

# SMART SOLUTIONS

SUMMER 2019

Helping contractors save money and enhance productivity

## Braconier Saves Time, Money with Obvious Choice for New Viega Headquarters

*Viega MegaPress, ProPress Cut Installation Time, Minimize Fire Risk*



It is no surprise that Viega products were used for Viega's new headquarters, but Braconier President Tom Stone added, "The number-one reason we use Viega is because when you install, you're done. There are no warranty callbacks, no leaks."

While it is no surprise that Viega chose to put its own products into its newly constructed building, Braconier Mechanical and Plumbing Services said using Viega products was a good option for them, too. "We reduced the manpower needs on this project by using Viega. That's a big advantage of MegaPress—we can have a smaller crew and still stay on schedule," said Tom Stone, president of Braconier.

Viega's new North American headquarters building takes full advantage of its own state-of-the-art products, including radiant heating, snowmelt for outdoor walkways, and touchless bathroom fittings. The ease of use

continued on page 24

## Elliott-Lewis Installs Resurrected EVAPCO Cooling Tower for Historic Philadelphia Residence

*Recreating Discontinued Model Makes for a Smooth Installation*

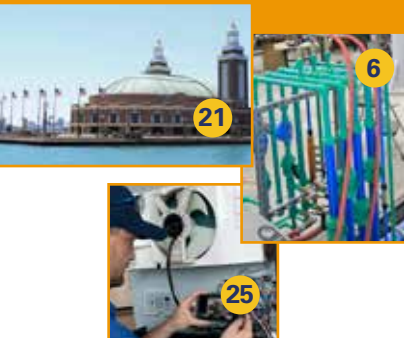
Downtown Philadelphia's Benjamin Franklin House needed an HVAC overhaul but, like most historic buildings, had no room to expand. EVAPCO reached into its archives for the specs of the building's original cooling tower and created a more powerful, up-to-date

continued on page 26



To meet the demands of the luxurious Benjamin Franklin House in Philadelphia, Elliott-Lewis Corporation installed a new, energy-efficient EVAPCO cooling tower with increased cooling capacity in the same space as the previous tower.

## WHAT'S INSIDE



Kruse Saves Thousands Using Victaulic BIM and Products .....	3
Hill York and Carrier Collaborate to Save Time, Money .....	4
ACCO Installs Uponor Radiant Rollout Mats to Meet LEED Goals .....	8
Hospital Cuts Costs with Cutting-Edge Daikin Chillers .....	11
CNA Offers Guidance on Limiting Driver Distractions .....	18
AMS Mechanical Keeps Timeline on Track with Sloan .....	21



## 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.

All information in this newsletter was supplied by members of MCAA's Manufacturer/Supplier Council. MCAA is not responsible for any claims made regarding products or services mentioned.

### Adrienne Breedlove

Director, Content

### Jan Grillo

Director, Membership Engagement

### Melissa Funyak

Executive Director, Executive & Conference Services

### Dana Trevas

Consultant

1385 Piccard Drive  
Rockville, MD 20850-4340  
301-869-5800  
Fax 301-990-9690  
e-mail [abreedlove@mcaa.org](mailto:abreedlove@mcaa.org)  
[www.mcaa.org](http://www.mcaa.org)

MANUFACTURER / SUPPLIER COUNCIL

**MCAA**

Adding Value to Your Supply Chain



## Putting Your Money Where Your Mouth Is

In this issue of *Smart Solutions*, see how MCAA supplier partners are putting their products to the test by having them installed in their own buildings. Using Viega products on Viega's new building, Braconier Mechanical and Plumbing Services reduced the manpower needed considerably. For Carrier's new headquarters, Hill York Service Company's expertise in installing Carrier products helped the company achieve LEED® Platinum certification.

### Taking Tech Further

Read how contractors are using new technology to improve business. Arista Air Conditioning Corporation is arming technicians with the cloud-based XOi mobile app and letting customers see what the techs see. Using Key2Act's Connect, Harris Company gathers data from building controls and sensors to identify problems much faster than traditional troubleshooting methods.

Jackson & Blanc digitized its timekeeping process with Rhumbix Core, saving about \$52,000 per year in labor costs alone. Just two years after implementing STRATUS software from GTP Services, University Mechanical Contractors, Inc. saved hundreds of thousands of dollars in packaging, spooling, and cutting costs. Complete Temperature Systems slashed office staff time by 14 hours per week using MobiliForms from iBusiness Technologies. MMC Contractors simplified its day-to-day labor management tasks with LaborChart, freeing up workers to focus on other activities.

### Ease and Efficiency

Our supplier partners can make installation easier and provide you with efficient solutions. EVAPCO created an updated version of a building's original cooling tower for the same space, making installation easier for Elliott-Lewis Corporation. To rebuild a facility after a roof collapse, Warner Mechanical LLC used Aquatherm polypropylene pipe because it was easier and faster to install than traditional welded pipe. ACCO Engineered Systems installed 138,000' of tubing with Uponor's Radiant Rollout™ Mats in five months—much faster than conventional PEX rails or tie-down methods would have required. Sloan's pre-assembled plumbing fixtures saved AMS Mechanical Contractors installation time and helped it meet clients' energy efficiency goals. A New Hampshire hospital upgraded to Daikin chillers, cutting energy use in half and reducing maintenance costs.

### Expertise on Tap

This issue also draws on the considerable expertise of our supplier partners. Learn how Victaulic's building information modeling saved Kruse Corporation nearly \$20,000 on a renovation project. IFS offers advice on selecting the best field service management software. NIBCO describes how to design an efficient hydronic system. Jay R. Smith Mfg. Co.® provides tips for specifying a trench drain system. CNA explains what you can do to prevent deadly distracted driving. I hope you'll find a lot to learn from *Smart Solutions*!

*William Hughes*

William Hughes, Chair

# Kruse Saves Thousands Using Victaulic BIM and Products

## Contractor Meets Tight Timeline for Renovation of Wichita's Union Station

Victaulic's building information modeling (BIM) expertise saved Kruse Corporation an estimated \$15,000 to \$20,000 on the renovation of Union Station in Wichita, KS, while the streamlined construction approach reduced build hours from 4,000 to 3,100, yielding an additional \$40,000 in labor savings. The combination of BIM services and Victaulic products simplified coordination, reduced risks during construction, and cut the manpower needed for this project in half.

### Laying the Foundation for Project Downtown

Project Downtown is Wichita's master plan for developing the city's urban core to increase the community's quality of life and encourage regional economic growth. It focuses on key stretches of the downtown area and includes both private and public investment. Union Station, a two-story train depot built in the early 1900s as a central railway station, was repurposed as a commercial office building when the city ended its passenger rail service in 1979. Today, it is central to the city's ambitious urban renewal project.

In September 2018, Kruse was selected to renovate the hydronic piping system in Union Station. The project schedule was ambitious—even without considering the unknowns of a building more than a century old and the fact that work would have to take place during the winter holidays. With a move-in date of April 1, 2019, for the new commercial tenants, Kruse was determined to meet the exacting schedule, so they reached out to Victaulic and laid out the requirements and timeline.

Before construction could begin, it was important to understand



Collaborating with Victaulic's Virtual Design and Construction team to use BIM to schedule the work resulted in significant time savings, allowing Kruse installers to complete 80 percent of the basement in just a few days.

the workspace. Union Station's mechanical room was in the unlit basement, which meant there was limited space. The area was only 6' high, and the contractor knew at the outset there was insufficient space for the hydronic system. Excavation would be necessary before work could begin, so it was critical to understand the layout, potential interference from existing structures, and the proposed placement of the new system components.

Site assessments usually begin with a sketch made from physical measurements, a process that takes a lot of time and can be flawed. Victaulic's Virtual Design and Construction (VDC) team used a FARO 3D scanner to assess the basement instead. Using the scanner allowed the team to quickly compile measurements of the room and the existing piping network while eliminating the need to go back to the jobsite for a missing measurement. As the project progressed, the scans streamlined design conversations, because the

model and the scan could be overlaid to ensure the designs were aligned with the space. While traditional site assessment methods would have taken two to three days, the digital scan was completed in a single day.

The scan verified that the planned installation matched the room dimensions and confirmed which areas needed to be excavated. The data, made up of more than 40 scans, fed into the BIM software, ensuring the correct dimensions were used. As a result, designers from Victaulic, Kruse, and other trades were aware of any potential interference as components were assembled for the hydronic piping systems.

### Coordinating in Real Time

Using Victaulic Tools for Revit®—a pipe-routing software add-in—the VDC team drew all piping sized 2.5" and larger and submitted the drawings to Kruse. Once everything was approved, Victaulic began drawing equipment and piping schematics

continued on page 23

# With Close Collaboration, Hill York Saves Time, Carrier Saves Money

## Carrier's New Global Headquarters Achieves LEED Platinum Status

Hill York Service Company worked closely with Carrier Corporation for nearly a year before construction began on Carrier's new headquarters, and Hill York's input saved Carrier \$1 million. Moreover, Hill York introduced a novel approach to installing Carrier's chilled induction beams that allowed the contractor to save time on the project's tight schedule. Thanks in part to Hill York, Carrier's new headquarters also met stringent indoor air quality (IAQ) standards and received LEED® Platinum certification.

### Building a Model Facility

When Carrier was building a world-class, first-of-its-kind facility, selecting the right HVAC contractor was key. As the new global headquarters for Carrier—the inventors of modern air conditioning—the Center for Intelligent Buildings in Palm Beach Gardens, FL, required a high-caliber contractor to install and configure the HVAC equipment that Carrier designs and manufactures. Carrier chose Hill York, an EMCOR Company based in Ft. Lauderdale.

Hill York, founded in 1936, designed and installed the first air conditioning systems in Miami Beach hotels

after World War II. It has since played a key role in ensuring that premiere Florida facilities achieve indoor comfort and energy efficiency. “Historically, Hill York has worked closely with Carrier to deliver the best solutions and pricing,” said Jeff Phillabaum, Hill York's president.

### Products in Action and on Display

Completed in 2018, the 224,000-square-foot building was designed to showcase new technology for customers from around the world. The building reveals the unseen, putting the most advanced integrations of Carrier's solutions and services in action and on display.

Every product displayed is in use somewhere in the building, and visitors can see how they function in real time. The building was designed specifically to demonstrate what is possible in the building technology space. Critical building technologies—typically hidden in mechanical rooms, behind walls, or on rooftops—are openly displayed.

### Hill York Showcases Innovative Solutions

“The Center for Intelligent Buildings is truly iconic,” said Phillabaum. “It

was one of those rare projects that, for HVAC professionals, comes along once or twice in a lifetime. It allowed us to showcase our full range of innovative solutions and craftsmanship on a world-class stage.”

Hill York's solutions and uncompromising quality not only met the stringent technical and comfort specifications, but also substantially reduced costs. “Our recommendations helped contribute to a \$1-million savings on the project and included a final design that used 350 chilled induction beams,” said Phillabaum.

But Hill York would take the chilled induction beams installation one step further.

“All the Carrier ActivAir™ units were set in place prior to the ceiling contractor's actual installation,” commented Anthony Scalone, Hill York's onsite project superintendent for the installation. “We worked very closely with the ceiling contractor to confirm each unit's precise measurements and position. This proved to be a critical and successful part of the puzzle,” he noted.



**Left:** To meet the tight construction schedule for Carrier's state-of-the-art headquarters, Hill York recommended setting Carrier's ActivAir chilled induction beams in place before the ceiling contractor's installation—a dramatic timesaver.

**Right:** Hill York's recommendations contributed to a \$1 million savings on Carrier's building project and included a final design that used 350 chilled induction beams.



**Left:** Hill York “worked very closely with the ceiling contractor to confirm each unit’s precise measurements and position. This proved to be a critical and successful part of the puzzle,” said Anthony Scalone, Hill York’s onsite project superintendent for the Center for Intelligent Buildings’ installation.



**Right:** To shave time off the installation timetable, Hill York prefabricated offsite many of the piping components that typically would have been done onsite for Carrier’s new headquarters.

Scalone continued, “One of the most significant challenges was the tight schedule of this project, but we knew that getting the chilled beams in position first would be a dramatic timesaver.”

To further shave time off the installation timetable and help their overall cost-reduction strategy for the building owner, Hill York prefabricated offsite many of the piping components that typically would have been done onsite. During the construction phase, Carrier Rentals supplied five portable packaged units ducted directly into the site throughout construction.

The Center for Intelligent Buildings illustrates the value of collaboration and communication between Hill York and the in-house engineering staff. “We worked very closely with engineering, both during the construction phase and through the commissioning of the project,” said Scalone. “Furthermore, we enjoy an ongoing relationship with them.”

### *Taking Technology to the Next Level*

Visitors to the building can use augmented reality—a technology that

superimposes a computer-generated image on a user’s view of the real world—to see the airflow in the four-story entryway. Building tours are customized to the visitor, so an HVAC consulting engineer and a security professional would receive different content relevant to their areas of expertise.

In the Customer Experience Center, solutions are highlighted across all product segments so that customers see products at work in the building. A prominent residential space built to

look like an actual home shows how HVAC, fire, and security products all connect. Here too, Hill York installed all of the HVAC components.

### *Efficiency and Productivity*

The Center is designed to meet IAQ conditions found by Harvard University researchers to double occupants’ cognitive function test scores, compared with a conventional building environment. “The building owners were adamant about meeting the stringent IAQ standards, and we

continued on page 28



With Hill York’s assistance from planning through installation, Carrier’s Center for Intelligent Buildings achieved LEED Platinum status. Hill York President Jeff Phillabaum takes prospective clients on tours of the building to illustrate the level of craftsmanship, skill, and expertise involved.

# Warner Mechanical Uses Aquatherm Pipe to Help Manufacturer Rebound Quickly from Roof Collapse

A roof collapse could have knocked IVP Plastics of Washington, IL, out of commission for a long time, but Warner Mechanical LLC, of Edwards, IL, used Aquatherm polypropylene pipe in the rebuild, helping the manufacturer get back to business quickly. The heat fusion process made Aquatherm piping easier and faster to install than traditional welded pipe, saving Warner Mechanical time.

## *From Disaster, New Opportunities*

IVP Plastics was founded in 1953; today, it is a leading provider of customized plastic parts for the

agricultural, heavy equipment, and automotive industries. On March 24, 2018, a late-season storm caused a portion of the roof to collapse at the IVP Plastics headquarters, a 20,000-square-foot, clear-span building. Fortunately, no one was injured. Although damage to the building itself was significant, a crane rail running the length of the ceiling spared much of the company's manufacturing equipment from serious damage.

About two weeks after the collapse, Jeff Frieden, president of Warner

Mechanical, visited the damaged manufacturing facility. "We sat down with the IVP Plastics team, the general contractor, and the insurance company, and the bottom line was that time was of the essence," Frieden said.

The decision was made to replace the damaged building with a new one, and IVP Plastics requested that Warner Mechanical design the process piping system for the 16 machines that would be moved into the new building. The old process cooling system had used 6" PVC pipe running overhead at the ceiling. The company said it preferred a system that would place the pipe in mechanical trenches behind each run of machines.

Frieden knew immediately that Aquatherm would be a good choice for such a piping application, and IVP Plastics' management agreed. Warner Mechanical used Aquatherm SDR-11 MF Blue Pipe® for the process chiller piping: 1,575' of 4" pipe, 247' of 3" pipe, and 156' of 1 1/2" pipe. They also used 507' of 1" Aquatherm Green Pipe® for clean-up water.

## *Plastic Pipe Eases Maintenance Concerns*

The system designed by Warner Mechanical called for most of the pipe to be located in trenches under the equipment in the concrete floor of IVP Plastics' new manufacturing facility. Fittings emerging from the trench covers allow the manufacturing machines to be hooked up easily whenever the process line is reconfigured. The company's process chiller provides 40° F cooling water to the machines, with return water flowing through the Aquatherm pipe at up to 100° F.



Following a roof collapse at its headquarters, IVP Plastics needed a new facility—fast. Warner Mechanical said using Aquatherm enabled them to cut the time it took to complete the system, compared with a welded pipe solution, allowing IVP Plastics to restart production quickly.

“We decided to do things differently at the new facility,” explained Joe Camp, engineering manager at IVP Plastics. “We wanted to put the process plumbing in the floor, and it was Jeff’s recommendation to use the Aquatherm pipe for that. It will be nice to not have pipes sweating and dripping, which was a problem when we had the PVC overhead.

“Another nice feature of the Aquatherm pipe was that we could get longer continuous lengths of pipe, so we had fewer joints to deal with,” Camp added.

The clincher for IVP Plastics, according to Camp, was Aquatherm’s virtually leak-free performance, backed by an extensive and comprehensive 10-year warranty because it was installed by Warner Mechanical’s Aquatherm-trained technicians.

“There is definitely peace of mind that comes from investing in a product with a warranty like that,” Camp said.

#### **Perfect Pipe for Plastics Pros**

For Warner Mechanical, an undeniably interesting aspect of this project was installing Aquatherm in a plastics manufacturing facility. “As we discussed this project with IVP Plastics, the owners were very pleased to see the range of temperatures and pressure ratings that were available to them,” Frieden said. “After our initial conversations, the owners researched it themselves and were very impressed by what they saw. When you’re working with a plastics company and they’re

*“Once [IVP Plastics] saw the benefits of the heat-fusion welding process, they had total confidence in the durability of the product. They could understand when it’s properly heat-fused there would be no leakage problems.”*

—Jeff Frieden, President, Warner Mechanical



Warner Mechanical found that Aquatherm polypropylene pipe was ideal for the new IVP Plastics facility, and it is easier and faster to install than traditional welded pipe, saving the contractor time and money.

researching plastics, you’re playing with experts.”

Once the project began, the installation of the Aquatherm pipe attracted a great deal of attention from IVP Plastics’ personnel. “The engineers were watching us put this in, and it really intrigued them—being a plastics company—that we were putting this thermoplastic piping in their building,” Frieden said.

“Once they saw the benefits of the heat-fusion welding process, they had total confidence in the durability of the product,” Frieden continued. “They could understand when it’s

properly heat-fused there would be no leakage problems.”

Frieden added it was much faster and easier to heat-fuse the Aquatherm pipe and place it in the trenches than it would have been to weld metal pipe. “I think any time you’re in a process where you would typically turn to welded piping, you should look at the time savings and durability of Aquatherm pipe,” he said. “For this customer, using Aquatherm enabled us to reduce the time it took to complete the system and allow the owner to start production.”

“I also really think it’s a great choice any time you’re in a buried or constrained space,” Frieden concluded. “It’s easier to work with than metal pipe, and it offers a big advantage in peace of mind. You know you can walk away from it and when the job’s complete and not worry about leaks.”

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



Delta Electronics (Americas) originally specified a conventional radiant tubing heating and cooling system for its project to help meet LEED Platinum status, but ACCO Engineered Systems suggested Uponor's Radiant Rollout Mats for a faster, more efficient, consistent installation.

## ACCO Installs Uponor Radiant to Achieve LEED Platinum in HQ Expansion

### Rollout Mats Speed Up Installation Time

Delta Electronics (Americas) originally specified a conventional radiant tubing heating and cooling system for its headquarters expansion in Fremont, CA, to help meet LEED® Platinum and net-zero energy building standards, but **ACCO Engineered Systems** suggested **Uponor's** Radiant Rollout™ Mats for a faster, more efficient, consistent installation. ACCO crews installed 138,000' of tubing with the Radiant Rollout Mats in five months—much faster than the time required for conventional PEX rails or tie-down methods.

#### Committed to Green Building

Founded in 1971, Delta's mission is "To provide innovative, clean and energy-efficient solutions for a better tomorrow," and its headquarters is a shining example of creative thinking paired with a desire to protect the environment. The company takes advantage of the latest in advanced energy-efficient research and product development, and the American headquarters is their 13th green building worldwide.

ACCO designed the radiant heating and cooling system using the mats

for the 178,000-square-foot campus, which includes a 38,000-square-foot warehouse. The radiant slabs are the primary cooling and heating systems in the campus buildings, so it was crucial for the design to ensure

comfort as well as the desired energy efficiencies.

#### Planning Pays Off

ACCO had recently completed several large commercial projects

*"For large, open circuits, the installation of [Uponor] Radiant Rollout Mats is much quicker than laying down regular tubing."*

—Jonathan Bell, Project Manager, ACCO Engineered Systems



ACCO crews installed 138,000' of tubing with Uponor's Radiant Rollout Mats in five months at Delta Electronics (Americas) Fremont, CA, headquarters—much faster than the time required for conventional PEX rails or tie-down methods.



using the mats, including the Pier 15 Exploratorium in San Francisco and the Sacramento Municipal Utility District building. For the Delta project, ACCO spent a considerable amount of time up front designing the slab construction, the sequence of the slab construction, and how the mats would be fabricated to align with the installation process. “We eliminated a lot of potential problems up front—lessons that we learned on other projects,” said Jonathan Bell, ACCO project manager.

Three dedicated crew members plus one runner installed 138,000' of tubing with the Radiant Rollout Mats in five months—much less time and labor than using conventional PEX rails or tie-down methods would have required. The installers needed a bit of onsite training to get up to speed, and the first couple of circuits went in a little slower while workers learned efficient, effective ways to speed up the installation. “But it didn’t take long for the crew to have a full understanding of the processes, and they quickly picked up the pace for the rest of the installation,” Bell said.

“For large, open circuits, the installation of the Radiant Rollout Mats is much quicker than laying down regular tubing,” said Bell. “And the prefabricated and labelled mats allow for more efficient material handling onsite, which is very important in these large installations.”

Uponor’s Radiant Rollout Mats were just one of the energy-efficient technologies that Delta used to achieve LEED Platinum status. The company also earned a First Place Honor Award in the National Institute of Building Sciences’ 2018 Beyond Green™ High Performance Building and Community Awards.

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



CTS Field Tech Jason Allen proudly shows his favorite tool—MobiliForms—which allows him to include pictures and audio in his work orders and is saving office staff 14 hours per week in processing invoices.

## Complete Temperature Systems Slashes Office Staff Time with MobiliForms

**Complete Temperature Systems** of Chicago cut office staff time by 14 hours per week using MobiliForms from **iBusiness Technologies** to help streamline their operations. Before, field work orders, service tickets, and preventive maintenance checklists had been driven around, which delayed invoicing and created the possibility of getting lost. Now, information streams in real time, allowing for same-day or next-day invoicing. CTS’ government contracts require specific work acknowledgement letters; with MobiliForms in place, they are signed onsite, stored, and shared digitally. MobiliForms also allows techs to capture pictures and sounds on work orders.

CTS achieved these benefits without changing their backend software. Service Supervisor Jason Churchill said, “Invoicing staff no longer has to hand-input illegible information from paperwork, saving approximately 14 hours per week. Our customers also really appreciate digital conveniences.”

Having heard about MobiliForms, CTS staff took a close look while attending the annual MCA of Chicago

Tech Day. According to International Data Corporation research, U.S. business annual spending on mobile is \$300 billion and growing. Industries like construction—where billable

*“Invoicing staff no longer has to hand-input illegible information from paperwork, saving approximately 14 hours per week.”*

—Jason Churchill,  
Service Supervisor, CTS

hours are paramount and labor costs continue to increase—are seeing the fastest returns on investment in mobile technology.

MobiliForms run on Apple’s iPad, a top choice for contractors seeking battle-tested mobile devices. Apple’s underlying iOS deployment platform simplifies managing devices and streamlines content distribution.

For more information, visit [MobiliForms.com](http://MobiliForms.com), call Steve Metzman at 215-850-5565, or email him at [metzman@iBusiness-Tech.com](mailto:metzman@iBusiness-Tech.com).

# IFS' Contractor Checklist for Selecting a Field Service Management Application

Lacking a broad and powerful field service management application, trade contractors can find themselves facing a variety of business challenges. However, if your contracting business gets its operations processes right by leveraging comprehensive field service management software like that available from **IFS North America**, you can turn that challenge into an asset. Here are nine essential functional capabilities trade contractors need in their field service management software to make the most of service revenue opportunity.

## **Work Order Initiation**

The execution level of field service is the work order, the tool used to assign the service task to a technician or subcontractor, provide instructions, define a scope of work, and record work performed. Modern field service software must be able to initiate a work order through an omnichannel platform. (See IFS' customer engagement solutions as an example.)

## **Contract Management**

Contract management functionality is essential to safeguard the customer experience while avoiding penalties for underperformance. It also helps keep track of what services and parts the contract covers, which may carry an extra cost. More and more service contracts are customer-specific, rather than standard agreements that apply broadly to all customers. This places a premium on field service software that tracks the specific deliverables and then operationalizes the terms of the contract.

## **Scheduling and Dispatch**

Scheduling optimization puts management in control of the field service workforce by generating an optimized route for the day. Modern field service solutions will have

advanced scheduling options, like episodic and dynamic scheduling. Options like these allow technicians information on one or two jobs at a time so that they are not setting their own route and schedule, which can be inefficient. Using scheduling optimization, service organizations have realized 40-percent improvement in technician productivity and more than 20-percent improvement in service-level-agreement compliance and on-time service delivery.

## **Quote Generation**

Generating quotes is important not only for customer service reps in the back office taking inbound calls, but for technicians in the field so they can sell additional work, parts, or even service contracts. That information must be available in the system to support adequate pricing on the go.

## **Inventory Management**

Inventory management is one functional area neglected in many field service software applications. A lack of the required part, though, is the single largest factor preventing contractors from improving their first-time fix rate. You can get a technician to the customer site quickly, but if he or she does not have the parts required, or if that part is out of stock, you will be wasting resources on return trips while simultaneously damaging the customer relationship.

## **Work Order Execution**

Once a service technician is assigned to a job, that technician will need access to the work order. Ideally, access to this information is on a feature-rich mobile interface, with real-time connectivity to data of the full-service history, asset lifecycle, and repair documentation—all over a simple web connection. Hiring and retaining employees is a challenge for many trade contractors,

so a more powerful mobile interface that provides guidance to the technician may substantially improve productivity of a new or revolving workforce.

## **Subcontractor Management**

If you involve subcontractors in your aftermarket service lifecycle, your field service software must, again, enable them to receive and complete work orders. It will need to capture broad information on their capabilities, background, skill sets, available equipment, and past performance so you can automate the process of involving them in your aftermarket service contracts.

## **Closing and Invoicing**

Invoicing is typically handled in an enterprise resource planning (ERP) or other financial system. However, your field service management software should be able to capture all invoicing details from the work order and customer-specific contracts (such as warranties or entitlements) and integrate with your ERP system so that you have a single source of truth when it comes to billing your customers.

## **Analytics**

One other reason to ensure that field service management software contains adequate invoicing functionality is for analytics. The data contained in sales and field performance offers visibility in operational effectiveness, and when paired with key performance indicators, you will have actionable insights to make improvements and the potential to create revenue opportunities.

(This article is a shortened version of IFS' full report. You can find a link to the full report in the online version of this article at [MCAA.org](http://MCAA.org).)

To learn more, visit [www.IFSworld.com](http://www.IFSworld.com).

# Hospital Cuts Energy and Maintenance Costs with Cutting-Edge Daikin Chillers

When Southern New Hampshire Medical Center in Nashua, NH, started having problems with its antiquated chiller system, the facility was eager to make an upgrade and chose Daikin chillers primarily for the energy efficiency. As a result, it has cut energy use in half and reduced maintenance costs.

Keeping patients, staff, and visitors as comfortable as possible is a top priority for any medical center. The HVAC systems “serve the entire building, including operating rooms and patient rooms and general use in the building,” said Alex Finlayson, field supervisor of Daikin Applied’s Boston Service office, explaining the glaring need for new equipment. “They had three non-Daikin centrifugal chillers that were 25 years old [and] that had leaks and control platform issues. The platform wouldn’t support it anymore, so the customer started to look at options to replace the machine.”

### *Investing in Efficiency*

Finlayson gives credit to a diligent administrator for making the right call. “The facility director did his

homework. He compared the competitor’s machines they already had and similar replacements with what Daikin had to offer. The energy efficiency of the Daikin chiller he selected was significantly better.”

“It was mainly energy-based,” Finlayson explained. “That was the reason for investing in these chillers. That, and a magnetic-bearing chiller is certainly a cutting-edge piece of equipment. We got involved and introduced to them our WME magnetic-bearing compressor, which improved efficiency and decreased costs.”

Daikin’s Magnitude® chillers can, in fact, save building owners up to \$4 million over the life of the chiller. Proven through installations all over the world, the oil-free design may reap up to 40-percent efficiency gains and reduces maintenance costs by eliminating the oil, mechanical seals, wear surfaces, and gears.

### *Difficult Installation Stays on Target*

Despite the clear decision, the team faced obstacles in the path to installation. Removing three aging chillers from a hospital basement was not a

### **Chiller One (of Three) Replacement Savings**

- \$300,000 installed cost
- \$110,965 rebate
- Magnetic levitation technology (no oil) = 50 percent lower annual maintenance
- 50-percent energy reduction
- \$55,500 annual savings
- Net payback: 3.6 years

simple task. Fortunately, the chiller project was scheduled alongside several other renovations, including new lighting and a new pump system, which helped make the Daikin project less obtrusive.

Even so, Finlayson said it was still a major undertaking. “It was a very complicated rig to get the old chillers out and the new chillers in.” To fit into the basement space, the chillers had to be disassembled, dropped through a pit to the mechanical room level, reassembled, and installed.

“It was very time-consuming,” said Finlayson. “Long days, 12-hour days to get the new machines down into the basement and the old ones out. It was a year-long project, one chiller at a time.” Still, the project came in on time and under budget. In the end, the hospital had three new, highly efficient Daikin Magnitude magnetic-bearing chillers.

### *Decision Pays Off*

The long-running labor effort paid off. In the two years since the project was completed, the facility has seen improved energy efficiency and a significant drop in mechanical issues. Finlayson said the facility director has been pleased. “The maintenance costs were substantially less as well, because the chiller uses a magnetic-bearing compressor, and he didn’t have to deal

continued on page 28



Southern New Hampshire Medical Center in Nashua chose Daikin chillers primarily for their energy efficiency but has also seen reduced maintenance costs since installation.

## NIBCO's Tips for Designing an Efficient Hydronic System

Designing an efficient hydronic system is no easy task. The needs of each system can vary greatly from one job to the next, although the core elements remain mostly the same. In a typical system, you will usually find a boiler, circulator pumps, an expansion tank, various heat distributors, and accessories such as vents, valves, and drains. Selecting the right components for the best installation, servicing, and control of the system and its equipment are key to the efficiency of the job.

These are things to look for when designing a modern and efficient hydronic system:

1. Starting at the boiler, consider a manifold with integrated shutoffs and drains to simplify installation and service of the primary heating loop. This solution combines closely spaced tees with isolation valves to (1) achieve hydraulic separation for the heating loops, (2) isolate the circulator pump, and (3) purge the system. Using a manifold with the right piping kit can save an impressive 261 minutes of labor, eliminate 29 leak paths, and replace 34 individual components. For combination boilers or tankless water heaters, choose a service valve kit that combines union-threaded isolation valves for the hot-water outlet and cold-water inlet with high-flow purge drains and a port for the required pressure relief valve. The service valve kit in this installation saves 108 minutes of labor, eliminates 12 leak paths, and replaces 14 components.
2. For the system pumps, choose a uni-flange ball valve that connects to the circulator pump at one end and the system piping at the other. It enables the user to isolate the pump for service, allowing virtually no air into the system upon replacement. Optional features include a removable rotating flange, slotted bolt holes for high velocity pumps, a round flange for variable speed pumps, and a multifunction high-flow hose drain. Choosing this forged brass alternative to field assembly can save up to 63 minutes of labor, eliminate seven leak paths, and replace eight components.
3. At the expansion tank, three-way ball valves can be installed to address the various needs of the tank. These valves are designed to allow the user to easily install, isolate, drain, or replace the tank, as well as connect the system to the supply feed. It also provides a connection to an air separator, which separates and vents trapped air from the system via a unique stainless-steel coalescing medium. This single valve can save 54 minutes of labor, reduce six leak paths, and replace seven components.



Use a uni-flange ball valve to isolate pumps for service.

4. Heat distribution methods can vary widely, from standard equipment such as baseboard heaters and radiators to premium installations such as in-floor heating and snowmelt systems. Use thermostatic mixing valves on any of these water distribution systems to ensure that the fluid is delivered to the device at the appropriate temperature. With eight end connections and optional union temperature gauge and isolation valves, thermostatic mixing valves can be customized for any installation.
5. Within the heating loops, some unique products on the market can control flow between primary and

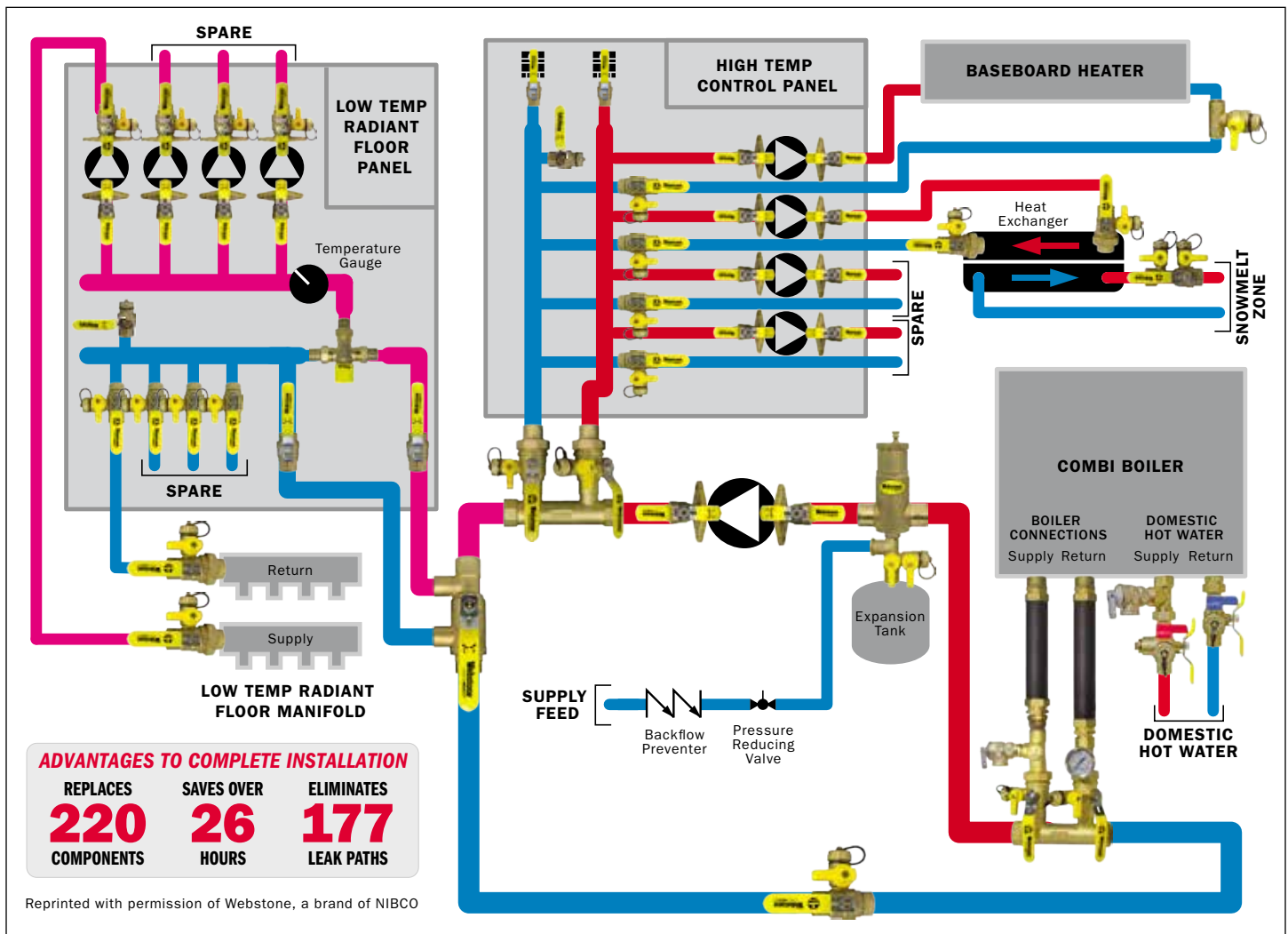
secondary zones. One such product is a valve that places a ball valve between two closely spaced tees—a configuration impossible to achieve using off-the-shelf components. For optional loops such as the snow-melt zone, look for products that assist with routine maintenance of the fluids. For the snowmelt zone, for example, the loop is outfitted with a three-way ball valve that isolates the flow between two independently actuated hose drains, allowing the user to simultaneously purge and fill the system. It saves 54 minutes of labor, eliminates six leak paths, and replaces seven components.

- The remaining needs of the system can vary but mostly depend on shutoffs and drains. Combination ball/drain valves can be used anywhere the user needs to isolate and drain a portion of the system. They can save up

to 45 minutes of labor, eliminate five leak paths, and replace six components. They can also be adjusted to drain from either side of the ball. For more simplified draining needs, a T-style drain can be installed anywhere a drain is needed that does not require isolation.

Hydronic systems have changed over the years. Many innovative products, such as NIBCO's Webstone® valves, save labor, space, and leak paths. When designing your next hydronic system, consider the newest valve innovations available. In a complete installation, valve selection is essential to having a modern and efficient hydronic system. With the right products, you can expect to replace 220 components, save over 26 hours of labor, and eliminate 177 leak paths.

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



In a complete installation, valve selection is essential to creating a modern and efficient hydronic system.

# Key2Act's Connect Gives Harris Company New View of Buildings

## Data and Mapping Allow Contractor to Find, Fix Issues Fast

Using Key2Act's Connect, Harris Company of St. Paul, MN, gathers data from building controls and sensors, then uses that information to identify problems much faster than traditional troubleshooting methods, which can take hours or even days. With Connect, a cloud-based solution, Harris technicians have eyes into their buildings that they have never had before—so they can find and fix issues quickly. Connect data can also reveal trends that allow techs to anticipate problems before they happen.

### Seeking Connected Building Solutions

In 2018, Harris was looking to differentiate itself from the competition. Connect's affordable pricing, along with its ease of deployment and use, helped the solution rise to the top of Harris's list, said Harris Vice President of Service Bob Swanger.

"The ability of Connect and its MiniAgent devices to connect into buildings easily and begin streaming data, and sort of configuring and

mapping those points through, made a huge difference for us," Swanger said. "We wanted something that would be easy to deploy. We don't want to have to have a technical expert, necessarily, in every location.

*"[Connect from Key2Act is] going to allow the technicians to be more efficient and identify more issues."*

—Brent Robertson, Data-Driven Solutions Manager, Harris

We were convinced that Key2Act would support us in the adventure. And they have so far."

According to Swanger, Harris's customers are looking to accomplish four things:

- Extend the life of the physical assets in their buildings
- Keep buildings comfortable
- Prevent downtime and failures

- Operate efficiently when it comes to energy use

"We were looking at connected building solutions in that spectrum of 'How do we help the customers accomplish those four things?'" Swanger said. "Anything that helps us deliver on that better is going to position us to be a better solution for them."

### Pinpoint Problems Early

The first property Harris hooked up to Connect was the company's own headquarters building in St. Paul. The two-story structure, constructed in 1997, includes about 34,000 square feet of office space and another 36,000 square feet of warehouse and shop space.

Once the building was connected and began trending data, the Key2Act Client Services team reviewed the findings with Harris. Key2Act Optimization Engineer Scott Whyte found several opportunities for improvement within the building, starting with some demand-side energy savings opportunities involving fan scheduling. Connect also exposed the fact that the main boiler plant was not operating as originally designed, but with a few tweaks to the system, Harris could optimize the plant's operation, leading to better control and a more energy-efficient system overall.

Whyte also found multiple issues related to sensors. Some sensors were not reporting data, some were locked in a certain state, and others were not resetting properly. Specifically, several outside air sensors were not reporting properly, which meant that the building's freeze protection could have been compromised. In Minnesota, that is never a good thing.



Key2Act Optimization Engineer Scott Whyte reviews data from a Harris site to identify opportunities for system improvements. Harris uses Key2Act's Connect system to gather building data for troubleshooting, saving technicians time.

The clear, concise information delivered by Connect gave Harris the ability to identify issues that the company would otherwise never have known about until a failure occurred. The Connect Dashboard allowed Harris to prioritize which issues and related pieces of equipment the company should tackle first, before even getting to the job, saving time and money.

### *Tech Benefits Customers and Contractors*

Harris has since implemented Connect at several customer-owned facilities. Based on early experiences, Harris has identified a number of benefits the company expects will continue. For example, “It’s going to allow the technicians to be more efficient and identify more issues,” said Harris’s Data-Driven Solutions Manager Brent Robertson.

Adopting a cutting-edge technology like Connect can also help mechanical service providers attract and retain technicians. “I think companies that don’t embrace technology are just going to get left behind,” Robertson said. “Because the younger generation, they embrace technology. They’re going to want to work for a company that is using technology. Those that do things the old standard way, they’re eventually not going to have talent.” Swanger is looking forward to leveraging Connect’s capabilities to create a superior experience for Harris’s customers. Most other mechanical service providers seem to be using connected services mainly to benefit themselves. “It’s largely being used to the advantage of the contractor or the service provider, and not so much to the advantage of the customer. I think that’s a missed opportunity,” Swanger said.

“We’re very early, but I think it will have a profound impact.”

*For more information, visit [www.key2act.com](http://www.key2act.com).*

## Jackson & Blanc Saves Thousands by Deploying Rhumbix Core Digital Solution

California-based Jackson & Blanc digitized its timekeeping process with Rhumbix Core, saving an estimated \$52,000 per year in labor costs alone. The company’s commitment to adopting innovative technologies is well-known, but adopting a new technology can sometimes be costly and require overcoming hurdles to implementation and adoption. Jackson & Blanc realized that technological advancements and social changes force companies to evolve—or fall behind.

The company’s challenges were two-fold: solve the inefficiencies and countless hours associated with manual timekeeping and gain broad buy-in and adoption with an automated approach. Before they brought in Rhumbix, J&B’s existing timekeeping method was done manually—100-percent pen and paper.

The process would begin each Monday with the team’s superintendent reviewing hours logged on various sheets of paper, then manually entering the data into an Excel spreadsheet. With a craft workforce approaching 125 employees, it became a marathon exercise that took about 10 or more hours per week. Additional time was spent investigating inconsistencies and correcting errors.

Jackson & Blanc was eager to address the problem. The management team wanted an easy-to-use solution that their extended team would quickly embrace and apply. A brief product demo of Rhumbix Core led to a month-long product trial. The company was quick to expand its list of software testers, and it included a cross-section of users, from tech-savvy to tech-challenged. Within three months, Jackson & Blanc deployed a digital timekeeping solution, stopped using paper, and fully embraced Rhumbix Core at all levels.

“It can be challenging to get our more veteran employees on board with any kind of change,” said Daryl Bauer, construction operations manager. “But this was different. It was so, so easy. Everyone embraced it.”

*“Once we were introduced to Rhumbix, the decision was easy. The results were immediate.”*

—Daryl Bauer, Construction Operations Manager, Jackson & Blanc

Today, the team bypasses hefty, error-prone paperwork and focuses on what really matters: building. The digital solution has led to more consistent time reporting from foremen and more accurate timesheets overall, seamlessly connecting the field and office.

“Once we were introduced to Rhumbix, the decision was easy. The results were immediate,” said Bauer.

Jackson & Blanc found Rhumbix to be user-friendly and intuitive, ensuring broad user adoption and satisfaction. It simplifies their work and saves them time. What used to take 10 hours a week per foreman, now takes only 1 hour per week, so Jackson & Blanc saves about \$1,000 per week in labor costs—a significant savings of \$52,000 per year.

“The Rhumbix team is outstanding. Their support and flexibility are unmatched,” Bauer noted.

Learn more by downloading the Rhumbix ebook, *Data Driven Construction: Evaluating Digital Solutions for Your Jobsite*.

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

# 10 1/2 Tips to Properly Specify Your Trench Drainage System

Learn from Jay R. Smith Mfg. Co.'s Years of Experience

With years of manufacturing all types of trench drain under their belts, engineers at Jay R. Smith Mfg. Co.<sup>®</sup> have come up with a list of 10 tips—and a bit extra—to assist you in specifying a trench drain system. By applying the following tips during design, you will avoid situations that might cause headaches both during and after installation.

## 1. Identify the anticipated traffic traveling over the trench drain.

Areas such as an airport runway will have significantly higher load requirements than areas devoted to pedestrian traffic and, therefore, require different materials. That much is obvious, but you also want to consider the direction a vehicle will be approaching the trench drain and the

speed that traffic will be moving when it drives over the trench. Forklifts running parallel to the drain versus perpendicular are going to cause very different wear and tear on the drain, as will tractor trailers slowly backing up to a loading dock versus those speeding over the trench at 50 mph.

**Bonus Tip:** Even pedestrian traffic has its own set of considerations—footwear. If you are specifying trench drains for shopping centers, office plazas, or similar locations where people might be sporting pointy heels, consider “heel-proof” grates.

## 2. Calculate the length and width of the catchment area.

Calculating the catchment area seems pretty straightforward, but sometimes

the catchment area can be deceiving. Say you have a parking lot that is 200' by 400'. That is a simple calculation: 800 square feet. However, what if that parking lot is sitting next to a warehouse (200' by 600'), and the rainwater runoff from the roof goes directly onto the parking lot? In this case, your catchment area is actually the combined measurements of both the parking lot and the warehouse roof.

## 3. Consider site restrictions and utilities.

Be sure to consult as-built drawings when calculating trench drain for installation in and around existing buildings. Certain obstructions, such as shallow utilities, can often be relocated and will not have any effect on your system design. Even when relocating utilities is not an option, a shallower, wider trench will often be able to handle the same amount of fluids.

## 4. Identify the outlet position and source and flow rate of the liquid to be drained.

If all you are dealing with is rainwater runoff, you can find your installation area's rainfall intensity charts very easily online. Be sure to check rates for 20-, 50-, and 100-year storms—keeping in mind that 100-year storms, despite the moniker, can happen more frequently than once a century.

Indoor situations often have more factors to consider. For example, what if you were working with a dairy that uses several 2,600-gallon bulk tanks? You will need to find out what the flow rate is when the valves on the tank are opened. You also need to consider not just what those tanks are for—meaning the liquid being stored—but you also want to know how they are being cleaned. For example, brewery tanks hold beer, and



**Left:** Polypropylene Zip Trench with an extra-heavy-duty frame and grate is appropriate for busy loading dock traffic.

**Right:** A Polymer Concrete Trench Drain System is appropriate for extra-heavy-duty hard wheel traffic applications.





Stainless steel was specified for this pool because it is long-lasting, does not harbor bacteria, and can stand up to pool chemicals. A ductile iron grate was selected to prevent bathers from slipping.

they are often cleaned with caustic, which leads to Tip 5.

**5. Determine the concentration of the chemicals to which the system may be exposed.**

Whenever chemicals are involved, you need to know the precise chemical, the concentration of the chemical, the temperature of the affluent, and how long the drain will be exposed to the compound. For example, you might be designing a trench system to be built around an area where there could be battery acid leaking onto the floor. You will want to know whether that acid will sit in the drain for only a couple hours before it is flushed out or sitting all weekend or even for weeks. That information is going to affect the desired material of the trench you specify (more on that in Tip 8).

**6. Determine runoff surface flow characteristics.**

Liquid runs at different speeds across concrete, asphalt, and pavers because of their surface characteristics. The smoother the surface, the faster the fluid will flow. However, that is not the only variable you need to know. You also want to consider how steep or shallow the approach slope is, as well as the length of that slope.

**7. Determine the number, size, and positions of outlets to the drainage system.**

The size and position of the outlets determine the efficiency of the drain, and that information is usually taken into consideration by the design engineer. However, if you are simply replacing or installing a trench as part of a smaller renovation, you need to know the size of the outlet into which the channel is directing the flow. A 4" outlet at the end of the trench could restrict the flow, whereas dropping fluid directly into a catch basin would not.

**8. Match the trench drain material with the application.**

Trench drains are typically made of cast iron, polypropylene, stainless steel, polymer concrete, and fiberglass. Stainless steel trench drains have the best chemical resistance, but you should also look for one that is manufactured with radius-rounded edges, so contaminants cannot get a foothold and grow. That chemical and contamination resistance and the fact that stainless steel can stand up to boiling water make it perfect for kitchens, dairies, and breweries.

If you have steel-wheeled pallet jacks, solid tire fork lifts, or track vehicles such as tanks or heavy construction equipment rolling over your trench,

polymer concrete is probably the material of choice. However, if you are looking for an excellent general-purpose trench drain with optimal flow characteristics, chemical resistance, and a low price point, consider polypropylene.

**9. Specify trench drains appropriate to the area.**

Whether the area you are draining is vast or just complicated, break it down into manageable areas, because insufficient drainage will cause pooling and possibly flooding. If standing water could be an issue—for example, in cold climates where ice could cause someone to fall—work with the manufacturer to find the best solution.

**10. Have a preinstallation discussion with your trench drain manufacturer.**

Before you even discuss plans for how you intend to install the product, consult with your manufacturer on recommended installation techniques. Not having this talk is at the root of most problems MCAA contractors experience. You will end up saving time, money, labor, and quite possibly your back if you do. Manufacturers can even give you recommendations on how to make the job more bearable on a 90-degree day.

**10 1/2. Take advantage of your manufacturer's resources.**

Whether it's resources on the website or technical engineers walking you through everything from specification to installation, be sure to take advantage of what is available from the manufacturer. It is a whole lot smarter and cheaper to use those resources at the very beginning of a project, instead of once the product is already in the ground. If you have questions about the load, hydraulics, or any unusual situations, a manufacturer will be happy to provide assistance and direction.

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

# Limiting Driver Distractions from Cell Phone Use

## CNA Offers Guidance on Employers' Responsibility

Distracted driving poses significant risk to every business that has employees who drive both company-owned and personal vehicles for company business. Common activities that divert attention from the road include texting, most mobile phone use, eating and drinking, reaching for an object, talking with a passenger, and reading navigation systems. According to the National Safety Council (NSC), for the second consecutive year, more than 40,000 people died in motor vehicle crashes in 2017. According to a 2017 NSC public opinion poll, 74 percent rated distracted drivers as a major concern for traffic safety.

Use this guide to assist in developing and supporting a program that helps in the control of driver behaviors, based on statistics about the impact of cell phone use and driver distractions, such as talking and texting. (Go to the NSC's website to download a poster explaining the risks of distracted driving: Hands-Free Is Not Risk-Free.)

### What Is Distracted Driving?

Any activity that could divert a person's attention away from the primary task of driving is considered distracted driving. All distractions endanger driver, passenger, and bystander safety. According to the NSC, distractions now join alcohol and speeding as leading factors in crashes that cause fatal and serious injuries.

### Common Cell Phone Distractions

- Phone calls
- Reading or composing text messages
- GPS
- Social media applications
- Taking photos or videos
- Surfing the web
- Adjusting music
- Watching videos

### Vehicle Crash Statistics

- The National Highway Traffic Safety Administration (NHTSA) states that 94 percent of crashes are caused by human error.

- According to the NSC, an estimated 25 percent of crashes involve cell phones (conversations and text messaging).
- Drivers using handheld or hands-free cell phones are four times as likely to crash.

### Texting

Texting is a distraction that requires all three types of attention—manual, visual, and cognitive. Studies show that using voice-to-text is more distracting than manually composing texts. The NSC estimates a minimum of 341,000 vehicle crashes involved the driver text messaging. According to NHTSA, five seconds is the average time your eyes are off the road while texting. At 55 mph, that is enough time to cover the entire length of a football field.

### Talking

A common misconception about talking on the phone while driving is that use of a hands-free device is a safe alternative to holding a phone to your ear. In 2013 NSC estimated 21 percent of crashes, or 1.2 million crashes, involved talking on handheld and hands-free cell phones.

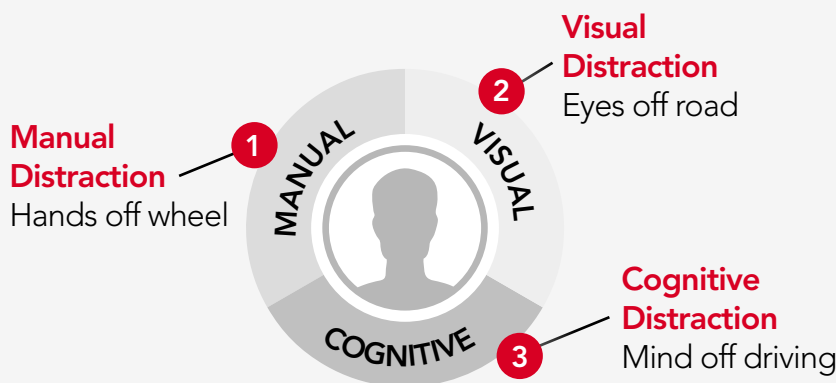
### Company Responsibility

Under the doctrine of vicarious liability, employers may be held legally accountable for the negligent acts of employees committed during the course of their employment. Employers may also be found negligent if they fail to put a policy in place for the safe use of cell phones.

According to the Network of Employers for Traffic Safety, motor vehicle crashes at work cost employers an estimated:

- \$25 billion total;

## Three Main Types Of Distractions



According to the NSC, an estimated 25 percent of crashes involve cell phones (conversations and text messaging).



## MMC Contractors Increases Efficiency with LaborChart

MMC Contractors simplified its day-to-day labor management tasks with LaborChart, freeing up time so workers could focus on higher impact tasks and activities. With labor being the most expensive and valued asset, a good workforce management solution is vital. The company's executive team has seen how LaborChart increased efficiency and alignment across multiple departments.

### *Making the Case for New Technology*

Founded in 1932, MMC Contractors of Kansas City, MO, has offices throughout the country. For decades, they managed their workforce on a whiteboard. Years ago, they transitioned from a whiteboard to a spreadsheet—a big step up that brought new challenges. The most noticeable frustration was the time it took their team to update and maintain the spreadsheet.

*“The ability to keep everyone aligned ... not to mention the ROI from reduced labor waste—it’s a no brainer.”*

—Jim Price, Labor/Operations Superintendent, MMC Contractors

Eventually, MMC Contractors realized it was time to find a more efficient way to manage their workforce. But to change methods for the second time in four years—while simultaneously implementing new accounting software—the company needed to ensure they could make a seamless transition.

MMC Contractors needed a platform that:

- would be easy to use;
- could be scaled up, so they would not have to change again in the near future;
- would provide the correct



MMC Contractors simplified its day-to-day labor management tasks with LaborChart workforce management software, freeing up valuable time so workers could focus on higher impact tasks and activities.

information to the people who needed it;

- would demonstrate a clear return on investment (ROI); and
- could integrate with current software.

To make the case for investing in LaborChart, the labor operations team needed to show (not tell) their executive team the problems with the existing method and process. Once leadership knew how big the problem was, they agreed it was time for a significant change.

At the time MMC Contractors was evaluating LaborChart, they were implementing a new accounting software—and it was a complex upgrade. They did not want to further frustrate employees by adding another system to learn. In addition, MMC Contractors wanted management software that would house operation-focused

documents—including safety certifications—in one place, so employees would not have to hunt down and piece information together.

### *Meeting the Company's Needs*

The labor operations team demonstrated to their company leadership how LaborChart could operate in real time. For example, if you are out in the field, you can make a schedule change from your mobile device, without worrying about emailing someone back at the office to make the change for you.

To simplify the transition to LaborChart, Erika Laney, labor coordinator at MMC Contractors, set up small user groups to help her coworkers get familiar with the software. They caught on quickly, and MMC Contractors slowly began to roll LaborChart out to the whole company. Because of Laney's

continued on page 27

# AMS Mechanical Counts on Sloan to Keep Installation Timeline on Track

## Chicago's Lakefront Treasure Specifies Sloan

AMS Mechanical Contractors relied on Sloan products for a new Welcome Pavilion on Chicago's Navy Pier because "Sloan's products definitely saved us time on installation," said John Brassfield of AMS, the project's site foreman. "A lot of them come assembled, and it's very cut and dry as far as the installation. We definitely save on labor costs," said Brassfield.

### Welcome to Navy Pier

Navy Pier is one of the most visited leisure and cultural destinations in the world and is Chicago's lakefront treasure. With parks, restaurants, exhibits, and more—all situated on the shore of Lake Michigan—it is a very popular tourist attraction.

*"Sloan's products definitely saved us time on installation."*

—John Brassfield, Site Foreman,  
AMS Mechanical Contractors

Navy Pier opened its People's Energy Welcome Pavilion in 2017, designed to greet people coming to enjoy the Pier's numerous amenities. For the more than nine million guests that visit the Pier annually, the Welcome Pavilion must make a good first impression on visitors and set the tone for the rest of their experience.

For the Welcome Center, AMS installed Sloan products that deliver an elegant aesthetic along with the durability to stand up to millions of users each year. "There really isn't any failure rate, either, so that's why we continue to use Sloan products," said Brassfield.

### Windy City Water Savings

The Pier also needed products that would match its commitment to

sustainability. Along with the facility's energy-saving green roof and LED lighting, Sloan's products help make the building over 20 percent more efficient than traditional structures.

With Lake Michigan in its backyard, the Pier strives to protect and conserve water and the life around it. The Navy Pier wanted water-saving flushometers that would contribute to its sustainability efforts in maximizing the guest experience while minimizing the environmental impact. Sloan

SU-7009 Small Washdown Urinals were paired with Sloan Royal® Sensor Flushometers (Royal 186 SFSM) to deliver an efficient 0.125 gallons per flush (gpf). For AMS, Sloan was the preferred solution because of their touchless, sustainable products, as well as the products' versatility.

Additionally, Sloan ST-2459 Elongated Wall-Mounted Water Closets were installed with Sloan Royal 111 SFSM Sensor

continued on page 28



AMS used Sloan products for the Welcome Pavilion on Chicago's Navy Pier because many of the products come preassembled, which speeds up installation and saves labor costs.



AMS saves money and time by specifying durable, efficient Sloan products. "There really isn't any failure rate," said AMS' John Brassfield.

# Transition to GTP Services' STRATUS Cuts UMC Costs by Hundreds of Thousands

Just two years after implementing STRATUS software from GTP Services, University Mechanical Contractors, Inc. (UMC) saved hundreds of thousands of dollars in packaging, spooling, and cutting costs and eliminated its cumbersome paper processes. UMC credits STRATUS with increasing efficiency, multiplying output volume, and enhancing its modeling capabilities.

## First Step: Paper to PDFs

Roughly two years ago, UMC set out to transform the way it issued deliverables to the fabrication team, moving from paper to a digital platform. Each fabrication package contained a set of drawings, bill of materials (BOM), material request, purchase order, cut list, packing slip, and identification stickers for each spool or assembly. Creating these items was labor-intensive and manually driven; printing multiple copies was burdensome.

UMC initially tackled the printing and copying issue by switching to PDF documents viewed on mobile tablets. Moving to a PDF workflow helped with document control and reduced paper, but UMC still had separate

systems to manage production and draw deliverables with Smartsheet and Bluebeam, along with a separate workflow inside of FABMEP, where UMC created the cut lists, BOMs, and packing slips. To support this work, UMC either had to train its fabrication team and purchase separate software licenses or rely on its virtual construction (VC) teams, which were already laden with deliverables.

Transitioning from paper to PDFs was a radical step for UMC, but PDFs did not take advantage of the integrated 3D models created by the VC teams. The VC staff spend countless hours poring over design documents to develop a constructible product in a 3D environment that is embedded with powerful information, such as cost and labor.

## Next Step: PDFs to an Integrated Platform

In November 2017, Doug Smith of Dynamic Systems, Inc., introduced UMC to GTP Services' STRATUS software, a construction manufacturing and logistics solution that uses Autodesk's Forge Platform. The product was in its infancy at the time,

but UMC appreciated the vision and potential and so became an early adopter.

At its core, STRATUS is a data aggregator that allows UMC to access and manipulate all the information contained in its models in any number of ways—solving the problem of maintaining PDF drawings separately from cut lists, BOMs, hanger reports, and other data. It can also connect to tooling, such as Watts Plasma, TigerStop, and Greenlee Tubing Benders, eliminating the manual effort of creating the lists or typing them into machine interfaces. UMC found that the STRATUS integration with tooling resulted in a large savings in material costs through its nesting routines. Because STRATUS connects to its printers, UMC eliminated another manual process.

The ability to create spools and assemblies inside of STRATUS was a major improvement for UMC. STRATUS gives UMC the opportunity to work directly within the model, eliminating the need for text and annotation. With the ability to rotate a model virtually,

## The GTP Method

### STRATUS Cost Comparison (Traditional vs STRATUS)

Category	Amount	Time (Traditional Method) hrs	Billable Rate	Spooling Cost (Traditional Method)	Time (STRATUS) hrs	Billable Rate	Spooling Cost (STRATUS)	STRATUS Savings
Number of Spools	13,000	0.16	\$75.00	\$156,000.00	0.02	\$75.00	\$19,500.00	<b>\$136,500.00</b>
Creating Labels	390	3.00	\$75.00	\$87,750.00	0.02	\$75.00	\$585.00	<b>\$87,165.00</b>
Creating Cut Lists	325	4.00	\$75.00	\$97,500.00	0.10	\$75.00	\$2,437.50	<b>\$95,062.50</b>
Total Savings:								<b>\$318,727.50</b>

### TigerStop Cost Comparison (Traditional vs TigerStop)

Category	Lineal Feet	Feet/Hr (Traditional Method)	Billable Rate	Pipe Cutting Cost (Traditional Method)	Feet/Hr (TigerStop)	Billable Rate	Spooling Cost (STRATUS)	STRATUS Savings
Cutting Cast Iron	12,369	100	\$75.00	\$9,276.75	500	\$75.00	\$1,855.35	<b>\$7,421.40</b>
Cutting Copper/PVC	24,738	150	\$75.00	\$12,369.00	750	\$75.00	\$2,473.80	<b>\$9,895.20</b>
Total Savings:								<b>\$17,316.60</b>
Total Savings (GTP Method):								<b>\$336,044.10</b>

the user no longer needs multiple views on spool sheets, and UMC can put the power of the model in the shop personnel's hands.

In addition, STRATUS pairs the visual aspects of a tool like Navisworks with the manufacturing tool. It allows UMC to take full advantage of the VC teams' work by building digitally. The modeling team now does less reporting and

more modeling, and workers in the field can generate reports themselves through STRATUS if needed.

#### *Early Adoption Pays Off*

A six-month snapshot of UMC's return on investment while running STRATUS integrated with TigerStop showed a total savings of more than \$330,000. UMC also runs its shops using three TigerStops purchased from GTP Services.

UMC appreciated how GTP Services listens to the needs of the end users. GTP Services' continued dedication to improvement and contractor involvement in development has transformed STRATUS into a powerful tool that met UMC's initial challenge to change its shop from a paperless workflow to a digital workflow with mechanized integration.

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

## VICTAULIC

continued from page 3

and shared a virtual model with the Kruse design team.

Taking advantage of Navisworks to identify clash detection, designers from both companies began piecing the system together, noting, for example, that previous electrical components posed impediments that would require piping to be routed around them. This information allowed the teams to coordinate workarounds that would permit construction to proceed without interruption, streamlining the design and avoiding costly and time-consuming rework down the road.

Using Trimble layout software, the teams were able to see where components were placed in relation to one another. The Victaulic model was imported to the Kruse model to ensure system design was coordinated throughout the project. Kruse laid out duct work and hangers based on the piping design developed by Victaulic. Once the designs were confirmed, semi-trailer trucks excavated 47 loads of earth to prepare the space for the hydronic systems.

#### *Expedited Construction*

A nearby Victaulic facility manufactured the pipe spools for installation and shipped them to the jobsite, following the BIM assembly map



Victaulic's 3D scans streamlined design conversations with Kruse and others, because the model and the scans could be overlaid to ensure the designs were aligned with the space.

provided by the design team. Because Kruse knew exactly what was coming and when, they efficiently organized and executed a systematic construction schedule. While work was being done in the Victaulic shop, Kruse was installing hangers in preparation for the pipe spool delivery. Once a spool arrived on the jobsite, it was lifted straight up into the hangers.

With piping systems being installed in a confined space, ventilation was a safety concern. Welded connections would not be feasible because of the open flames and fumes. Kruse decided the most efficient way to meet the schedule would be to use Victaulic's grooved mechanical joining system, which would allow joints to be connected safely and easily in

this space-restricted area.

Using BIM to schedule the work resulted in significant time savings, allowing installers to complete 80 percent of the basement in just a few days. Everything fit as intended, enabling accelerated installation. By using visually inspectable parts, workers could verify proper installation as the system came together, enabling work to proceed safely and delivering a reliable and robust system.

Wichita celebrated the grand re-opening of Union Station on May 16, 2019.

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

## VIEGA

continued from page 1

of MegaPress and ProPress helped streamline installation. Efficient products like Viega's Flushing Technology Systems will save the company money moving forward. The headquarters building, and the Colorado Seminar Center located next door, opened earlier this year in Broomfield, Colorado.

In the two new Viega buildings, ProPress fittings behind the walls provide potable water. "With ProPress, the biggest advantage for us is there are no callbacks and no leaks," said Stone. "With solder joints, you're likely to get some leaks and warranty callbacks. That doesn't happen with Viega fittings."

MegaPress connects the fire sprinkler system, and MegaPressG fittings were used on the natural gas lines. "Especially with this being a big wooden structure (the buildings are filled with cross-laminated timber),



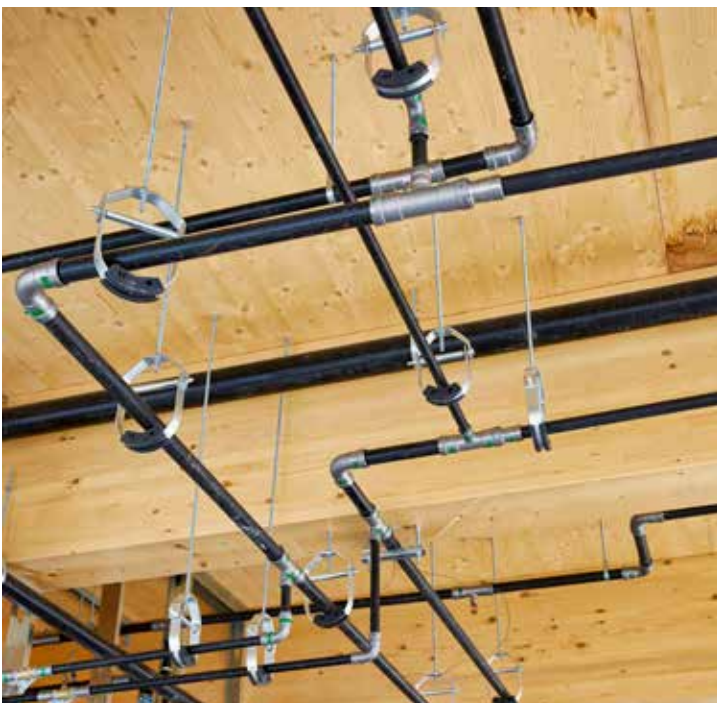
Viega's two new buildings use ProPress fittings behind the walls to provide potable water because, as Braconier President Tom Stone said, soldered joints might leak, but ProPress joints do not.

not having open flames involved in the process of putting the pipe together is a big bonus," Stone added. "Plus we don't have areas to protect from the mess of welding and soldering."

Radiant heating and cooling systems are installed in both buildings. Stone said the biggest benefits of using

radiant versus traditional forced air come after installation. Radiant provides a truly even temperature no matter the location, and the efficiency leads to lower operating costs and a more comfortable setting.

Stone said the radiant system in the seminar center—which contains more



By using Viega's MegaPress and MegaPressG fittings in the predominantly wooden structure of Viega's two new buildings, Braconier avoided having open flames and did not need to protect against the mess of welding and soldering.



The radiant system in the seminar center—which contains more than 36,000 linear feet of tubing—was the largest Braconier had ever installed. The bare concrete floors stay comfortable year-round with the radiant products.



*“With solder joints, you’re likely to get some leaks and warranty callbacks. That doesn’t happen with Viega fittings.”*

—Tom Stone, President, Braconier Mechanical and Plumbing Services

than 36,000 linear feet of tubing—was the largest radiant job Braconier had ever installed. The bare concrete floors of the seminar center, as well as both the carpeted and concrete areas of the headquarters building, stay comfortable year-round with the radiant products.

Snowmelt systems were installed in front of both buildings, so walkways will remain clear regardless of the Colorado weather. This equates to less maintenance and no chance of icy slips or falls by employees or visitors.

The bathrooms feature Viega in-wall carriers and touchless flush plates. The Viega Flushing Technology Systems products provide a sleek, modern look and make maintenance easy. With the tank inside the wall and bowls off the floor, cleaning is simplified. Touchless flush plates help improve hygiene for users, and the choice of a small or larger-volume flush means less water is used.

“For us, the number-one reason we use Viega is because when you install, you’re done. There are no warranty callbacks, no leaks,” Stone said. “Compared to other systems, Viega seems to have the largest product line. You’re not going to be missing a type of fitting or anything like that. Definitely the performance of the system is key. You just don’t have any leaks.”

For more information, visit [www.viega.us](http://www.viega.us).



An Arista technician relies on the XOi mobile app to document findings during a service call—so customers see what the tech sees.

## Arista Air Conditioning Employs XOi Technology to Build Customer Trust

In New York City, competition among HVAC providers is intense, so **Arista Air Conditioning Corporation** found a new way to win over customers. The company armed all of their technicians with the cloud-based **XOi** mobile app. Technicians use their mobile devices to generate photo and video documentation of every service call for Arista’s customers—so customers can see what the techs see.

Arista Air Conditioning serves more than 3,000 commercial and luxury residential customers in the New York City metropolitan area. The company harnesses the power of hundreds of highly-trained field service technicians, 100 trucks, and the latest technology. Evidence-based video collection elevates the customer service experience by increasing transparency and enhancing communication. It also helps Arista optimize its recordkeeping and provide technicians with easy, immediate access to the collective experience of the company’s most experienced workers.

The XOi platform ensures that field service techs can clearly communicate job requirements, progress, and

circumstances through the lifecycle of the relationship. Videos and still images get added to customer-facing records, so customers can verify they are paying for the correct services.

XOi Vision™ content also helps the organization train technicians efficiently and cost effectively, using real-world video examples. Vision helps senior field service technicians collaborate with less-skilled techs on unique problems or unfamiliar equipment through shared, real-time video. The company benefits from the knowledge of its best techs on every jobsite, without having to roll a second truck, which costs over \$400 on average in the field service industry.

“We think giving our employees the ability to instantly tap into the collective wisdom of technicians, who jointly have thousands of years of experience, is an invaluable resource,” said Michael Rosone, vice president of Service Sales for Arista Air Conditioning.

For more information, visit [www.xoi.io](http://www.xoi.io).

## EVAPCO

continued from page 1

version for the same space, making the installation process easier for Elliott-Lewis Corporation.

### *Time for an Upgrade*

The Benjamin Franklin Hotel—now known as The Franklin Residences or, simply, “The Ben”—was built in 1923. Upgrading historic sites typically comes with challenges, such as limited space. The building’s owners recognized that keeping tenants and guests comfortable during increasingly warm and humid summers would take the right systems and equipment working with minimal or no downtime.

A key component of The Ben’s cooling system is the cooling tower that serves a water-sourced heat pump loop in the building. For many years, this loop met most of the building’s cooling needs. Several suites still use packaged terminal air conditioner units, but many tenants have requested the switch to heat pumps. In addition, the retail space expanded from one floor to two. These changes have increased demand on the heat pump loop.

Mike McCauley, sales engineer at Elliott-Lewis Corporation, explained yet another reason for the demand increase. “Some equipment loses efficiency as it gets older. Back when

*EVAPCO’s solution increased the system’s cooling capacity on the heat pump loop from about 565 tons to 675 tons, without sacrificing space.*

it was built, the system was designed to meet certain demands. Well, those demands have changed. We have warmer summers now, and that’s taxing on older equipment. You can have the best maintenance in the world and [the system] still won’t be as efficient as it once was.”

The increased demand did not come with increased floor space for a second cooling tower or even a new, larger one. The owners were faced with a challenge: how to get more cooling capacity using the same footprint. At the same time, the existing cooling tower, which had served the

building since 1984, was reaching the end of its useful life.

“Our company maintains the cooling tower on this site,” said McCauley. “We realized that the equipment was at its end of life and told the owners that if they didn’t replace it soon, they’d be spending lots of money refurbishing it.”

### *Old Meets New*

When the original cooling tower was built, it was not subject to certifications or ASHRAE 90.1 requirements, and building codes were different too. The building needed a new cooling tower that met current requirements—yet had the same footprint and a greater capacity. Engineers were called in to tackle the design, and Elliott-Lewis Corporation, which has served Philadelphia for a century, was chosen to install the new cooling solution.

The original cooling tower was a discontinued EVAPCO unit, a PMTQ cooling tower. So, EVAPCO retrieved the design from their archives and built a new one to meet all the requirements for the project, including a sharply increased cooling demand, while maintaining the same footprint. EVAPCO’s solution increased the system’s cooling capacity on the heat pump loop from about 565 tons to 675 tons, without sacrificing space.

The original galvanized material was replaced by stainless steel, ensuring durability and a long lifespan. The addition of a custom fiber acoustic base for the tower ensured that the new unit was fully up to code.

### *Quiet and Efficient*

The new tower also needed to meet or exceed current codes for thermal and acoustic performance. The building sits in a densely populated part of Philadelphia, surrounded by office buildings and residences,



EVAPCO recreated a discontinued cooling tower to fit the tight quarters occupied by its original unit in the historic Benjamin Franklin House, simplifying the installation process for Elliott-Lewis Corporation.

so noise is a concern. The new unit features EVAPCO's super low sound fan instead of the typical centrifugal fan that would be used with a forced draft system.

In addition, the unit has four fans drawing a total of 60 horsepower, up from the original unit's 40 horsepower. Despite this increase, which achieves a greater capacity, the unit's performance is more energy-efficient at part loads. Each fan is driven by a variable frequency drive (VFD) designed to run at part loads rather than cycling on and off when the demand changes.

With VFDs, the unit can run all four fans at, for example, 30 percent, which is much more efficient than running one fan at 100 percent. The unit only uses the energy needed at any given load.

#### *Overcoming Other Challenges*

The heat exchanger, originally designed to meet the lower demand, would not serve the upgraded cooling tower to provide extra cooling to the building. Rather than replace the heat exchanger, the owners

chose to modify the existing piece of equipment. Because there was enough room to add additional plates to increase capacity, the original heat exchanger was cleaned and expanded.

Replacing the old cooling tower with a modernized version allowed for minimal pipework, saving Elliot-Lewis time. "There were some piping changes," said McCauley. "Old pipe was replaced because of its age, but other than that there was only some rerouting of pipes to accommodate the new tower dimensions."

Controlling the cooling tower required integration of the unit's VFD controllers into the building management system. This step proved to be a challenge at first, but since its startup, the unit has been able to meet its required performance with no complaints from the owners. With its sturdy equipment and supportive professionals, The Ben is sure to maintain its reputation for luxury for many years to come.

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

## LABORCHART

continued from page 20

methodical implementation process and LaborChart's ongoing implementation support, the transition was easy to manage.

Recognizing that managers need to interact with LaborChart in different ways than their subordinates, MMC Contractors used LaborChart's customizable permissions to assign permissions to users that matched their role and level of responsibility. Most importantly, this approach allows for control, so that no one can make significant changes without the appropriate permission.

To show the ROI for LaborChart, Jim Price, MMC Contractors' labor/operations superintendent, said, "It's simple. I break down the annual subscription to a 'cost-per-day' to use LaborChart. The ability to keep everyone aligned at that calculated daily cost—not to mention the ROI from reduced labor waste—it's a no brainer."

#### *Added Benefits Realized*

MMC Contractors has been using LaborChart for almost two years, and Laney and Price said they could not imagine going back to the old spreadsheet process. In addition to the expected benefits, LaborChart helped MMC Contractors' safety department by bringing together all the safety and trade certifications in one place. As a result, the department can see quickly what needs to be updated and who is fit for which job.

With LaborChart, MMC Contractors saved time in its labor department and company operations.

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



Replacing the Benjamin Franklin House's old cooling tower with a modernized version allowed for minimal pipework, saving Elliot-Lewis time.

## CARRIER

continued from page 5

executed the testing to ensure that they were, indeed, met,” said Scalone.

From its inception, every component of the Center for Intelligent Buildings was developed with sustainability in mind. As a result, it is the first commercial building in Florida to earn the coveted LEED Platinum version 4 certification. The Platinum rating—the highest designation—was awarded under the stringent LEED green building program for building design

and construction from the U.S. Green Building Council.

“We take great pride in knowing that Hill York’s HVAC installation in the Center for Intelligent Buildings project helped the building achieve efficiency ratings that contributed to obtaining the LEED Platinum v4 certification,” Phillabaum said. “As a testament to this, we have used the facility to host events for various professional organizations that we

support, and we held our annual sales meeting there.”

Phillabaum has also used the Center as a selling tool, taking prospective clients on tours of the facility to illustrate the level of craftsmanship, skill, and expertise involved. “It’s a project that distinguishes Hill York and clearly defines who we are,” he concluded.

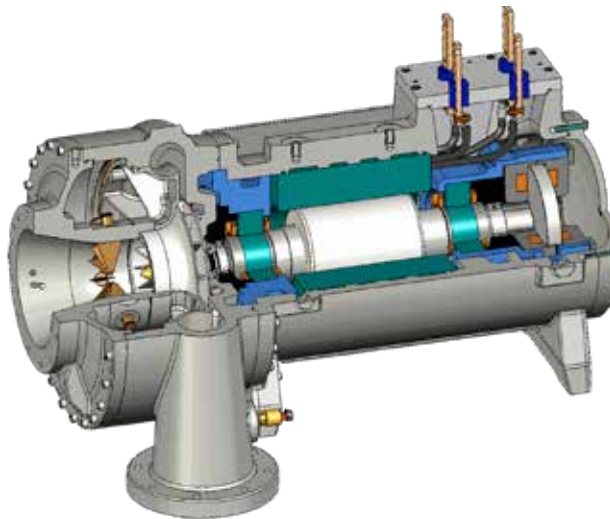
*For more information, visit [www.carrier.com/commercial](http://www.carrier.com/commercial).*

## DAIKIN

continued from page 11

with changing oil every year.” It may have been a long process getting the chiller system upgraded, but now the staff at Southern New Hampshire Medical Center can be assured that they are delivering superior indoor air quality for the best patient outcomes. That is an upgrade that every hospital visitor should be able to appreciate.

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



Daikin’s magnetic-bearing technology eliminates oil, bearing wear surfaces, and gears for longer machine life and increased reliability. The design eliminates the risk of contamination from efficiency-robbing oil buildup onto heat-transfer surfaces. For Southern New Hampshire Medical Center, that translates to lower maintenance costs.

## SLOAN

continued from page 21

Flushometers. With a static load rating of 750 pounds, the water closets can withstand the Welcome Center’s high traffic, while the flushometers’ 1.28 gpf contributes to water savings across the facility.

### *Lakefront Lavatories*

The Pier paired Sloan DSG Designer Series™ sinks with its BASYS® EFX800 wall-mounted faucets for an aesthetically pleasing, sustainable

handwashing experience. Featuring a Silestone Spa Suede finish, the ADA-compliant sinks complement the faucets’ sleek polished chrome. The faucets’ infrared sensors allow for hygienic, touch-free handwashing, with a flow rate of just 1.5 gallons per minute and a line purge feature to eliminate stagnant water.

“Sloan’s products do an excellent job of inviting guests to the

Welcome Pavilion with an elegant aesthetic that they can expect throughout Navy Pier,” said Harry Smyrniotes, Navy Pier brand activations and marketing associate. “Not only that, but they match our unwavering commitment to sustainability,” he noted.

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