

SMART SOLUTIONS

SUMMER 2015

Helping contractors save money and enhance productivity



Photo courtesy of Pan-Pacific Mechanical, © LaCasse Photography

Thanks to innovative and customized solutions from Jay R. Smith Mfg. Co., RPM finished the new Camp Pendleton Naval Hospital six months early and under budget.

With Jay R. Smith Customized Solutions, Naval Hospital Completed Early, Under Budget

To overcome multiple and unusual challenges—including concerns about terrorism—Pan-Pacific Mechanical, in partnership with Murray Co., and A.O. Reed, collectively known as RPM, called on Jay R. Smith Mfg. Co. to accommodate unique specifications and complex coordination for the U.S. Navy's Camp Pendleton Hospital Replacement Project.

The Camp Pendleton Hospital Replacement Project had a budget of over \$450 million. The 70-acre site includes a 500,000-square-foot,

multilevel medical hospital; a central utility plant; a 1,500-space multilevel parking structure; surface parking; and supporting facilities. The new hospital replaced the base hospital at Lake O'Neill, which was built in 1969.

RPM Rises to Unique Challenges

"The project schedule was exceptionally fast; it was a very aggressive schedule," said Chris Young, project manager for Pan-Pacific. RPM also faced extra layers in the project's chain of command. Navy construction is run through the

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CFI Mechanical Overcomes Skilled Labor Shortages with Victaulic Products and Services

Building information modeling (BIM) and 3D modeling offered by Victaulic's Construction Piping Services (CPS) division helped CFI Mechanical manage the lack of detailers available in Houston, where construction is booming. Victaulic's grooved piping systems and prefabrication services also saved CFI Mechanical installation time and money on a new office building project.

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Victaulic grooved mechanical piping products, shown here on chilled and condenser water piping systems, helped CFI Mechanical reduce total installed costs and meet the demanding project schedule for Houston's Millennium II office building.



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MCAA
Adding Value to
Your Supply Chain

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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Cynthia Buffington
Senior Executive Director

Jan Grillo
Director, Membership

Adrienne Breedlove
Director, Publications

Dana Trevas
Consultant

1385 Piccard Drive
Rockville, MD 20850-4340
301-869-5800
Fax 301-869-3520
e-mail cbuffington@mcaa.org
www.mcaa.org



Innovation on Your Side

In this issue of *Smart Solutions*, you will see excellent examples of how suppliers are working with you, the contractor, to meet increasingly complicated customer demands while ensuring you stay profitable. For example, to prevent potential terrorism at a new Naval hospital, Jay R. Smith Mfg. Co. custom-designed a downspout nozzle with a locking, hinged cover so no one could insert an object into the piping. To excavate live, buried telecommunication cables in Silicon Valley, Tri Tool Inc. created novel machinery to cut the pipe housing the cables. Aerial service provider Erickson Incorporated lifted tons of chiller equipment to a rooftop in a few hours, cutting Conti Corporation's installation time dramatically.

Solving Dilemmas

Sometimes, the right products and services can help you out of a tough situation. Facing construction labor shortages in Houston, CFI Mechanical relied on building information modeling from Victaulic's Construction Piping Services division for a new office tower. MacDonald Miller was relieved to find—midway through construction—that the HOLDRITE® HydroFlame™ sleeving system not only fixed leaks that had emerged but also resolved other challenges.

Other examples in this issue demonstrate the benefits of experience and knowing what a product can do. With years of experience with Mitsubishi Electric US, Inc. Cooling & Heating Division, Arista Air Conditioning Corporation knew that a Variable Refrigerant Flow (VRF) zoning system would fit the bill for a new restaurant whose originally planned system proved unworkable. Since The Warko Group convinced a medical device manufacturer to install APR Controls from Rawal Devices, Inc., the firm has finally been able to control humidity and temperature in its cleanrooms. TG Gallagher had only two consecutive weekends to replace a hospital's aging cooling towers, so they selected Baltimore Aircoil Company towers designed to make installation and upgrades easy. ACCO Engineered Systems took an unusual approach to a compressor retrofit, replacing a tandem scroll set with a single BITZER compressor for an efficient, quiet solution.

Software Solutions

More software solutions are emerging to help you improve business operations. Read how Johnson Controls, Inc. combined its YORK® chillers and Metasys® software to help contractors monitor chillers, pinpoint problems, and resolve issues quickly. With MobiliForms from iBusiness Technologies, Donald C. Rodner, Inc. sped up their invoicing time and cut labor costs while keeping the forms and backend software employees were used to. By replacing their outdated software with easy-to-use, flexible Vista™ by Viewpoint, Bassett Mechanical improved efficiency and streamlined billing processes. Looking ahead, Autodesk is developing software for a "smart" hardhat with sensors that alerts workers to dangers.

We hope this issue spurs you to think about how your suppliers can help you save time, improve productivity, and meet complex customer needs.

A handwritten signature in blue ink that reads "James C. Allen".

Jim Allen, Chairman

Join me in welcoming our newest supplier partners:

- Coilmaster Corporation
- DEWALT Industrial Tool Company
- Enceptia
- ISCO Industries, Inc.
- LG Electronics USA, Inc.
- Rawal Devices, Inc.
- Seton
- SPP Manufacturing
- Watts Specialties, Inc.

Arista Relies on Mitsubishi Electric Systems to Keep Restaurant Customers Comfortable in Any Weather

Thanks to years of experience serving the New York City area, **Arista Air Conditioning Corporation** knew that a Variable Refrigerant Flow (VRF) zoning system from **Mitsubishi Electric US, Inc. Cooling & Heating Division** would fit the bill for a new restaurant whose originally planned system proved unworkable. The VRF system also provided cost savings over the chilled water system originally specified.

System Meets NYC's Strict New Noise Standards

Fogo de Chão® (Fogo), headquartered in Dallas, TX, is a Brazilian steakhouse known for its exceptional dining experience. Fogo began in Southern Brazil 35 years ago and has grown to 37 locations across Brazil, the United States, Puerto Rico, and Mexico. Fogo recently opened a New York City location directly across the street from the Museum of Modern Art, on West 53rd Street, between 5th and 6th Avenues.

The original HVAC design for the restaurant—a water plant on the roof—posed issues of code-compliance, cost, and unsightly ductwork. Dale Forester, the construction manager at Fogo, said, “Due to new noise standards, the water plant would have needed to come up to code. New York City has really strict regulations, and the noise levels from the previously planned HVAC design would have far exceeded them.”

Stanley Berger, CEO of Arista, based in the New York City borough of Queens, added, “Bringing in heat would have required bringing in many gas-fired boilers. That would have cost quite a bit.”

Arista Project Manager John Stewart further explained, “The chilled water



Photo courtesy of Mitsubishi Electric. © ACMB Photography

For the new Fogo de Chão restaurant in New York City, Arista installed Mitsubishi Electric's VRF zoning system to ensure guests at the multilevel restaurant are comfortable inside no matter what the weather outside.

system was spec'd for 180 tons with two 90-horsepower compressors. This was designed by an engineering firm outside of New York City and would have required an operating engineer at an additional cost.” Berger noted the chilled water system also would have required a new and expensive controls system.

Arista suggested an entirely different route: VRF. Berger said, “VRF's simultaneous cooling and heating capability means you can have heat coming from one handler, cooling from another—any combination you want. There's tremendous energy savings to that.”

Fogo did an energy analysis comparing the chilled water and VRF systems. Forester said, “We saw that using this [VRF] system over chilled water dropped the current load by 300 amps, offering tremendous savings.”

Zoning Guarantees Customer Comfort

Forester liked the idea of VRF but was unsure how the zoning would perform. Arista brought him to multiple installation sites around Manhattan. “In one steakhouse, I saw how the kitchen and dining room were separated into zones. This was in the wintertime, and the heat in the dining area was nice and warm. I was surprised at how well the dedicated zones worked,” Forester said.

The team was in agreement: VRF would save money while ensuring guest comfort. Berger said, “We've been working with Mitsubishi [Electric] for about 14 years and have installed several hundred jobs. It's a fantastic product, and the machines operate under much more severe conditions than traditional systems can. It can be 120° in these spaces and VRF still works. We feel so positive

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TG Gallagher Prescribes BAC Cooling Towers for Easy Installation, Efficiency

Cambridge Hospital Runs Without Interruption During Rapid System Replacement

With only two consecutive weekends scheduled to replace Cambridge Hospital's aging cooling towers, TG Gallagher selected Baltimore Aircoil Company (BAC) towers designed to make installation and upgrades easy. Recovering from one of the harshest winters in recent memory, the Boston-based hospital wanted to be prepared for their HVAC needs this summer, and they were looking for a more energy-efficient solution. The real challenge was getting the old towers removed and the new towers installed in the short timeframe while working around the busy Cambridge neighborhood streets.

Cambridge Hospital needed to replace three existing BAC Series V Cooling Towers. With the help of TG Gallagher, they found the optimal solution: three Series 1500 XE (Extreme Efficiency) Models, designed to fit the same space with the same steel support layout as the existing Series V equipment. However, XE models use less energy and run more quietly. In this application, the reduction in fan horsepower resulted in approximately 70-percent lower energy usage. With the addition of the Whisper Quiet Fans, the Series 1500 XE Cooling Towers also reduced sound levels in all directions by at least 10 A-weighted decibels (dBA) when compared with the original equipment.

TG Gallagher found the towers very easy to install. They required no changes to the structural or the electrical infrastructure and only minimal changes to the piping based on the proximity to the piping of the original equipment.

Matt Wiley, project manager at TG Gallagher, noted, "The installation



TG Gallagher stuck to a tight work schedule by replacing Cambridge Hospital's BAC Series V Cooling Towers with Series 1500 XE Models, which are designed to fit the same space with the same steel support layout but use less energy and run more quietly.

"The installation of the Series 1500 Models went really smooth, and allowed the team to meet the strict schedule for our client."

—Matt Wiley, Project Manager, TG Gallagher

of the Series 1500 Models went really smooth, and allowed the team to meet the strict schedule for our client." The entire installation was caught on film (www.baltimoreaircoil.com/cambridge) to highlight the expertise of all parties.

As a company, BAC prides themselves on the delivery of quality equipment. "We wanted to give them the best solution for their application. The installation was a challenge, but we were able to work together and complete the job without any complications, and now

Cambridge Hospital will be able to meet their cooling needs," said Dave White, regional sales manager at BAC.

The hospital continued to run normally during the entire installation without interruption. The goal of finishing the project in two consecutive weekends was met, thanks to the collaborative efforts of TG Gallagher and BAC.

For more information, visit www.baltimoreaircoil.com.

Johnson Controls Offers High-Tech Connections to Monitor Equipment

Data Speeds Up Problem Diagnosis and Resolution, Saving Money

Johnson Controls, Inc. combined its YORK® chillers and Metasys® software technology to help contractors monitor the health of installed chillers during the warranty period so you can save time and money. Instead of sending multiple parties to the site to diagnose a problem, this connected approach gives you remote access to operating data and trends that help you pinpoint the root cause and resolve issues more quickly.

Managing product warranties can be a challenge for contractors, who are eager to complete projects on time and on budget for their clients. Monitoring chillers during the warranty period gives you a single point of accountability for warranty and maintenance. Implementing a proactive warranty response also creates value for the client.

The approach establishes a secure connection between the YORK chiller and the Metasys cloud-based analytics platform, enabling the following:

- Critical alarms are monitored 24/7 by a UL-, FM-, and CSAA Five Diamond-certified remote operations center, which helps the contractor respond rapidly to identify and resolve problems.
- Technicians have access to the chiller's data and current operating conditions via smartphone, PC, or tablet.
- Chiller operating data are collected and stored to analyze and troubleshoot issues.
- Chiller health reports are provided during the warranty period to make sure issues are detected before they become serious problems.
- Operating and trend data can be provided to local, regional, and global experts as needed to help troubleshoot and resolve problems.



At the MCAA Technology Conference, Johnson Controls representatives demonstrated how connecting HVAC equipment with software allows contractors to keep an eye on performance so they can detect issues before they become serious problems.

When you have data to identify and manage warranty issues quickly, you can expect to resolve problems faster, which means getting paid faster and improving the overall project profitability. Connected systems also boost service levels and building performance, reducing downtime through remote, proactive issue resolution.

For more information, visit www.johnsoncontrols.com.

SITE LOCATION	Site Name	
EQUIPMENT ID	Chiller Name	
DATE RANGE	7/1/2013 - 7/31/2013	
PERIOD HOURS	720	
RUN HOURS - System	ACCUM OPERATING HOURS	
Period	481 hrs	Utilization 67%
		Lifetime 2890 hrs

Health Check	Status	Comments
High Condenser Approach Temperature	Alarm	<p>Condenser approach is an indication of how well the condenser heat exchanger is performing. For this chiller, it has been well above its design value for an extended period of time during the reporting period.</p> <p>Common causes of this condition include:</p> <ol style="list-style-type: none"> 1. Non-condensable gases in the condenser 2. Tube fouling 3. Pass baffle gasket leakage <p>Operating with this condition can result in:</p> <ol style="list-style-type: none"> 1. Increased chiller energy consumption 2. Reduced chiller cooling capacity 3. Unplanned down time 4. Tube failure 5. Compressor Failure 6. Shaft seal failures 7. Refrigerant leaks
High Evaporator Approach Temperature	Acceptable	
High Entering Condenser Water Temperature	Acceptable	
Low Entering Condenser Water Temperature	Acceptable	
High Condenser Refrigerant Level	Acceptable	
Low Condenser Refrigerant Level	Acceptable	
High Oil Temperature While Running	Acceptable	

Johnson Controls connected Metasys software technology with YORK chillers to monitor chiller function. Contractors receive "health summary" reports like this one that help them diagnose and resolve problems quickly, saving time and money.

Autodesk's Smart Hardhat Software Alerts Workers to Onsite Dangers

Autodesk's mobile software prototype communicates with dust and noise pollution sensors attached to a hardhat and tracks when levels become dangerous, offering the potential to dramatically decrease the number of injuries. Attendees of the MCAA Technology Conference: The Best of Now, The Best of Next, held just outside of Chicago, had a chance to try out the app and give feedback. Several members of the Autodesk research team came in from China to demonstrate the product, answer questions, and interact with potential users.

Construction continues to be one of the most dangerous occupations globally. Every year, hundreds of people are killed and many more injured at construction sites in the United States. The MCAA Technology Conference provided a first look at a sort of

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Attendees of the MCAA Technology Conference had a chance to try out Autodesk's mobile software prototype, which uses hardhat-mounted sensors to measure dust and noise pollution and alert workers when levels become dangerous. The new technology could dramatically decrease the number of injuries.

Donald C. Rodner, Inc. Cuts Labor Costs, Billing Time by Going Mobile

By adopting MobiliForms software from iBusiness Technologies, Donald C. Rodner, Inc. sped up their invoicing time and cut down on labor costs while still using the same forms and back-end software employees were used to. Don Rodner, president, said, "When I saw a demonstration of MobiliForms at the MCAA conference, it blew my mind. I knew that we found the right solution."

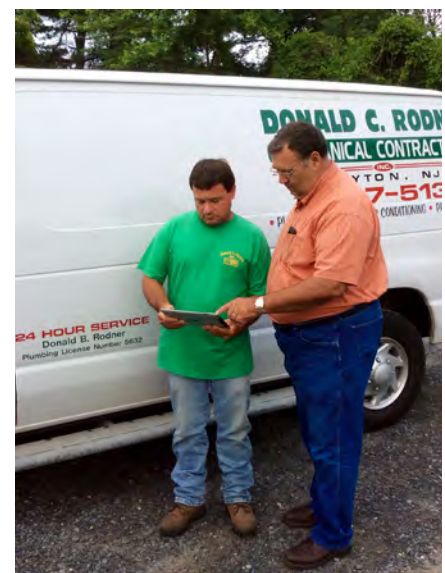
Donald C. Rodner, Inc., based in central New Jersey, is a full-service

mechanical contractor. In serving their Fortune-500 customers, best-in-class service and tight record-keeping are musts. Like many other mechanical contractors, Rodner had managed his staff of highly trained, experienced service and plumbing technicians the old-fashioned way—with a variety of paper forms including work tickets, service orders, and time sheets. Billings were a week behind, handled in batches, as paperwork was all dropped on Mondays.

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"When I saw a demonstration of MobiliForms at the MCAA conference, it blew my mind. I knew that we found the right solution."

—Don Rodner, President, Donald C. Rodner, Inc.



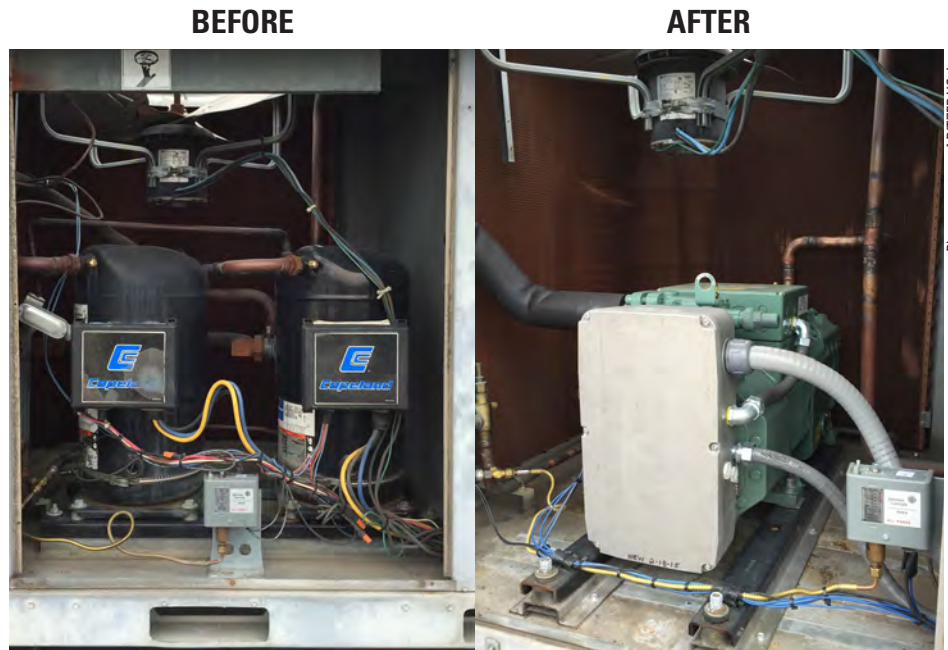
Don Rodner, president of Donald C. Rodner, Inc. (right) and a technician use MobiliForms software from iBusiness Technologies on an iPad in the field to speed up business processes, saving time and labor costs.

ACCO Gets Creative, Uses Single BITZER Compressor to Replace Tandem Units

When a major animation studio needed to replace a compressor and upgrade its systems, **ACCO Engineered Systems** took an unusual approach, replacing a tandem scroll set with a **BITZER** single semi-hermetic reciprocating 15-ton Varispeed™ model compressor with an integrated VSD. The new unit was easy to install and satisfied the customer's demands.

The studio, based in Northern California, lost a 10-ton scroll that was part of a 20-ton circuit on a condensing unit that serves a projector room and 50 percent of a theater. Jay Blundell, ACCO's project manager on this job, said the customer is very technology-driven, extremely conscious of noise and vibration, and concerned about energy savings.

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ACCO Engineered Systems replaced this tandem scroll set (before) with a single BITZER Ecoline Varispeed compressor (after), which was not only easy to install but also provided the quiet efficiency that the customer demanded.

Photos courtesy of BITZER US, Inc.

Conti Corporation Cuts Installation Time with Erickson Incorporated Aerial Lift and Placement



By relying on Erickson's Aircrane to lift thousands of pounds of chiller equipment to the rooftop of the JPM Chase building, Conti Corporation slashed the job's installation time and also saved labor costs.

Innovative aerial service provider **Erickson Incorporated** successfully conducted 13 chiller equipment lifts to the top of the JPM Chase building in Belleville, MI, in just two-and-a-half hours, allowing **Conti Corporation** to cut installation time dramatically. Erickson's placement lifts saved time on the ground and also saved labor costs, because they were much more efficient than standard ground-based methods.

To prepare for such an extensive HVAC lift and placement project, Erickson operators worked with Conti project managers for three months, with an initial site visit in February to determine lift sequence, rigging, and clearance for crews to enter JPM Chase property. On the morning of March 28, Erickson's S-64F Aircrane and crew arrived at the site. The chiller components were previously prepared and staged

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Bassett Mechanical Streamlines Payment, Reporting Processes with Viewpoint Software

By replacing their outdated accounting and management software with easy-to-use, flexible Vista™ by Viewpoint, Bassett Mechanical has improved efficiency and streamlined billing processes. “It’s important for our financial health that we get paid quickly, and by using the software, Bassett can give customers the documents they need (invoices, reports, etc.) the way they want to see them,” said Mike Kees, manufacturing project manager at Bassett Mechanical. “That means Bassett is presenting accurate data in a professional format with the right details per customers’ request, and so billing, for example, can be processed efficiently and not returned with concerns and questions that slow down the payment and cash flow.”

Bassett Mechanical provides custom-built mechanical contracting, metals manufacturing, and

maintenance service solutions to customers throughout the United States and the world. Established in 1936, the company has grown into a trusted specialty contractor that handles design, engineering, fabrication, installation, and service in specialty areas including industrial refrigeration, HVAC, industrial ventilation, metal fabrication, plumbing and piping, laser cutting, testing and balancing, and preventive maintenance. In addition to its 266,000-square-foot facility and fabrication plant in Kaukauna, WI, Bassett houses service locations in both Madison and Milwaukee.

Bassett Mechanical is continually growing and innovating to better serve their customers and support their Lean principles and processes. Having outgrown their outdated, custom software program for accounting and project management, the

“I was not very familiar with construction technology, but using Vista has been easy. ... I can run reports myself and see exactly what I need to when I need to.”

—Roy Immel, Project Manager, Construction, Bassett Mechanical

Contract	Description	Project Manager	Contract	Cost	Profit	Margin
Department 01 - San Francisco						
1092	St Thomas Hospital	Clark W Griswold	35,394	30,795	4,600	13.00%
		Current	479,320	429,566	49,754	10.38%
1007	Pacific Bell Office	Bart Starr	2,326	7,647	(5,322)	-228.82%
		Current	162,600	143,162	19,438	11.95%
2020	Lake Village Office - Phase 2 Electrical	Bart Starr	206,555	127,610	78,945	38.22%
		Current	452,393	400,215	52,178	11.53%
2200	First Avenue - Phase Activity	Brent Kuenzi	0	286,856	(286,856)	0.00%
		Current	520,000	470,566	49,434	9.51%
2550	Trans American Gas Pipeline	Dale Murphy	3,775,669	2,093,704	1,681,966	44.55%
		Current	7,941,484	6,764,694	1,176,789	14.82%
2600	Capital Center Interior Uplift	Terry Porter	198,630	271,078	(72,448)	-36.47%
		Current	709,286	620,775	88,511	12.48%

Bassett Mechanical appreciates the flexibility and ease-of-use of Vista software by Viewpoint, which has helped improve efficiency in operations and billing.

company explored new options and opportunities to help them improve. “Considering that 97 percent of our work is custom, we really needed a program that was flexible and could handle all of the unique processes and things we need to do,” said Kees.

“It’s important for our financial health that we get paid quickly, and by using the software, Bassett can give customers the documents they need” to move the billing process forward smoothly.

—Mike Kees, Manufacturing Project Manager, Bassett Mechanical

“We wanted a more efficient way to pull data for specific reports and allow us to track variations in labor and pricing. Custom work means every project is different, so it’s essential we find ways to cut down on operational inefficiencies wherever we can. We believed a flexible and feature-rich ERP [enterprise resource planning] software solution could help us do exactly that,” Kees noted.

Bassett Mechanical now uses Vista to manage accounting, project management, operations, and more. “The flexibility of Vista is so valuable to us,” said Kees. “The software allows the contractor to produce lots of helpful reports and respond to requests for analysis quickly.”

In addition to flexibility, Bassett Mechanical appreciates that the Vista solution is easy to use. After spending about 10 years as a field employee, Roy Immel became a project manager in Construction at Bassett, which

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The Warko Group Strikes Perfect Humidity Balance with Rawal Devices

Pharmaceutical specialty and medical device manufacturer Angiotech had tried almost everything to keep humidity levels in its cleanrooms just right, but only the APR Control from **Rawal Devices, Inc.** was up to the task. Since **The Warko Group** installed the device, Angiotech has maintained humidity and temperature in its cleanrooms well within required specifications.

Too Damp or Too Dry

Before installing the APR Control, John Garbini, facility support manager for Angiotech, had been stuck with a nagging problem: When the humidity in the plant's ISO Class-8 cleanrooms was not too high, it was too low. He had tried dehumidifiers. He had tried a large industrial desiccant unit. Balanced dampers? Reduced air pressure? Been there, done that. Angiotech uses its Reading, PA, plant to assemble and package sterile, disposable scalpels and surgical needles with attached sutures. High humidity in the cleanrooms could not only encourage bacterial growth, it could prematurely degrade a type of moisture-activated suture that is designed to slowly dissolve in human flesh after the surgical incision heals. Low humidity, on the other hand, promotes static electricity, which interferes with computerized packaging and labeling equipment and gives employees small shocks.

"Temperature and humidity swings were normal," Garbini recalled. "Our employees were either too hot or too cold. It was a challenge to maintain the proper temperature while still dehumidifying the space.

The APR Control from Rawal Devices "made such a significant impact that we installed another one in the air handler for the other cleanroom."

—John Garbini, Facility Support Manager, Angiotech

The air-handling compressors were constantly slamming on and off, but the main problem was that I could never get the humidity low enough to stay within our specs, which are more stringent than the federal cleanroom standards."

Bob Reichenbach, service manager for The Warko Group, had been recommending the APR Control device for years, but Garbini had not found room for one in his budget. Finally, he purchased the device along with a new air handler for the troublesome cleanroom (the one where the needles with moisture-activated sutures are packaged). It was installed in late December, when the plant was shut down for the holidays. At last, Garbini was able to keep the room at 20–50-percent relative humidity regardless of the weather outdoors. (He calls the device "Little Pauly" after Paul Gardner, the amiable Warko Group mechanic who installed it.)

Temperature, Humidity Stabilized

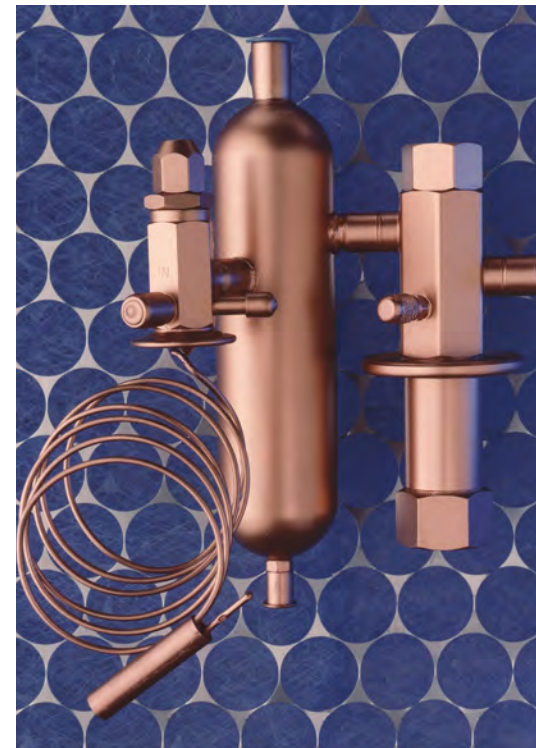
The APR Control smoothly modulates a direct-expansion air conditioning system's capacity, allowing it to dehumidify the space without overcooling it. The device varies refrigerant flow according to suction pressure, which changes with the temperature of air crossing the evaporator coil. Because it continuously monitors the heat content of return air, it maintains the system in a dehumidifying mode more efficiently than thermostats and humidistats and without risk of coil icing, liquid slugging, or excessive compressor cycling.

"The APR Control is running great, with no problems at all," said Garbini. "It made such a significant impact that we installed another one in the air handler for the other cleanroom in May."

Garbini continued, "We're now maintaining humidity and temperature in both rooms well within specs, our employees are more comfortable, and I've even seen a decline in the electrical energy consumption."

To allay any doubts that the improvements from the first installation could be attributed to the device (rather than the brand new air handler) and to demonstrate its effectiveness, Reichenbach persuaded Rawal Devices President Richard Rawal to donate the second

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Since The Warko Group installed the Rawal Devices' APR Control, Angiotech's cleanrooms are finally maintaining optimal temperature and humidity for production. The device allows an air conditioning system to dehumidify without overcooling.

Tri Tool Customized Machinery Allows Unprecedented Relocation of Live Communication Lines Without Service Interruption

When a California transit project called for excavating and relocating buried telecommunication cables in Silicon Valley—while the cables remained live—Tri Tool Inc. created novel machinery to do the job. To complicate matters, a “hot work” permit would have delayed work, so the whole process had to be accomplished using cold-cutting techniques. Not only did the Tri Tool solution succeed in the delicate operation, it did so quickly, helping to bring the project in 10 months before schedule.

Novel Approach Requires New Tools

The Silicon Valley extension project is part of the effort to extend California’s Bay Area Rapid Transit (BART) regional heavy rail system to provide improved rail service to San Jose and Santa Clara. The 16-mile extension project begins in the Warm Springs district of the City of Fremont and travels through Milipitas to end in the Berryessa area. The Berryessa Extension is the first phase in the multiphased approach to the effort. It was anticipated that a year-long turnaround time would be required for this phase of the project, which included the excavation and rerouting of communication lines.

Originally, AT&T, which owns the active copper wires and fiber optic communication cables, put forth a plan to lay new conduits and cables, then cut and remove the old cables. However, the contractor believed and proposed that the existing cables could simply be rerouted into newly constructed bridge decks running above the railway. No one had ever before attempted to excavate and move live communication cables from inside a steel casing that was 32" in diameter, 205' long,



For the Silicon Valley extension of California’s BART rail system, Tri Tool designed a chain-mounted milling fixture to make lateral cuts to massive underground casing so that contractors could relocate the live communication cables it housed, speeding up the project timeline dramatically.



Tri Tool’s customized machinery allowed workers to cut away sections of buried casing without damaging the communication cables inside. This approach meant cables could be relocated, saving months of effort that would have been required to lay new conduits and cables.

3/4" thick—and buried 15' below ground.

As a portable machine tool manufacturer and on-site machining contractor, Tri Tool had designed numerous special machining solutions that involved linear machining of pipe. Tri Tool experts proposed a solution to the challenge and made the case for it first to AT&T, which had never heard of anything like it, and then to the Santa Clara Valley Transit Authority. Given the project's location in the heart of the Silicon Valley, it was a safe bet that countless high-tech companies' Internet connections were currently active on the AT&T lines. It was crucial that the cables not be cut or damaged while being removed from their steel casing.

Tri Tool started with a conventional carriage mill and modified it to mount to the casing via a heavy-duty chain (versus the typical weld attachment). They tested the proposed cutting system multiple times at their Rancho Cordova manufacturing facility. Once it was proven that it would remain rigid enough to perform the precision cuts, the equipment was deployed to the site, along with qualified service technicians who had been specially trained for this operation.

On-Site Operation a Success

On location, the first step was to mount the custom-modified carriage mill onto the excavated carbon steel casing. Next, the technicians made two linear cuts along the entire length of the casing, approximately 205', taking care that the cutting bit depth did not contact and damage the vital cables nestled inside. Finally, axial cuts were made perpendicular to the initial linear cuts at approximately 12' intervals using a Tri Tool Model 630 RBL split-frame lathe mounted



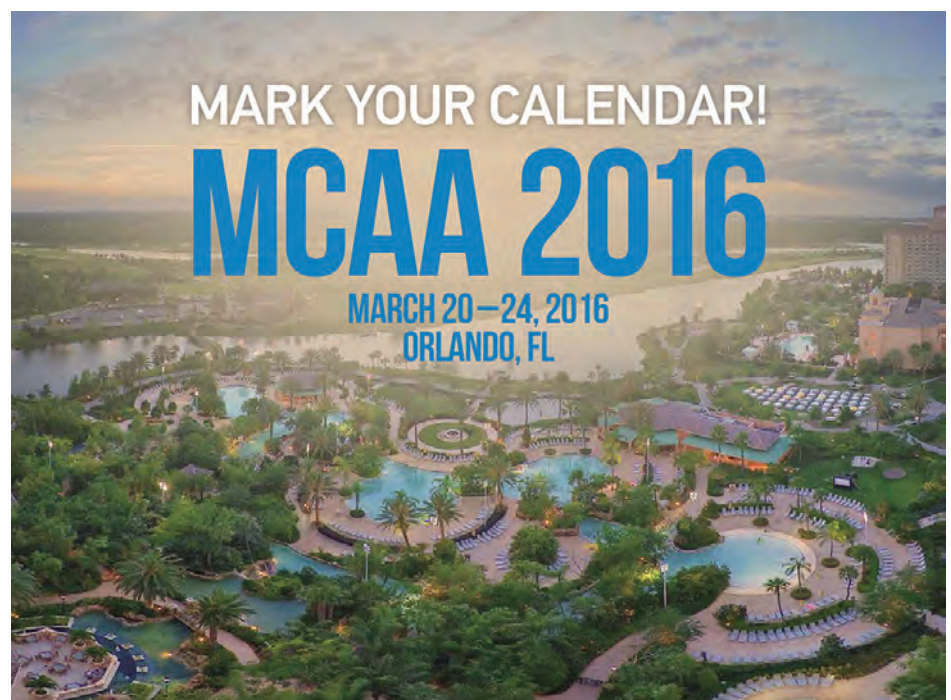
Tri Tool conceived and created tools for precision milling of the communication cable casing, which was needed to avoid damaging the live communication cables and potentially affecting telecommunications across Silicon Valley.

directly to the carriage mill. This technique permitted workers to remove large sections of the upper casing, exposing the cables so that they could be lifted out and brought above ground.

Tri Tool's efficient, custom, on-site machining operation required only 14 days, significantly faster

than contractors anticipated. The time-saving solution helped bring this phase of the project in 10 months under schedule—with no damaged cables. Contractors were very pleased with Tri Tool's expertise, professionalism, and performance.

For more information, call 800-345-5015 or visit www.tritool.com.



MacDonald Miller Turns to HOLDRITE to Stop Leaks, Provide Watertight Solutions

Midway through construction in downtown Seattle, MacDonald Miller was relieved to find that the HOLDRITE® HydroFlame™ sleeving system not only fixed the leaks that had emerged but also provided more convenient, effective solutions to ongoing challenges the contractor faced. HOLDRITE provided reliable prefabrication services and resolved a persistent problem MacDonald Miller faced with its tub boxes, saving time and helping projects run more smoothly.

HOLDRITE Holds Tight

As MacDonald Miller was building the tower at 2030 8th Avenue, the steel sleeving system they had installed began to leak. With water leaking through the sleeves down to the finished floors below, the company needed a solution. MacDonald Miller decided to give the HOLDRITE HydroFlame sleeving system a try.

Using HOLDRITE HydroFlame patented cast-in-place technology, the

“Other manufacturers also offer prefabrication options, but HOLDRITE actually did it right.”

—Randy Borman, Piping Operations Manager, MacDonald Miller

sleeve’s internal and external water seals offer double protection against water intrusion. Its patented mid-body seal allows for contraction and expansion of piping systems and the surrounding concrete floor slab while still protecting against the spread of water, smoke, and gas. The product line meets and exceeds building code requirements.

“There were three things that sold us on HydroFlame,” explained Piping Operations Manager Randy Borman. “Number one, the HydroFlame does not leak. Number two, HOLDRITE would be able to fabricate all of the sleeves to our specifications, whatever we wanted them to do. And finally, HydroFlame would also solve some issues we’ve had with our tub boxes. We’ve had problems with other

company’s tub boxes because their caps are not safe to walk on after the box is poured into place, and the boxes can be very difficult to water-seal.”

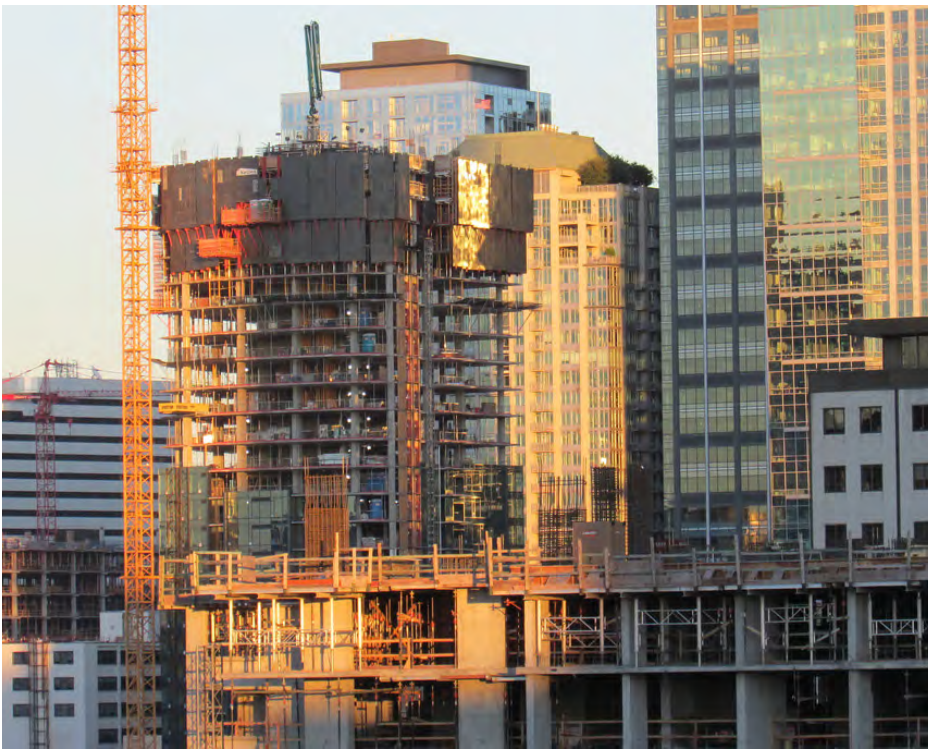
Plumbing Superintendent Mike Kunkel added, “The tub boxes we used in the past were not deep enough to house the bathtub drain with tubs that sat flat on the deck. We had improvised with various fillers, but HOLDRITE was able to offer a 4”-deep Styrofoam insert that alleviated that problem. The HydroFlame sleeve was ordered 1/4” lower than the finished concrete slab. With the concrete coverage and the rated cap, this was safe to walk on after they were installed.”

Of course, the biggest concern for any sleeve is preventing water from



Top: Using a 4”-deep Styrofoam insert from HOLDRITE, MacDonald Miller alleviated the problems it had been having with tub box caps that were not safe to walk on after the box was poured into place and were difficult to seal against water.

Left: “The HydroFlame does not leak,” said MacDonald Miller Piping Operations Manager Randy Borman, making it the top choice for patching leaking pipes and preventing costly leaks in the future—major concerns the contractor faced in a recent project.



While seeking a solution for leaky pipes in a downtown Seattle construction project, MacDonald Miller appreciated not only the reliability of HOLDRITE's HydroFlame sleeving system but also of HOLDRITE's prefabrication services, which saved the contractor time.

traveling from floor to floor, and the HydroFlame sleeves worked very well in this regard. The system proved to be watertight as promised, which solved the water leakage problem. It also ensured that if any water issues should develop in the long run, the problem would be isolated to that floor and would not penetrate to the floor below.

HOLDRITE was able to deliver the prefabricated sleeves and tub boxes packaged into floor-specific crates—a much-appreciated convenience for MacDonald Miller.

“The whole process was much easier than we thought it would be,” stated Borman. “We were impressed that HOLDRITE was able to meet our order and delivery requirements for the job. Other manufacturers also offer prefabrication options, but HOLDRITE actually did it right. With other companies we’ve had two to three floors of products

delivered incorrectly, then we had to sit and argue about who was responsible! None of that happened with HOLDRITE.”

HOLDRITE Offers “Very Solid Testing System”

Borman and Kunkel also decided to install the new HOLDRITE TESTRITE® test tee on this project. Unlike traditional clean-out tees, where the tee and the test device are sold separately, this product provides all-in-one convenience.

“We’ve found that typically the tee and the test device don’t work well together,” Borman notes. “You try to pull the test device out and you get water all over the place! With the HOLDRITE TESTRITE tee you can fill it up, test it, let water pass through the tee, put the cap back in and you’re done. It eliminates the ‘water everywhere’ problem and also provides an extremely watertight seal to test against. This is a very solid testing system, and water does not leak past the tee. Just like the HydroFlame sleeve, these proved to be a labor saver and watertight.”

For more information about HOLDRITE, visit www.holdrite.com.

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MITSUBISHI

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about it that we put VRF in our own office.”

Two-Pipe System Saves Space

R2-Series units were selected for the majority of the project for their simultaneous cooling and heating capabilities. One Y-Series unit was selected for the main dining room. Berger explained, “It’s such a big area and it wasn’t necessary to have each air handler be able to operate on its own.”

The outdoor units went on the fifth floor setback. “We installed structural steel for the 84 tons of Mitsubishi [Electric] condensing units. We then ran piping from the roof down through an outside shaft into the building, connecting to about 30 air handlers,” said Berger. Forester added, “Other [VRF] brands use three-pipe systems. Mitsubishi [Electric] having just two pipes really helped.”

Fogo has since installed Mitsubishi Electric VRF at their Portland, OR, location. Forester said, “In Portland, the challenge was a lack of space on the roof. Mitsubishi [Electric] offered the most efficient use of space. Inside, Mitsubishi [Electric] solved the challenges of low ceilings and tight spaces quite easily with their two-pipe system. From these successes, we consider Mitsubishi [Electric] a preferred partner for this equipment.”

User-Friendly Monitoring Minimizes Maintenance

The system has been in place for over a year now, “and we’ve really had no problems at all. No mechanical issues, no repairs,” said Berger. Forester commented, “The HVAC works well. At the street entrance, when it’s 20° outside, if you walk in 10 feet, it’s warm. The zoning of the air also works really well with the

three-level restaurant. There is a tendency for heat to rise, but the system can maintain all floors of the building at 72°. It’s designed very well.”

Part of that smart design is user-friendly monitoring. Fogo monitors its equipment via a control panel in the manager’s office. “It’s very simple to use for the amount of technology it has. There’s also diagnostic programming, online diagnostic programming, filter changes, etc., that are all very easy to use,” said Forester.

Code-compliance has not been a problem, either. “With the variable frequency drives of the Mitsubishi [Electric] units, there is literally no noise,” said Forester.

For more information, visit www.mitsubishiipro.com.



Top: The Mitsubishi Electric’s VRF zoning system has a user-friendly monitor to help stay on top of maintenance and diagnose any issues that arise.

Left: Arista CEO Stanley Berger knew from experience that Mitsubishi Electric’s VRF zoning system would easily meet New York City’s strict new noise standards thanks to its variable frequency drives.

Photos courtesy of Mitsubishi Electric, © ACMB Photography

JAY R. SMITH

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Naval Facilities Engineering Command (NAVFAC), and a Resident Officer in Charge of Construction oversees the build.

For any other hospital in California, Pan-Pacific would typically operate under the California Plumbing Code. But because this was a U.S. Naval facility, RPM instead had to adhere to the International Plumbing Code as well as a multitude of other unique requirements mandated by NAVFAC.

Among those unique requirements, RPM had to take into consideration antiterrorism measures. “Terrorism on a military base is a big concern,” said Young. The storm and overflow drains had to be sized to accommodate over 3” of rainfall per hour according to the 100-year storm statistical assumptions. “You have a very large-diameter overflow drain, up to 6–8” in diameter. There was concern that someone could push a bomb in there from the ground level.”

Jay R. Smith Mfg. Co. custom-designed a downspout nozzle with a perforated latching stainless steel hinge cover that could be locked to prevent someone from inserting an object into the piping. Smith has since added the new design to their catalog, and it is now available as a standard offering. Young was so pleased with the clean look of the downspout nozzles that Pan-Pacific now uses them on other projects.

Pan-Pacific also eliminated the threaded nipple connection often used on the downspouts. “With the exterior of the building and the inside wall tight against one another, it was hard to get enough space between the sweep and the cow’s tongue to utilize a threaded nipple. Smith engineered the downspout nozzle so there are set screws around the perimeter of the downspout nozzle, which threads tight against the pipe,

and the nozzle fits over the pipe to save space,” said Young.

Sustainable Solutions

Part of NAVFAC’s mission is to build and maintain sustainable facilities. Innovations used at the Camp Pendleton Naval Hospital include green roofs, photovoltaic cells (solar panels), solar hot water panels, and horizontal and vertical sunscreens. It is estimated these innovations will help to reduce energy consumption by 30 percent compared with a typical hospital.



To thwart potential terrorism at the new Camp Pendleton Naval Hospital, Jay R. Smith Mfg. Co. custom-designed a downspout nozzle with a perforated hinge cover that could be locked to prevent someone from inserting an object into the piping. The novel downspout resolved a tricky challenge for the RPM contracting group and has since been added to Jay R. Smith Mfg. Co.’s catalog.

The green roof at the Camp Pendleton Naval Hospital uses the Inverted Roof Membrane Assembly system, which must be installed over a structural concrete deck because of its weight. The green roof drains required staging. The drain bodies were initially installed on the job to make the concrete pour, and the tops (with perforated mesh screens) were shipped and installed later. All of the staging and shipping was coordinated to meet RPM’s schedule. The drainage off a green roof surface

is particularly important for maintaining optimum growing conditions for the plants, managing heavy rainfall without sustaining damage to growth due to erosion or pooling of water, and ensuring the sound engineering and structural integrity of the roof. Young explained that the selection of the roof drains was also important because of the hospital’s proximity to the Pacific Ocean and the aggressive nature of the air. The roof drain systems would not only have to withstand harsh weather but also hold up to the saltwater in the air.

While the weather conditions can be harsh on the top of a roof, down on the ground things are a bit different, especially in Oceanside, CA. The hospital design takes the temperate climate into consideration and provides an abundance of outdoor space for patients and their families.

Customized Connections

One of the outdoor amenities RPM had to provide for was an outdoor coffee kiosk. Anywhere you have food or beverage service, you need to provide hot water and sewer service for the staff to wash their hands. Young explained that an outdoor coffee kiosk connection box is not a standard item you can order from a catalog.

RPM turned to Smith to design a custom, stainless-steel, hot and cold water connection box. The custom-made box was set flush in the wall, which provided convenient hookup connections to hot and cold water service and sewer discharge when the kiosk was in use.

The Camp Pendleton Naval Hospital construction project spanned four years. The hospital officially opened January 31, 2014.

For more information, visit www.jrsmith.com.

VICTAULIC

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Building Boom Spurs Labor Shortage

Houston, TX, the heart of the oil and gas industry, has seen rapid growth in recent years, fueled by tax incentives for companies setting up headquarters in the area. The influx has led to a high demand for office space and, in turn, a wave of construction that has resulted in labor shortages. Despite the recent oil industry downturn, building activities continue at a breakneck pace. When they were awarded the mechanical systems contract for the Millennium II Tower, CFI Mechanical turned to Victaulic for help in overcoming the labor shortage, as well as schedule and budget challenges.

The Millennium II Tower is an office building under construction in the Westchase district of Houston. The long-planned sibling property to the Millennium Tower, Millennium II is a 24-story glass-and-aluminum-clad tower that will stand 309' tall, making it the tallest building in the district. All 417,000 square feet of space was pre-leased by National Oilwell Varco (NOV), a leader in the design and manufacture of oil and gas drilling equipment and Houston's largest energy employer. With more than 14,000 employees in the area, NOV will consolidate employees from 10 other facilities at the Millennium II Tower when it is completed in October 2015.

"Construction has a lot of cycles to it, but for the last two years, it has been crazy around here," said Chuck Fell, president of CFI Mechanical and immediate past president of MCAA. The Houston-based contractor, which provides plumbing and HVAC services for commercial construction throughout Texas, knew the labor shortages would present challenges on the Millennium II Tower project in terms of design and construction. In addition to welders, the company has experienced a shortage of detailers that has been magnified by mandates for BIM on projects. "There's a lot more demand now on our drafting services," Fell explained. "More customers want the Cadillac, they want everything."

"CPS did exactly what they said they were going to do and when. ... We can't wait to get another job where we can plug in Victaulic."

—Chuck Fell, President, CFI Mechanical

CFI Mechanical is also facing the typical construction challenges of schedule and budget. "We are building at a record pace around here as far as the speed at which we put buildings together," Fell noted, "and budget's always an issue."

Victaulic Services Extend Drawing Departments

Although CFI Mechanical planned to manage the BIM process in-house, it quickly became clear that help was needed. CFI Mechanical had not previously worked with the Victaulic CPS team, but the Millennium II Tower was a good project to test the waters. "We see a need for [CPS services] in the future, and this looked like it was a good fit for Victaulic to come in," Fell said.

Shortly after CFI Mechanical was awarded the contract, in January 2014, the contractor brought in the Victaulic CPS team to model the mechanical rooms and piping systems. The CPS team completed the fully coordinated BIM model for the basement and penthouse mechanical



Victaulic triple-service valve assemblies, strainers, couplings, and fittings join condenser water piping to pumps in the basement mechanical room of the Millennium II office building. Combining Victaulic products and CPS for BIM, CFI Mechanical saved installation time and overcame Houston's skilled labor shortage.

rooms, an air-handling unit room on the eighth floor, the cooling tower area in the attached parking garage, and the crossover piping, managing to stay ahead of the construction coordination timeline despite the tight schedule. CPS also generated isometrics, fabrication spool drawings, and bills of material, enabling the contractor to get a head start on fabrication.

Victaulic Products Speed Installation

With years of experience working with Victaulic products, CFI Mechanical knew grooved piping systems would be the solution to the schedule and budget challenges, as well as the labor shortage. “We’ve been in business for 19 years; we’ve used Victaulic for 19 years,” Fell stated. “We try to use it every possible way.”

In 2014, CFI Mechanical executives toured Victaulic headquarters in Easton, PA, where they got a closer look at the manufacturing and quality control processes. Already a proponent of Victaulic because “there’s a trust factor there,” according to Fell, the tour gave CFI Mechanical’s leadership even more confidence in the products. It also revealed new ways to improve efficiency. “It changed our approach, got us more into fabricating and using the tools available to us from Victaulic,” said Fell.

Victaulic grooved mechanical piping products, including QuickVic™ Installation-Ready™ couplings and AGS couplings, were specified to join the carbon steel condenser and chilled water piping systems as well as the stainless steel and copper domestic water systems. In addition to the mechanical systems, Victaulic products were specified for the storm drainage and fire protection systems.

“We could not have accomplished our budget for the job without using Victaulic products, and it would have been a whole lot more difficult keeping up with the schedule.”

—Chuck Fell, President, CFI Mechanical

The Victaulic CPS team coordinated bag-and-tag product shipments to CFI Mechanical’s fabrication shop. This service enables Victaulic products to be shipped to the shop or jobsite for just-in-time delivery, labeled and packaged per the contractor’s direction. Pipe spools were cut, grooved, and assembled in CFI Mechanical’s shop and sent to the jobsite for installation.

Cooperation Keeps Project On Time, On Budget

The installation went smoothly, and the CPS team stayed involved throughout the construction process, assisting with several design changes. For instance, an extra floor was added, which increased the size of the piping at the lower levels and called for larger cooling towers. The control valves that had been ordered per the contract drawings did not fit the cooling tower connections, and the lead time to get new valves would have delayed construction. The CPS team devised a solution using Victaulic reducers, which enabled the original control valves to be used and construction to progress on time.

The Millennium II Tower project is on time and on budget. “We could not have accomplished our budget for the job without using Victaulic products,” Fell stated, “and it would have been a whole lot more difficult keeping up with the schedule.”

Despite CFI Mechanical’s reservations about working with CPS, attitudes changed by the end of the

project. Initially concerned about costs, prompt service, and lack of control, Fell reported that the project “turned out very well. CPS did exactly what they said they were going to do and when. The value was there. We can’t wait to get another job where we can plug in Victaulic.”

For more information, visit www.victaulic.com.

VIEWPOINT

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required him to spend more time in the office, handling management and more administrative duties.

“I was not very familiar with construction technology, but using the project management features in Vista has been easy. I was able to pick up the software fairly quickly, and it’s easy to get around,” said Immel. “I can run reports myself without relying on accounting, so I save time and can see exactly what I need to when I need to. I have many favorite reports that I use on a consistent basis, and they help me stay on top of purchase orders, materials, contracts, billings, so much—even snapshots of job progress to stay informed and ahead of any problems.”

For more information, visit <http://viewpoint.com>.

ERICKSON

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in the parking lot next to the helicopter landing and fueling zone where Erickson and Conti managers had established a direct flight path to the rooftop to minimize flight time.

After a comprehensive safety briefing, the lift portion of the project began at 1:00 p.m., and all chiller components were successfully placed on the rooftop by 3:30 p.m. Erickson proved instrumental in accomplishing Conti Corporation's goals in a short amount of time, while meeting safety expectations.

Although the lift was quickly completed, it was no small undertaking. All 13 placements were flown with steel cable rigging as four-point lifts, and package weights ranged

from 2,118 pounds to 15,500 pounds. Erickson's expert Air crane crew consisted of three pilots and two radio personnel, one stationed on the ground for rigging, and one on the roof at the delivery site. For added safety, five road guards were stationed around the perimeter to ensure a secure area while the helicopter was working. This collaboration between Conti Corporation and Erickson Incorporated is an example of effective, efficient, and modern infrastructure installation and construction. Erickson's Air crane is uniquely designed, piloted and crewed to perform these kinds of specialized lifts and has successfully and safely placed more than 40,000 HVAC units on multistoried buildings, automobile plants,

and aviation hangers across North America and Europe.

"The mechanical equipment was located in the middle of a 300,000-square-foot live data center complex. The pre-planning that Erickson and Conti undertook was exceptional and [the lift] went as planned. Each unit was precisely placed in a very efficient and safe manner. The Erickson Team took the time to visit the site twice, once meeting with the owner and the other with the Conti Team, making sure we all worked the plan and giving the customer a level of comfort," said Victor Calleja, senior project manager for Conti Corporation.

For more information, visit <http://ericksonaviation.com>.

RAWAL

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unit. The results were enough to finally convince Angiotech's upper management. Garbini recently ordered a third device for the finishing department, where the needles and blades are polished, cleaned, and washed before going to the cleanrooms for assembly and packaging. Though not an official cleanroom, this area requires frequent air changes, HEPA filtration, and, of course, stable levels of temperature and humidity.

Device Tracks with Load

A typical HVAC system is designed for a sunny 95° day with 95-percent relative humidity. On cooler days, because the system

has more capacity than it needs to satisfy the actual load, it tends to cycle on and off. When it shuts off, the humidity increases, causing the room's occupants to feel uncomfortable even when the temperature is within the desired range. Occupants tinkering with the thermostat only make things worse.

The device improves an HVAC system designed for on/off operation by allowing it to "track" the load—that is, to operate at the same capacity as the load. In other words, a compressor pumps only what it is rated for, but the APR Control "de-rates" the evaporator coil for a reduced load.

Reduced compressor cycling means energy savings and less wear and tear on the compressor.

In a system equipped with the APR Control, even if a filter is clogged or a belt malfunctions, coil temperature never falls below freezing. With no coil icing, the building is spared the water damage often caused by melting coil ice. The device is also used for high-percentage (up to 100 percent) makeup air systems, reducing the cycling caused by wide variations in the temperature and humidity of outside air.

For more information, call 800-727-6447 or visit www.rawal.com.

AUTODESK

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“smart” hardhat from Autodesk that incorporates technological advancements to improve safety on the jobsite.

The Autodesk system can also alert other workers when someone falls. Construction crews could locate workers, in near real-time, who had become injured or unconscious while in a remote corner of a building. In addition to identifying individual safety issues, the data from the sensors

can be captured in a dashboard, giving holistic and historical views of where most accidents occur, along with other information. The software could also potentially eliminate the need for workers to punch in and out every time they arrive at or leave a jobsite.

Conference-goers offered the researchers ideas on how the construction industry might deploy these intelligent platforms to improve construction safety. For example, they suggested

adding a sensor that could detect gas levels, particularly carbon monoxide, and others that could capture personal health parameters, like heart rate and body temperature. Autodesk is seeking companies that might be interested in piloting the helmet at their jobsite.

For more information, visit www.autodesk.com. Contact ling.zhao@autodesk.com to learn more about the pilot program.

iBUSINESS

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Rodner knew that mobile technologies could help him operate his business more efficiently. He was not sure, though, which platform made the most sense or how his employees and customers would respond. Then, Rodner met the iBusiness Technologies team at an MCAA national event and saw how MobiliForms works.

The art of managing costs and internal processes dictates that

any procedural change be carefully evaluated for its return on investment (ROI) and potential disruption. Rodner liked that MobiliForms does not require any change to backend software and also delivers the company’s familiar forms on the Apple iPad with multimedia capture. This meant that ROI was fast, and putting the system in place would not cause internal upheaval or resistance from employees.

Workdays now go more smoothly, as Rodner can track his technicians’ progress in real time, order parts as they are being used in the field, and ensure that invoices are sent to customers immediately. The dependability and durability of the iPads running MobiliForms turned out to be a smart investment that is paying dividends daily.

For more information call 877-565-3261 or visit www.iBusiness-Tech.com.

BITZER

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Blundell consulted Steve Esslinger, BITZER’s regional sales manager, and requested a compressor recommendation to meet his customer’s needs while also converting the system to R407C. Rather than replace the tandem scroll set with new scrolls, Esslinger recommended BITZER’s 4PCS-15.F4Y Varispeed compressor. It operates from 25 Hz to 87 Hz, generating nearly 22 tons of capacity at 87 Hz. As the load

on the auditorium changes, the compressor speed changes to match the load requirement. This seamless capacity control minimizes suction pressure fluctuations and cycling rates, thus reducing energy costs.

ACCO has performed numerous retrofit upgrades, so the mounting, piping, and wiring changes were easy. The built-in, maintenance-free,

suction-gas-cooled VSD is fully parameterized for easy commissioning, and the unit has been running quietly and efficiently for months. Blundell said the customer is pleased with the results, and he intends to use the Varispeed for other retrofit jobs.

For more information, visit www.bitzerus.com or contact techsupport@bitzerus.com.

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