,
- 9-percent reduction in turnover and absenteeism, and

- a decrease in workers losing interest in their jobs.

How Can Safety Save You Money?

One way to have a direct effect on profitability is your workers’ compensation (WC) insurance cost. A factor used by insurance companies to develop the premium for WC coverage is called the Experience Modification Factor, or E-Mod. This is developed by the National Council of Compensation Insurance (NCCI), a U.S. rating and data collection bureau specializing in WC. Typically, if your E-Mod is 1.0 and your WC premium is \$200,000, you would not see a difference in your premium.

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DAIKIN

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finest. The eight-story building houses nearly 152,000 square feet of office space along Fresno's Fulton Mall on Tulare Street.

In 2014, the building's existing 20-year-old water-cooled centrifugal chiller needed replacement. Owners T.W. Patterson Partnership turned to temporary cooling while pursuing options. In early 2015, the Patterson Building owners conducted an ASHRAE Level-2 audit under the Central Valley Business Energy Tune-Up (BETU) program, sponsored by utility company Pacific Gas & Electric (PG&E) and managed by the City of Fresno.

The audit provided owners with an extensive analysis of energy usage and equipment options based on the type of chiller. "We visited the site a few times in early 2015 and our work included helping the owner evaluate options for the chiller's replacement using a new air- or water-cooled chiller, or whether to refurbish the existing chiller," said Ignacio Robles, P.E., senior program manager and



When they installed new Daikin chillers, NESM maintained the integrity of the historic T.W. Patterson Building—a high priority for the owners—while bringing 21st-century technology to bear on the cooling system.



Daikin chillers installed by NESM not only met the cooling needs for this Fresno landmark but also helped owners improve energy efficiency, reducing electrical costs by an estimated 25 percent.

energy consultant, on behalf of the Central Valley BETU program. "Our 20-year payback analysis showed a water-cooled chiller would be about half the cost of a typical air-cooled chiller, saving ownership about \$1 million versus an air-cooled chiller."

T. W. Patterson Partnership evaluated a number of proposals from equipment suppliers and ultimately decided to stay with a water-cooled solution with the same manufacturer while upgrading to state-of-the-art technology. "A major driver for us was we were extracting water, cooling our systems down, and discharging our water. We weren't ecofriendly, so we decided to put in a closed-loop system with the new Daikin Magnitude chiller and add a cooling tower," said Rick Roush, general partner for T.W. Patterson Partnership in Fresno.

"We started the process of working on the project in spring 2014 while the owner reviewed options," said Eric Dinneen, Daikin Applied representative in Fresno. "Without a doubt, the energy savings of the magnetic-bearing chiller put the decision

over the top. It was also selected for its compact design."

The 284-ton capacity Magnitude chiller serves 92,000 square feet of office space at the Patterson building. "The whole package with the Daikin chiller offered much greater savings and operating efficiency than with the closest competitor," Roush said.

"The Daikin magnetic-bearing technology was so intriguing to us, the gravity feed, the lack of friction, no oil, and the quiet operation all made so much sense" Roush continued. "The PG&E/City of Fresno program showed us an average compilation of how efficiently the chiller would run, with even greater savings when used in tandem with the dual compressors."

Installation Poses Challenges

A number of upgrades to the building were required to accommodate the Daikin Magnitude chiller. "It was really important for us to maintain the history and integrity of the building. Part of the challenge was that there were no mechanical drawings available for the existing system,

which added a discovery component to the project,” said Richard Walker, account manager for the mechanical solutions team at NESM.

In spring 2015, temporary cooling was located outside the building in a semi-trailer, and preparations were made to replace the existing chiller located in the mechanical room off the underground parking ramp. “Low clearances in the building presented installation challenges. Routing of the condenser water pipe to the second story roof was a critical part of the installation,” Walker said.

The cooling tower was installed on the second-floor rooftop, and 200 feet of eight-inch condenser water supply and return piping was installed, running from the chiller across the parking garage and up to the cooling tower. Chilled water piping was connected to the existing piping in the lower level. NESM also provided controls integration with the existing building automation system (BAS) and installed a refrigeration alarm system with an exhaust fan to provide fresh air in the event of a refrigerant leak.

“One of the most difficult challenges of the entire project was getting the old chiller out of the building and navigating the tight spaces in the underground parking garage. The ramp has about a 15° angle,”

said Chuck Cox, project manager with NESM. Casters, fabricated by NESM to accommodate the 15,000-pound weight of the old chiller, were used to pull the chiller out of the underground parking garage with low-clearance forklifts at each end.

On the same day the old chiller was removed, the 11,000-pound Magnitude chiller was disassembled, which required draining of the refrigerant system. The dual compressors were stacked on the same caster system, transferred down the ramp, and maneuvered into the lower mechanical room. The chiller is situated in the same location as the former chiller, near the original 1926-era air conditioning system, which remains in the building.

Wayne Wimer, building superintendent at the T.W. Patterson building, worked closely with NESM to facilitate the required changes and oversaw those made directly by building owners. To accommodate the new chiller, owners made additional investments that included removing a wall and relocating two electrical panels as well as installing a step-up transformer and new circuit breakers to meet the voltage requirement of the new chiller.

“Most buildings are now wired to 480 voltage and have transformers located outside their buildings. Because our building is wired to 208 voltage, we had to have a dedicated step-up

transfer installed near our extra circuit breakers in the mechanical area to accommodate the new chiller,” Wimer said.

Energy Savings Realized

Installations, including piping and ductwork, were completed in June, and by July 1, 2015, the new equipment was up and running. Wimer noted, “It’s very interesting to walk into our basement and have the very oldest and very newest in chiller technology.” Wimer is among many who appreciate the quiet operation of the chiller. Every morning, he checks the Magnitude chiller performance data and also monitors the system through the facility’s BAS system on a PC and tablet. “The new chiller has made a big difference in our occupant comfort and level of control across our 33 thermostats in the building.”

As a result of the new Daikin Applied chiller system, the building’s mechanical systems are more sustainable, resulting in significantly less water and electricity use. Prior to the chiller replacement, the Patterson building’s annual electric bill was approximately \$200,000. Now, with the new Magnitude chiller, Roush estimated electrical costs have been reduced by 25 percent. This equates to roughly 355,000 kWh saved per year, or a 162,000-lb reduction of CO₂ emissions per year.

The Patterson building is set for a new era as downtown Fresno continues to revitalize. The Fulton Mall is currently undergoing a major renovation, thanks, in part, to federal Transportation Investment Generating Economic Recovery funding, with completion expected by late 2016.

For more information, visit www.DaikinApplied.com. MCAA thanks Daikin Group for being a benefactor of MCAA 2016 and providing beverages for the closing dinner.



Historic buildings like the T.W. Patterson Building in Fresno, CA, pose challenges to contractors tasked with upgrades. For example, NESM removed the old chillers and installed the new Daikin chillers while navigating a 15° underground parking ramp.

CARRIER

continued from page 1



Upgrading the historic Lincoln Home with modern Carrier HVAC products went off without a hitch, despite the fact that “the components of the air handler had to be delivered through a standard three-foot-wide door, and we could not so much as drill a hole without permission from the staff,” said Mark Patrick, project manager for Henson Robinson.

several decades after Lincoln’s lifetime, the original Carrier HVAC system at the home was cleverly concealed to provide appropriate conditions while hiding any traces of the modern air delivery system, which is located in the security railings. The existing HVAC system had been in service for 25 years, longer than its expected lifetime, so the facilities staff sought to replace it.

Dale Phillips, superintendent at the site, said, “The project was important to the Lincoln Home National Historical Site because it allowed us to accomplish one of our primary goals, which is the long-term

protection of the Lincoln Home and its contents for future generations.”

The Lincoln Home remained open to the public while renovations took place. Working in the basement and yard, Henson Robinson disassembled and removed the old HVAC equipment and replaced it with a Carrier AquaSnap® 30RA air-cooled chiller and an Aero® 39M air handler. The air handler was installed in the basement of the historic home, while the chiller was placed in a modern but period-designed outbuilding that also serves as a warehouse for artifacts not currently needed for display. The

buried coolant loop that connected the original chiller and air handler was also updated, necessitating the services of an archaeologist to oversee the digging in the yard, in case the contractors found any historical objects.

The Aero 39MN air handler includes an electric heater, so the unit is able to provide both heating and cooling to the Lincoln Home. In an interesting adaptation, fresh air enters the system via dampers in an old chimney. Two dehumidifiers and a steam-powered humidifier serve to keep the relative humidity at the target 50 percent ideal for both human health and artifact preservation. In the hot and humid summer months typical of Springfield, the AquaSnap 30RA chiller provides additional cooling capacity by sending chilled water to the air handler via the loop buried under the yard.

Mark Patrick, project manager for Henson Robinson, said, “It was an interesting challenge to perform this installation with a minimum of disruption to the visitors and staff. The components of the air handler had to be delivered through a standard three-foot-wide door, and we could not so much as drill a hole without permission from the staff. However, the project was very successful, and we believe our founder, Henson Robinson—who himself was a neighbor of Lincoln’s and provided cutlery for the Union Army during the Civil War—would have been proud.”

For more information, call 800-CARRIER or visit carrier.com commercial. MCAA thanks Carrier Corporation for being a major sponsor of MCAA 2016 and for cosponsoring the Annual Dessert Party featuring Andy Grammer and the Annual Golf Tournament.

ANVIL

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and 2) the ability to quickly and easily prefabricate and assemble grooved pipe and couplings from Anvil International in Exeter, NH, in much less time than it would have taken to weld pipes together. Anvil's grooved pipe and durable, easy-to-install grooved couplings are well suited to tight spaces such as the high school's new mechanical room. Together, they require less space for installation than welded pipe. Moreover, Gruvlok couplings, fittings, and flanges bring together grooved-end pipes with a specialized gasket and two-bolt design that makes connections fast and easy.

Because GTC had relied so much on welding in the past, its craft professionals were inexperienced in working with grooved pipe. Anvil provided training on how to use the Gruvlok products safely and effectively and checked in with workers every couple of weeks once the project was underway.

Faster Installation Saves Costs

The lower labor cost had helped GTC win the contract from the school district, and the company was excited to prove its skills on such a large project. But would the anticipated labor savings

actually come about? Billings and Detillion knew things that looked good on paper did not always work out on the jobsite. As the days ticked by, however, a two-person crew was installing as much grooved pipe in one shift as two shifts of welders could have accomplished. The cost savings were holding firm, and more importantly, the project was inching ahead of schedule.

Beating the Clock

The overall reconstruction project was not without its disruptions to the school and students. The marching band and athletic teams had to relocate, and temporary walkways were built around the jobsite to protect students. Truck traffic increased, and the safety of students, faculty, and staff was a priority throughout the project. The two-year schedule may have seemed like a short timetable to the professionals involved, but to students and school personnel, the question was, "When will this ever end?"

The answer that was now emerging was, "Maybe on time." Month by month, GTC's crews, led by UA Local 24 Sheet Metal Foreman Ted Taylor,

UA Local 189 Pipefitting Foreman John Johnston, and Plumbing Foreman Matt Egginger, were eating into the schedule deficit. As the winter snow melted and leaves appeared on the trees, Billings cautiously predicted the project might finish two to three months ahead of schedule.

And that it did. On June 1, 2015, GTC's crew switched on the air conditioning, just 11 months after the project began, and well ahead of the originally allocated 13 to 14 months. Along with the painters, flooring and ceiling installers got to work. In perhaps nothing short of a miracle, the new building opened for students on August 18, as originally planned.

As for his first big experience with grooved pipe and couplings, Billings laughed, "Maybe someday I'll just get rid of all my welding equipment."

For more information, call Anvil's corporate offices at 603-418-2800 or visit anvilintl.com. MCAA thanks Anvil International for being a major sponsor of MCAA 2016 and sponsoring the Annual Fun Run/Walk.

WAYNE WATER

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idea the situation was so bad. We now understand why the area flooded so often," Kloewer explained.

With only a couple days left to complete the project, work was started to remove the current pit and mud. After clearing the area and existing pit, the new basin and Blue Angel Pump were installed. "The installation process was extremely quick," Whalen said, "Because of prior experiences, we knew getting the basin and pump installed would be

a breeze; it's one of the reasons we choose the T50E."

"There's a reason we decided to approach Stroh with such a stringent deadline," said Kloewer. "We had a unique situation that was directly affecting how we provided for our customers. Given the situation, the roadblocks that stood in the way, and how quickly Stroh was able to complete the project, we're walking away completely satisfied with this collaboration."

"As our industry advances and new techniques are discovered that make the job easier for contractor and customer, we're always looking for ways to improve our processes," said Whalen. "The collaboration between Stroh and Blue Angel to provide Helena the best service and quality, easy-to-use products in such a short amount of time makes this a win-win for us."

For more information, visit www.waynewatersystems.com.

F.W. WEBB

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and stretching construction resources. Including SolarCity, there are at least eight large-scale commercial projects underway—valued collectively at over \$1 billion.

When Mollenberg-Betz was selected to install all the PVF for the high-purity processing, water, chemical, waste, and general purpose process lines in the SolarCity facility, one of the first challenges was to find a capable supplier of engineered plastic piping systems—one who could supply more than inventory.

“Mollenberg-Betz has been in business for over 100 years, and we have diverse expertise and depth. We seek out smart vendors to form cohesive, strategic partnerships with us for the benefit of our customers,” said H. Van Mollenberg, president and CEO of Mollenberg-Betz.

F.W. Webb Offers Solutions

“F.W. Webb introduced our teams to highly engineered plastic piping products and solutions from Georg Fischer (GF),” McGinnis said. “They went the extra mile with product and



On most days, up to 40 different contractors from various trades are on site at the massive plant, competing for workspace. Constant contact with F.W. Webb ensures that Mollenberg-Betz has adequate inventory and support to stay on track. Pictured from left to right, Kevin Buchanan of GF, Mollenberg-Betz Project Manager Jamie DeWald, and Ryan Warner of GF consult at the SolarCity jobsite.

installation training, and even further by simplifying MBE/WBE [Minority Business Enterprise and Women’s Business Enterprise] requirements and helping us establish a Class-1000 cleanroom to fabricate high-purity lines.”

“F.W. Webb has brought all its resources to bear on this large, unprecedented project,” said Van Mollenberg. “We have been thoroughly impressed with the company’s depth of expertise and ability and commitment to support us every step of the way.”

Tackling the Unknown

The massive SolarCity project functions essentially as a design-build, or design on the fly, which presents challenges. Without knowing the full scope of the project, Mollenberg-Betz could not order all products and material up front or establish a regular delivery and installation schedule. Working within the confines of this arrangement, the F.W. Webb team frontloaded the project by ordering all of the GF inventory specified in the original job takeoff. Stored at a nearby Webb location, this inventory is available in regular or urgent shipments.

On most days, up to 40 different contractors from various trades, including steel, HVAC, and electrical, maneuver to install their materials in the overhead plenum. The skeletal facility is dotted with lifts, tools, machinery, inventory, and teams of construction personnel. Mollenberg-Betz is in the mix, scrambling for workspace to install the specialized PVF that will become an essential component of the solar panel manufacturing process. Getting squeezed out by a traffic jam of subcontractors can delay installation and make it difficult to determine types and

“F.W. Webb has brought all its resources to bear on this large, unprecedented project.”

—H. Van Mollenberg, president and CEO of Mollenberg-Betz

quantity of products needed from day-to-day.

In all circumstances, continuous contact between F.W. Webb and Mollenberg-Betz ensures adequate inventory and support, including facilitation of special and back orders to keep the project moving steadily toward its midyear target completion date.

Cleanroom Operations

Solely responsible for installing all the high-purity process piping at SolarCity, Mollenberg-Betz needed a cleanroom to fabricate the GF pipe for this specialty application. F.W. Webb was instrumental in assisting with setup and training of a Class-1000 cleanroom at a Mollenberg-Betz location. Fitted with three stages of filtration to remove particles, the 18' x 25' cleanroom refreshes air 150 times an hour. Once fabricated and packaged, the pipe is moved to a 40' storage unit at the construction site to await installation.

Emerging Industry

Light production of solar panels at the SolarCity facility is expected to begin as soon as the project is completed, with full production planned for 2017. Spinoff industries are anticipated, making Buffalo a focal point for the emerging alternative fuel industry. Mollenberg-Betz and F.W. Webb can relish knowing their cohesive partnership contributed to this important undertaking.

TRIMBLE

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Once the racks, pods, and walls were complete, the prefabricated items were delivered to the tower construction site for installation.

While Savko doesn't know exactly how much time was saved on the project, he is very aware of the advantages created by prefabricating the bathroom pods and corridor racks. He added, "We were installing bathroom pods and corridor racks before exterior walls were going up. We were in the building doing install right after the floors were poured with concrete. Normally, we would have just started putting hangers and piping up. On this project, we had full corridor main systems and bathroom groups completed."

Looking Ahead

Prout recently used the combination of AutoBid Mechanical and PipeDesigner 3D to bid a hospital heat exchanger project. In this case,

the mechanical room was jam-packed.

Savko said, "With our laser tools, we were able to get measurements in a couple hours, draw it in PipeDesigner 3D, and then draw in a new heat exchanger along with details about how we'd do the replacement, including labor hours and materials. We refined our material-based drawings and won the job and the subsequent fabrication, and, as an added bonus, we had installation drawings ready for our field guys."

The benefits of estimating and detailing solutions are also playing a big role in the company's strategic growth, which includes expanding its industrial pipe fabrication and commercial prefabrication services. Prout detailers are looking forward to using Trimble's Quick Link integrator tool that will allow take-off in AutoBid Mechanical and define route lines in

PipeDesigner 3D to automatically draw pipe and fittings, which would expedite the drawing process. Savko said, "Much like the Salem tower project, the owners want the project completed faster so they can start generating revenue earlier than conventional construction. We'd like to expand our fabrication shop to meet growing demand—the success of this endeavor will depend on our detailers and PipeDesigner 3D."

Savko concluded, "Thanks to 3D technology, we keep finding efficient ways to expedite the whole piping process from layout to design to fabrication and enhance our multi-trade coordination capabilities. I went for training on PipeDesigner 3D in 2007. Since implementation in our company, it's paid for itself tenfold."

For more information, visit www.trimble.com. MCAA thanks Trimble for being a supporter of MCAA 2016.

JAY R. SMITH

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requirements. The engineers at Smith's Montgomery, AL, manufacturing facility created modified brass scupper boxes that would meet the overflow requirements and blend in with the building's exterior.

Stephen explained that even with the special requirement, there were no setbacks in the timing of the job. "Humphrey Company's jobs always run smoothly because they can spot a problem early and take the time to think through the best solution instead of having to come up with a quick fix."

Jerry McDanal, vice president of engineering at Smith, said, "It's not unusual for us to create custom

solutions and modify standard parts as needed by contractors. We prefer working closely with the contractor to design the right solution, so they don't have to make do with a less-than-desirable quick fix."

In a way, custom solutions are exactly what MD Anderson is looking to provide when it comes to personalized cancer therapy and advances in pancreatic cancer research. The new Zayed Building was designed to facilitate collaboration among researchers. Built into the design is the ability to accommodate changes in occupancy as needed. An office wing can be quickly transformed into a laboratory if research needs call for it.

To accommodate those transformations, all spaces had to be fitted with the appropriate drainage and plumbing required for a laboratory. The majority of the drains installed by Humphrey were Smith Acid Resistant Coated drains.

The Zayed Building for Personalized Cancer Care opened in early 2015, just over three years after breaking ground. For their part, Humphrey said, "This one went very smoothly for us."

For more information, visit www.jrsmith.com. MCAA thanks Jay R. Smith Mfg. Co. for being a supporter of MCAA 2016.

LGH

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to perform the rigging and execution of the temporary rigging design so that Hayes Mechanical could work with the duct fabricator to manufacture 72 duct modules complete with insulation and lagging in certain sizes for the areas in which they were to be placed. The new duct modules were shipped by barge to the Waukegan Harbor and later trucked a few miles down to the plant.

Bob Segiet, project manager and site construction supervisor, said, “We had to design and install an extensive system of monorails, trolleys, and chainfalls to demo out over 400 tons of the old duct and to maneuver the new modularized sections back in.”

Segiet continued, “When we talk about the monorail system, it wasn’t one point of entry and one end point. We erected 60 tons of temporary structural steel and used upwards of 70 individual rigging pieces like the chainfalls and trolleys to manipulate a few different locations at the same time in order to move the duct work in and out of the structure. It couldn’t be done one piece at a time. It would’ve taken too long.”

Quality, Customer Service Seal the Deal

Despite the challenges involved, it was clear to Bluis and Segiet just what was needed to ensure a successful project.

“We involved LGH’s local representative early on,” said Bluis. “We knew the quantities of the rigging we would be using were a little more than what they were used to seeing on a power plant job from us. We worked with the local rep to make sure we had the right pieces and quantities available right from the start of the job. Of course,

there were other vendors available, but what sold it for us was obviously the quality of the equipment. With as many pieces as we needed, we knew we’d be getting the commitment and dedication that we needed for our equipment from LGH. Not to mention, if we had a piece of equipment go down, we’d get a spare or a replacement in less than 12 hours.”

“We have worked with LGH for many years,” Segiet added. “Because of the reliability and condition of the equipment, we were very confident that when the equipment came out, it was going to be rebuilt, inspected, and ready to go. Also, LGH provided all the documentation we needed for the lift plans as well. This made it very easy for us to get right into the project.

“There’s always potential for a piece to go down,” Segiet concluded. “When you’re using 46 chainfalls it’s a real possibility. However, LGH gave us spares, wrapped them in plastic, and told us if they’re not used, then return them and you will not be charged. That’s quality of service I’ve never seen before.”

From an engineering standpoint, the goal was to reduce the operating temperatures of the precipitator by 350° F. Thanks to the efforts exerted by Bluis’ and Segiet’s team, Hayes Mechanical was able to accomplish their endeavor, and the project was deemed a success. Reducing the operating temperatures of the precipitator lowered the mercury emissions present in the facility, allowing the facility to meet the EPA standards required and continue operation.

For more information, visit lgh-usa.com.

SPX

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coils. Not only would this approach make the towers more efficient, but also the towers would last longer by avoiding some of the issues that had taxed the original equipment.

Turning Down the Noise

Another issue that proved to be a concern was tower noise—specifically, the transfer of vibrations. Because of the sensitivity of the floor directly below, the existing installation used springs. But as the project team examined the springs, they found them ineffective.

Although it was thought that the new cooling tower would perform satisfactorily without springs, the team decided to provide the same level of isolation design for the new towers as in the original installation. Piping was optimized for better water flow, and the entire structure was reworked. Additionally, new grillage provided needed structural support. With a better support structure and new steel, the client got a quieter option that was better than new.

By combining high-performing cooling towers with the ingenuity of a talented project team, an effective solution was reached—one that will last for a long time. The new cooling system has been operating since March 2015 and is performing up to expectations.

A project of this scope with this many challenges could have been incredibly difficult with disappointing outcomes. But with proper planning and clever solutions by the EMCOR team, along with the powerful capabilities and configuration of the new SPX cooling towers, the installation was fairly routine, with low risk and no surprises.

For more information, visit spxcooling.com.

KEY2ACT

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environment. As an organization we feel that technology is the force for change.”

Since Goldner first signed on to implement the Signature Job Cost and Service Management solutions in 1998, KEY2ACT has worked with Goldner staff to address the company’s changing needs. “The service product was one of the main reasons we even shopped KEY2ACT,” said Le. “Having the ability to quantify and calculate percentage of completion for larger projects and then turn around and also handle the light jobs was important.”

Beginning in 2005, “we grew extensively on both the job and service sides,” Le said. “It was a move away from large, multiyear construction jobs and toward shorter-term, high-profitability contract work. It worked in our favor to get in and out of a job sooner.” Goldner still has KEY2ACT’s Signature Job Cost in place today, tracking up to 600 open jobs at a time. They have realized the benefits that come from working with a solution over a number of years.

“The support has been fabulous,” Le said. “We use tech support all the time developing new ways of doing

things, including personalizing the solution for Herman Goldner during and after upgrades.”

Le continued, “We are probably one of their most loyal customers. Through the years, KEY2ACT has supported us from initial implementation to periodic upgrades. They have always had people available to assist us in support issues. Not only were they available but they gave us extra help on weekends and late nights,” said Le.

For more information, visit www.KEY2ACT.com, or call 866-KEY2ACT (866-539-2228).

CNA

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To break it down, let’s say a company has a good safety record and has an E-Mod of 0.8. If that company’s typical WC premium is \$200,000, it would pay \$160,000, or 20 percent less. That saved \$40,000 could help the company buy new equipment, pay better salaries, and bid more jobs. However, if a company has a poor safety record and an E-Mod of 1.4, its WC premium would be \$280,000, or 40 percent higher. The loss of \$80,000 impacts the ability to bid jobs aggressively as the contractor now has possibly lost the ability to bid on state or federal work. These entities want companies with E-Mods below 1.0, which shows a higher standard of job safety.

Another way to look at safety and its impact on company profits is the cost of a claim. Direct costs of claims include medical and compensation or indemnity payments. These are paid by the insurance company. Indirect

or hidden costs include but are not limited to lost time of a supervisor investigating a claim, loss of efficiency due to breaking up a crew, and time for hiring a new employee.

Let’s look at this example. If an accident has direct costs of \$20,000, the indirect costs can range from four to 10 times, or \$80,000 to \$200,000. Indirect costs come out of the bottom line of a company. Because they are not insurable, they have a negative impact on profitability.

Good contractor safety and performance records are no longer preferred—they are considered a necessity for survival. Not only is safety a smart investment, but good performance gives companies a competitive advantage.

For more profitability improving tips, check out www.cna.com/construction. MCAA thanks CNA for being a benefactor of MCAA 2016.

JONAS

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“With Digio, if a customer calls in and I need to access a particular work order or invoice, I can simply go into Digio, search, and access the work order, which not only saves us time, but helps improve our customer service as well,” said Tracy.

Chiller also appreciates the Jonas executive dashboard, which allows them to view financials, key performance indicators, and highlights from a single dashboard view. Since deploying Jonas Construction Software, Chiller has reduced their billing cycle, reduced overall IT expenses with Jonas eMobile, and is now running a more organized and efficient service business. Not only are their employees more satisfied with the user-friendly Jonas software system, but with Chiller’s ability to provide exceptional service, their customers are much happier as well.

For more information, visit www.jonasconstruction.com.

Support the Suppliers Who Support Your Association

When choosing a product or service for that next bid, give an extra edge to the companies that support your association.

Members of the Manufacturer/Supplier Council play an increasing role in MCAA's commitment to lifelong learning by participating in a number of educational ventures. Over the past several years, the Manufacturer/Supplier Council has had the opportunity to cooperate with MCAA initiatives that produced or are in the process of producing some of the association's most valuable educational products.

In addition, MCAA's Supplier Partners support our annual convention through their sponsorships, and their participation at the exhibit. They also publish the semiannual *Smart Solutions* newsletter to showcase new technologies and promote cost-saving and productivity-enhancing applications.

Learn more about MCAA's Supplier Partners and find contact information for the key individuals who can assist with your next project in the *MCAA Membership Directory & Buyer's Guide*. Then, plan to meet your supplier partners in person at the Annual Manufacturer/Supplier Exhibit at *MCAA 2016*. You will have an opportunity to learn about new products, see new technologies demonstrated, find new services, get solutions to your challenges, or stop by just to say hello and renew acquaintances.

Supplier Partners also can be found at MSCA's annual conference and select MCAA meetings. And, their websites are easily accessible via links at www.mcaa.org.

When contacting MCAA's Supplier Partners, remember to thank them for all they do for your association.

