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## Tankless Game Changer by New England Contractor

BY ERICA LEVASSEUR, SPECIAL TO CONTRACTOR

First impressions count. So, when the University of New Hampshire (UNH) was preparing to host more than 600 prospective enrollees at its annual summer sports camp for high school athletes, the campus had to look and perform its best. From the manicured soccer pitch and hydration stations on its playing fields,



Exterior of UNH.

Mike Ross, UNH Photographic Services

➤ Turn to Tankless, page 14

## PHCC Holds Industry Summit in Dallas, TX

SPECIAL TO CONTRACTOR

LLS CHURCH, VA — Proving the value of constructive collaboration, Plumbing-Heating-Cooling Contractors—National Association (PHCC) leaders and the association's industry partners and major sponsors

exchanged ideas and solutions for mutual benefit during PHCC's Industry Summit in Dallas, Texas, last month. The Summit—a chance to make a meaningful impact on

➤ Turn to PHCC, page 8



Attendees at the 2023 PHCC Industry Summit.

PHCC-NA

## Oatey Women's Resource Network Sponsors Plumbing Day

SPECIAL TO CONTRACTOR

CLEVELAND, OH — Oatey Co. recently sponsored a plumbing day at Northeast Ohio Let's Build Construction Camp for Girls, a program for middle-school-aged and high-school-aged girls to attend a free week-long camp to explore the construction trades, architecture, engineering, and construction manufacturing through hands-on experiences and field trips.

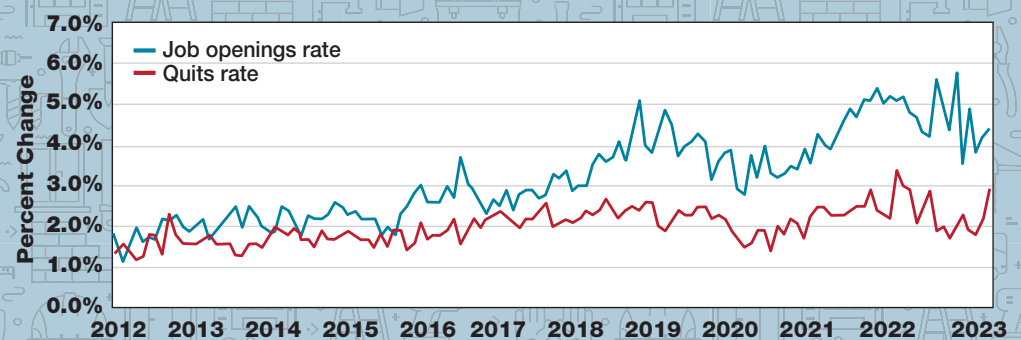
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A group shot of camp attendees.

### CONTRACTOR INFOCUS

#### Construction Job Openings Rate and Quits Rate: May 2012 to May 2023



Source: U. S. Bureau of Labor Statistics

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A black and white photograph of a plumber wearing safety glasses and a work shirt, kneeling on a tiled floor. He is using a General Speedroter 92 pipe cleaner, which has a large orange drum and a black frame. The machine is connected to a coiled metal cable that he is feeding into a drain. The background shows a brick wall and some boxes.

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# DOE Proposes New Energy Efficiency Standards for Water Heaters

SPECIAL TO CONTRACTOR

WASHINGTON, DC — On July 21st, the US Department of Energy (DOE) proposed new, Congressionally-mandated energy efficiency standards for residential water heaters. These standards align with recommendations from stakeholders, including two of the largest water heater manufacturers and the Consumer Federation of America. If adopted, they could save consumers \$11.4 billion on their energy and water bills every year.

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# John W. Danforth Company Supports 'Pawsitive for Heroes' Program

SPECIAL TO CONTRACTOR

BUFFALO, NY – John W. Danforth Company, one of the largest mechanical contractors in the northeast, recently met an important new team member. However, this team member will never work at one of the company's offices, in any of its fabrication shop facilities, nor on any of its job sites.

Danforth representatives gathered at the offices of WNY Heroes to meet Piper,

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Piper poses with members of the J. W. Danforth team.

# Home Improvement Professionals Report Mild Optimism for Q3

SPECIAL TO CONTRACTOR

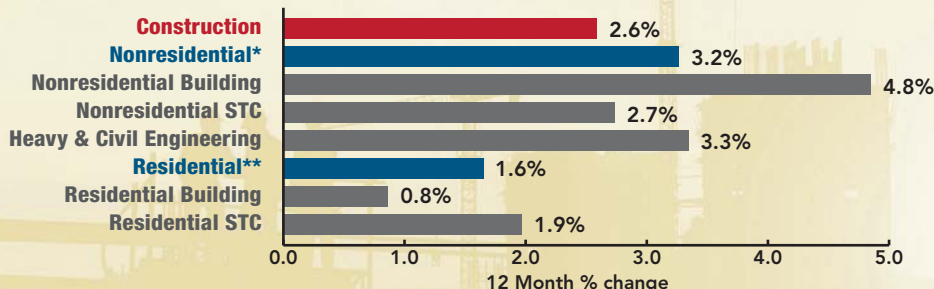
Houzz Inc., a leading platform for home remodeling and design has released the Q3 2023 Houzz U.S. Renovation Barometer. The Barometer tracks residential renovation market expectations, project backlogs and recent activity among businesses in the US construction sector and the architectural and design services sector. Fielded from

➤ Turn to Story, page 50



## CONTRACTOR INFOCUS

### Construction Employment Growth: June 2022 vs. June 2023



\*Includes nonresidential building, nonresidential STC, and heavy and civil engineering  
 \*\*Includes residential building and residential STC

Source: Bureau of Labor Statistics

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Your Reputation is Only as Good as Your Last Review

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## In Brief

**NAVAC**, the world's largest supplier of vacuum pumps, has hired industry veteran Mike DeLisi as Director of Sales for its Industrial Vacuum Business unit. In this role DeLisi will collaborate with Brian Cox, Director of the Industrial Business Unit.

**Interplay Learning** has announced a strategic partnership with **Southern Home Services Corporation**, a leading residential home services provider specializing in HVAC, plumbing, electrical, and generator service. This collaboration names Interplay Learning the exclusive content engine for technical training and the designated LMS provider across Southern Home Services' growing network of 25+ locations.

**Kohler Co.** has announced two Signature Store openings – in Cherry Hill, NJ and Gilbert, AZ. The openings of these stores provide the trade, and consumers, the ability to experience the Kohler Co. family of brand products for the bath and kitchen that exemplify each brands' craftsmanship.

At the beginning of July 2023, the Board of Directors of the Building Valves Division of the **VDMA** elected Stefan Gering, CEO of **Dornbracht AG & Co KG**, as its new Chairman. As a result, the he will also assume the role of Vice Chairman. Gering succeeds Oliver D. Gessert, formerly Managing Director of VDMA member company **KWC Aquarotter GmbH**, who resigned from the Board of the Valves Association with effect from May 1, 2023.

**Malco Products**, one of the nation's leading manufacturers of high-quality tools for the building construction trades today announced that Rebecca Talbot has joined the company as its new vice president of marketing.

**Emerson** will bring together customers, experts, and automation industry leaders for a three-day, process automation experience as part of the first **Emerson Exchange Immerse**. The conference will be held October 3-5, 2023, at the Anaheim Convention Center in Anaheim, California. As an extension of the comprehensive Emerson Exchange events held globally, Emerson Exchange Immerse will enable users to more directly focus on process automation systems, solutions, and software.

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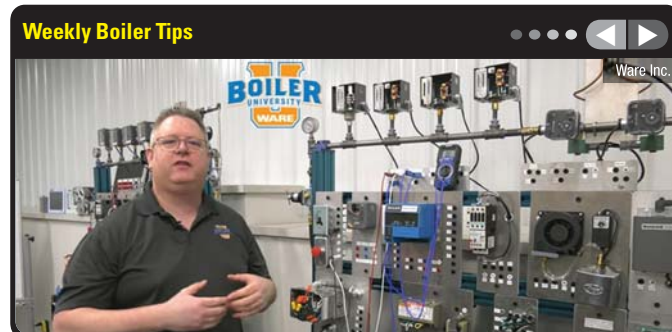
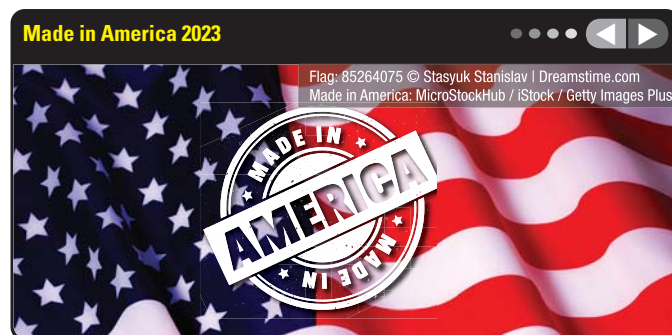
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## Top Stories

- P3 Services Acquires Anchor Plumbing
- Registration Open for Goulds Water Technology Factory School Q3 Courses
- Is Your Smart Building an Easy Target for Hackers?
- Blue Cardinal Launches Network of HVAC, Plumbing, and Electrical Services

## Videos & Media Galleries



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For the latest news on the federal and local response, code and regulation developments, opinions and best practices from industry experts and more, bookmark **CONTRACTOR'S** Coronavirus News Page: [www.contractormag.com/covid-19](http://www.contractormag.com/covid-19).

## How Much Do You Know About Water Conservation?

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## INDUSTRY PERSPECTIVES

- ▶ Want to know what is on the mind of Ed O'Connell, business coach and consultant?
- ▶ Want to know about how to get the flow rates right in hydronics from master trainer Steve Swanson?
- ▶ Want to know what the 14 characteristics are of a professional plumbing company? Matt Michel will tell you.

If so, our Industry Perspectives page is the place for you! Visit Industry Perspectives today at [contractormag.com/industry-perspectives-0](http://contractormag.com/industry-perspectives-0)

Want to converse with experts in the plumbing and hydronics industries? Then check out **CONTRACTOR'S** Industry Perspectives, serving up thoughtful, conversational content from the industry experts you have gotten to know so well at [www.Contractormag.com](http://www.Contractormag.com).



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# Legionella Update with Dr. Janet Stout

*It may not be in the news every day, but Legionnaires' Disease is still out there. One leading expert updates us on the continuing battle to end it!*

■ BY ROB MCMANAMY FOR CONTRACTOR

[Editor's note: this Q&A is an edited transcript of HPAC Engineering's HPAC 'On the Air' podcast. To listen to earlier podcasts or subscribe visit the HPAC Members Only page at [www.hpac.com/members](http://www.hpac.com/members).]

In this episode, HPAC 'On the Air' welcomes **Dr. Janet E. Stout**, executive vice president and founder of the Special Pathogens Laboratory and an associate professor at the University of Pittsburgh Swanson School of Engineering.

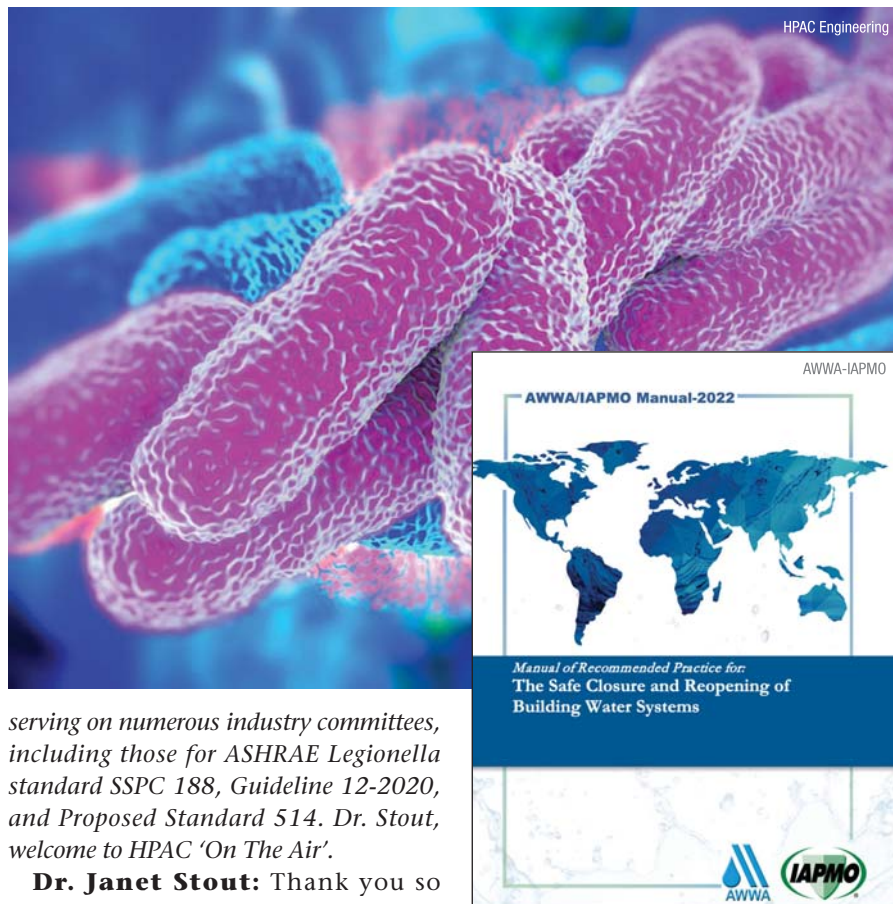


**Dr. Janet E. Stout**, executive vice president and founder of the Special Pathogens Laboratory.

An infectious disease microbiologist, Dr. Stout is recognized worldwide for her pioneering research in Legionella and now, after three decades, remains on a mission to End Legionnaires' disease. She updates us here on where that mission is today.

**HPAC:** Our topic this month is Legionella, the notorious bacteria first detected in a hotel water system at the American Legion Convention in Philadelphia in 1976. That outbreak sickened over 200 attendees, killed 34 and spawned decades of new research, scrutiny and remedial strategies for building engineers worldwide.

Our guest today is one of the world's foremost experts on the subject, Dr. Janet Stout, whose expertise includes detection, prevention, and control strategies for Legionnaire's disease in building water systems. She advances the mission to End Legionnaires' disease by speaking and



serving on numerous industry committees, including those for ASHRAE Legionella standard SSPC 188, Guideline 12-2020, and Proposed Standard 514. Dr. Stout, welcome to HPAC 'On The Air'.

**Dr. Janet Stout:** Thank you so much, Robert. It's a pleasure to be with you and your audience.

**HPAC:** Please tell our listeners a bit more about your background, your current work, and how you came to study this subject for nearly 40 years now.

**Dr. Stout:** Well, I say I'm an infectious disease microbiologist who has studied Legionella for more than 30 years. I refuse to say 40. That makes me sound too old. Of course, when a microbiologist studies Legionella for their entire career, they are not a microbiologist anymore. So, I'm a "legionnologist." And yes, I did make that up. But I think it adequately describes my career. And it all started when I got my master's degree at the Graduate School of Public Health in 1982, studying Legionella. And there was an outbreak of Legionnaire's Disease then at the Pittsburgh VA Medical Center. I had the good fortune to be doing my master's work there. And Legionella

and I have been together ever since.

**HPAC:** Just so we are all on the same page here, could you please define Legionnaires' Disease and talk about its origins? Is it exclusively something connected to the arrival of HVAC in society? If so, was there evidence of it in the decades prior to the Legionnaires' convention in '76?

**Dr. Stout:** So, I love telling the story about Legionella. At the American Legion Convention in 1976, they deduced that Legionella was coming from the air conditioning system because the epidemiologist had studied who got Legionnaire's disease and who didn't.

Most of the people who got it were in Ballroom A. So, the only way to transmit it must have been through the air. But what we learned later, in 1982, we published in a seminal article in the *New England Journal of Medicine*. It said that in our VA hospital (in

Pittsburgh), it wasn't coming through the air ducts. It was coming out of the faucets in the showers and infecting the veterans there from the potable water distribution system.

So back in 1976, Legionella was not a new bacteria, per se. It was a newly discovered bacterium. And the reason is because this bacteria requires a very specialized culture, media to grow it, which was developed as a result of that outbreak.

Investigators at the Center for Disease Control and Prevention (CDC) formulated a brand new media. Then when they were able to grow the bacteria, they went back to their freezers for unsolved mysterious cases of pneumonia. And they found a type of Legionella going back to 1947 that had caused pneumonia in a patient. Then they also saw some that were from the 1950s, and so forth. So that's how we know it existed prior to 1976.

And to your point, we also have these man-made systems that provide Legionella bacteria with just the right conditions to grow—which is nice, warm water, some organic material in our piping systems, our cooling towers and such, and hot tubs. Don't get me started on hot tubs! But that creates a great environment for Legionella and other bacteria to grow. So, what I say is that what's happening in those pipes is that "Legionella is having a party in the pipes." And so yes, (HVAC) has sort of created an ideal resort for these bacteria.

**HPAC:** As I understand it, stagnant building systems circulating air and water have long been seen as the key contributing factor to the development of Legionella. So, in the wake of building shutdowns globally for the Covid pandemic over the last three years, how much has that led to a resurgence of Legionnaires' today?

**Dr. Stout:** Well, I'm a "glass half-full" person. So, the good news was that in 2020, we knew that Legionella

➤ **Turn to Legionella, page 16**



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# PHCC Holds Industry Summit in Dallas, TX

► **Continued from page 1**

issues and opportunities facing plumbing and HVACR contractors and the industry—was hosted

Summit. “By exchanging ideas, learning from each other, and establishing new relationships, we can further our mission of advancing the industry not

only for our own organizations but also to protect public health, safety, and the environment.”

Indeed, the group of industry leaders spent the day exploring ways to better collaborate on crucial industry initia-

tives, namely regulatory issues, advocacy, workforce development, education and training, and sustainability.

## Regulation

Regulatory updates – particularly trends in decarbonization/electrification—were a key takeaway for Summit participants. PHCC—National Vice President of Regulatory Affairs **Chuck White** led a discussion on how PHCC and its industry partners can work together to ensure that contractors and their employees have the information they need to effectively advocate for reasonable regulatory mandates and prepare for upcoming changes. “The complexity of regulations impacting our industry amplifies the need for collaboration on advocacy efforts and to establish effective communication channels to keep industry professionals informed to ensure compliance,” he said.

## Financing

During the Summit, attendees discussed how to set contractors up with financing options for customers interested in purchasing new HVAC equipment. Other topics addressed included how manufacturers can help develop information on heat pump water heaters (the benefits of new products, when to expect return on investment, etc.) for contractors to pass on to customers, as well as how they can improve hands-on training opportunities through PHCC state and local chapters.

## Workforce Development

In the area of workforce development, several PHCC partners and sponsors shared some transformative efforts,

including supporting an apprentice program for at-risk female high school students, working directly with school guidance counselors to promote the trades, and more. “While workforce challenges are not new to this industry, it remains the number one concern for PHCC members,” said PHCC Vice President of Business Development **Elicia Magruder**. “PHCC and the PHCC Educational Foundation have numerous resources available to help our chapters and members promote careers in the trades, but we still need to do more to ensure a continuous pipeline of skilled workers.”

## Advancing the Industry

Of the event, Rheem Vice President of Residential AC **Randy Roberts** said, “Manufacturers can’t be successful unless we hear and respond to the challenges and needs of our customers. PHCC’s Industry Summit took that up a level, allowing us to engage with contractors, suppliers, and other manufacturers to focus on the current issues our customer base is experiencing and identify how we can all help each other to support and advance our industry.”

PHCC already is building on the energy and commitment exhibited during the Summit, moving to implement many of the solutions discussed as well as making arrangements for its next Industry Summit. “The ideas shared serve as a strong foundation for future collaboration among PHCC, the PHCC Educational Foundation, and our industry partners,” said Frame. “By working together, we can address industry challenges, foster growth, and ensure a prosperous future for the plumbing and HVACR industry.”

**Industry leaders promote solutions, explore key topics such as workforce development, education, regulation and more.**

by Rheem Manufacturing, a PHCC Corporate Partner.

“I learned early on that constructive collaboration was essential for success,” PHCC—National President **Dave Frame** told attendees at the

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## Celebrate Backflow Prevention Day

National Backflow Prevention Day celebrates backflow prevention and cross-connection control and those who install, maintain, and test backflow preventers.

Watts will be hosting a new CEU webinar, “New Tech in Backflow Prevention: The Future is Now”, on August 16th at 12 p.m. ET. Also on August 16th, Watts

will be livestreaming on social media at 2 p.m. ET highlighting smart and connected solutions, new innovations in backflow, and more.

During the month of August, Watts will be running special Watts Works online learning promotions.

Learn more at [watts.com/backflow-prevention-day](http://watts.com/backflow-prevention-day).



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# DOE Proposes New Efficiency Standards for Water Heaters

## ► Continued from page 3

The proposal would require the most common-sized electric water heaters to achieve efficiency gains with heat pump technology and gas-fired instantaneous water heaters to achieve efficiency gains through condensing technology. These standards, which would take effect in 2029 if finalized, are expected to save Americans approximately \$198 billion and reduce 501 million metric tons of harmful carbon dioxide emissions cumulatively over 30 years—roughly equivalent to the combined annual emissions of 63 million homes, or approximately 50 percent of homes in the United States.

## Improving Outdated Standards

“Today’s actions—together with our industry partners and stakeholders—improve outdated efficiency standards for common household appliances, which is essential to slashing utility bills for American families and cutting harmful carbon emissions,” said US Secretary of Energy **Jennifer M. Granholm**. “This proposal reinforces the trajectory of consumer savings that forms the key pillar of Bidenomics and

builds on the unprecedented actions already taken by this Administration to lower energy costs for working families across the nation.”

Water heating is responsible for roughly 13% of both annual residential energy use and consumer utility

costs. DOE last updated residential water heater efficiency standards, which are required by Congress, in 2010. If adopted within DOE’s proposed time-frame, the new rule—which builds on consensus-based recommendations from a wide range of stakeholders—would apply to new water heater models starting in 2029.

**Congressionally-mandated appliance standards could save consumers \$11 billion annually, help meet carbon emission targets.**

costs. DOE last updated residential water heater efficiency standards, which are required by Congress, in 2010. If adopted within DOE’s proposed time-frame, the new rule—which builds on consensus-based recommendations from a wide range of stakeholders—would apply to new water heater models starting in 2029.

## Years of Utility Bill Savings

Replacing common-sized traditional electric resistance storage water heaters with electric heat pump water heat-

ers meeting the proposed levels would save consumers \$1,868 on average over the life of the appliance, with savings even higher for renters and low-income households who spend a higher percentage of their income on utility bills. President Biden’s Inflation Re-

duction Act also expands the accessibility and increases affordability of heat pump water heaters through tax credits, rebates, and other incentives, making it easier for families across the nation to switch to a more efficient model when deciding to replace a water heater—and benefit from years of utility bill savings as a result.

Separate standards would raise the minimum efficiency levels for gas-fired storage water heaters, gas-fired instantaneous water heaters, and oil-fired storage water heaters based on

## 18 Product Categories So Far

With this proposal, DOE has now issued proposed or final efficiency standards for 18 product categories so far this year—actions critical to carrying out Congressional direction for energy savings while improving reliability and performance across household appliances and commercial and industrial equipment.

Collectively, DOE’s past and planned energy efficiency actions under the Biden-Harris Administration will save Americans \$570 billion and reduce greenhouse gas emissions by more than 2.4 billion metric tons cumulatively over 30 years.

## Tankless Pushback

In response to the proposal, Rinnai America Corporation, a leading manufacturer of tankless water heaters, issued a statement saying that, in its current form, the draft rule will unreasonably restrict consumer access to certain tankless water heater products, disproportionately impacting middle-income households and small businesses.

“As currently drafted, DOE’s proposed rule will create an uneven market that effectively bans an already energy efficient product and puts American jobs at risk,” said **Frank Windsor**, president of Rinnai America. “Consumers who rely on access to tankless water heaters will see their options limited, resulting in higher energy bills and shorter appliance lifespans, while the very environmental goals prompting this rule will go unfulfilled. We urge DOE to re-consider this untenable rule for standards that better protect American consumers and drive our energy efficiency goals forward.”

Rinnai urged members of the public who wish to submit a comment on the draft rule to contact the DOE or their representative in Congress. [C](#)

## Franklin Electric Names Greg Levine Vice President

FORT WAYNE, IN —Franklin Electric Co., Inc. (NASDAQ: FELE) has announced that Donald Kenney, Vice President and President, Global Water, will be retiring after nearly 32 years with the company. Kenney was a driving force behind Franklin Electric’s Global Water growth and strategy over the last decade, and he will remain with the company through the end of July to ensure a smooth transition to his successor, Greg Levine. Levine will join Franklin Electric on July 3 from Nidec Corporation, where he served as President of the Motion Control and Drives business for the past six years. In his new role, Levine will be responsible for Franklin Electric’s global Water Systems business.

“Don’s strategic vision and customer-centric approach was essential to



**Franklin Electric**

our growth these past few years,” said Gregg Sengstack, Chairperson and Chief Executive Officer. “We are excited to bring on a leader with a proven track record of identifying and nurturing growth opportunities. This insight will allow us to build on the strong foundation we have in place.”

Levine served in global profit and loss and technology roles for Nidec for 13 years, where he oversaw an international team of 3,800 individuals across 13 operational sites. During his time with Nidec, Levine positioned the company to grow two-fold in five years through organic growth and acquisitions. Before working at Nidec, Levine



Greg Levine.

held senior engineering roles at Emerson for 15 years. “Greg’s disciplined technology focus and industry insight will help him guide Franklin Electric well into the future as we explore new products, markets and customers,” said Sengstack. [C](#)



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# IAPMO's 2023 Conference Returns to San Antonio

ONTARIO, CA — Co-locating with ASSE International's Annual Meeting and the American Rainwater Catchment Systems Association's (ARCSA) Annual Conference, the International Association of Plumbing and Mechanical Officials (IAPMO®) will return to

San Antonio, Texas, Sept. 24-28 for its 94<sup>th</sup> annual Education and Business Conference.

Back in the Alamo City for the first time since 2011, IAPMO's 2023 conference will be held at the Hyatt Regency San Antonio Riverwalk, the city's only

hotel located on the River Walk that also overlooks the historic Alamo. Dig-Deep founder and CEO **George McGraw**, whose presentation at IAPMO's 2016 conference helped launch a successful partnership with IAPMO's charitable arm, the International Water,

Sanitation and Hygiene Foundation (IWSH®), will be the keynote speaker.



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ASSE International's Annual Meeting is scheduled for Sept. 24-27 and will include four days of education, input, networking, idea sharing, advice and camaraderie. It will co-located with the American Rainwater Catchment Systems Association's Annual Conference.

Registration for IAPMO's Education and Business Conference is available online at <http://conference.iapmo.org/2023/iapmo/register>. The deadline for early registration, with a \$70-80 discount (member/non-member) off the regular price, is Aug. 21.

To register for, or learn more about, ASSE International's Annual Meeting, visit <https://conference.iapmo.org/asse/home>.

For more information about ARCSA's Annual Meeting, call 480/289-5766, email [info@arcsa.org](mailto:info@arcsa.org) or visit <https://www.arcsa.org/events/EventDetails.aspx?id=1757564&group=>.

To book a room at IAPMO's \$222 group rate, direct your browser to <https://www.hyatt.com/en-US/group-booking/SATRS/G-XBRW>.

For more information, please contact IAPMO Travel and Events at 909/472-4207 or [conference@iapmo.org](mailto:conference@iapmo.org). 

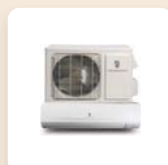
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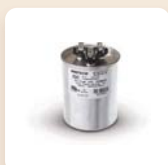
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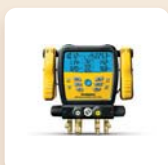
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# Tankless Game Changer by New England Contractor

► **Continued from page 1**

to fresh linens and spotless rooms where hundreds of overnight campers would be staying in the University's student dormitories.

Just days before the beginning of the UNH sports summer camp, the water heaters failed at McLaughlin Hall—the main source of hot water for McLaughlin, as well as neighboring Congreve and Lord Halls—a potential disaster for the university.



The old hot water system at McLaughlin Hall.

## Granite State Plumbing

To get a new water heating system sourced and installed quickly, the University's facilities management worked with Granite State Plumbing and Heating, LLC, a Weare, NH contractor with more than 40 years in commercial mechanical contracting services, including plumbing and HVAC maintenance. The company prides itself on building and maintaining high quality, highly-efficient systems that are long-lived to deliver excellent return-on-investment.

Fortunately, the facilities team at the University saw the problem coming, and had already identified some replacement options for the aging water heaters, working with SMRT Engineering, an architectural, engineering and planning firm. One option was the iQ1501 tankless water heater from Intellihot. The iQ1501 is designed for large volume, commercial

applications, delivering approximately 1.5 million BTU/hr. Like all Intellihot water heaters, it's extremely energy efficient and its tankless design eliminates the need for mixing valves, where required, while lowering Legionella risks. It features a turn-down ratio of 50:1, and is relatively compact in size at 30" in width and weighing 1,025 lbs.

## Selecting for Sustainability

"Sustainability factored in in a major way because they saw that the Intellihot runs anywhere between about 97 and 99 percent efficient," said **Scott Tarzia**, industrial business development and sales at Granite State. "That was big deal to them. They have a lot of people in their organization who monitor what kind of equipment they put on campus.

"They also liked that it's an intelligent piece of equipment that offers multiple benefits, all in one unit," added Tarzia. "When I talk to people about replacing their water heating systems, there's a pretty big factor that needs to be considered. If you store your water, you always run the risk of Legionella. I know UNH goes the extra mile to protect their students, faculty and staff. With Intellihot you mitigate the possibility of Legionella because of the temperature it runs at and the frequency it runs."

## Addressing Concerns

**Jeff Slattery** handles commercial business development at Dan Davis Sales, a Lebanon, Maine-based business that represents products for the plumbing, heating and renewable energy markets in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

"We engaged with UNH earlier for another water heater project they were considering," said Slattery. "But they admitted they were not completely comfortable because the technology was new to them. So, Erica, Scott and I met with them to introduce and train their facilities personnel on Intellihot products. How they operate, the benefits, and how to work on our units."

While there are no dining facilities at any of the affected dorms, predicting



The Intellihot iQ1501, shipped from F.W. Webb, installed. (Top inset) Intellihot iQ1501 with doors removed. (Bottom inset) Efficiency meter showing the iQ1501 operating at 99.9%.

a peak flow hour is nearly impossible. Unlike predicting peak flow at a hotel or even a multi-family housing building, the hot water demand for college dormitories varies greatly based on the occupants' unique schedules.

"One of the great attributes of Intellihot equipment is when you have a moving target on load, the unit will ramp up as it needs to meet that load," said Slattery. "When there is no demand, it will be idle, not wasting any energy."

## Fast Turnaround

"The initial call from UNH came in on Wednesday," recalled Tarzia. "The most important factor was that F.W. Webb had the unit in stock at their Methuen (Mass.) location."


Granite State was able to secure a unit and install it in less than 48 hours. The unit was delivered to the site Thursday by noon and installed by four licensed professionals from Granite State. With Slattery's help with startup, it was running by Friday at 5:00 pm.

Aside from product availability, this project had other issues. "The biggest challenge in this project was that the old equipment was extremely heavy and awkward, which made it very difficult to remove," said Tarzia. "The tanks and the piping, especially. It was 1990s era equipment. The two 250-

gallon tanks were cement lined... By the way, all this was going on while graduation ceremonies and events were taking place on campus, which created a logistical nightmare getting to and from the site."

## Winning Score

So how is the new unit performing today? "One of the University's facilities people reached out to me to say that they have not had a single hiccup with the new unit," said Tarzia. "They've been very impressed. No alerts. No fault alarm. And there's been no interruption of hot water since the Intellihot unit was installed. I have a picture of Jeff's efficiency meter showing the unit operating at 99.9 percent."

The winning score, ultimately, is a happy customer, in this case **Mark E. Geuther**, director, facilities project manager at UNH: "The team at Granite State Plumbing and Heating responded quickly and professionally to ensure hot water continued to flow... at a key time." 

*Erica Levasseur is Intellihot's strategic district account manager in New England and Upstate New York. She has been in the plumbing industry since 2011 with various roles in wholesale, commercial HVAC, corporate training and commercial sales.*



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# Legionella Update with Dr. Janet Stout

► **Continued from page 6**

was in these buildings and their water distribution systems, and that closures, shutdowns, and stagnation would provide that great environment for Legionella and its friends to grow. And so that meant that there was a much greater awareness about it. We said, "Okay, let's not just let this happen; let's do things to mitigate the risk."

And in fact, in 2020, the American Water Works Association (AWWA) and the International Association of Plumbing and Mechanical Officials (IAPMO) wrote a white paper on responding to water stagnation in buildings with reduced or no water use. That was their answer to helping people to manage the fact that building shutdowns impact water quality. For instance, cold water warms up and warm water cools down into that sweet spot for Legionella to grow. And any disinfectant that was there is gone because of water age and just sort of sitting there.

So, they had a program for that they described there, and they actually just updated it in January 2023. Your readers can look for the *AWWA/IAPMO Manual-2022: Manual of Recommended Practices for the Safe Closure and Reopening of Building Water Systems*. Those documents are free. So, they can go online and download them. And so we knew that there was a potential problem.

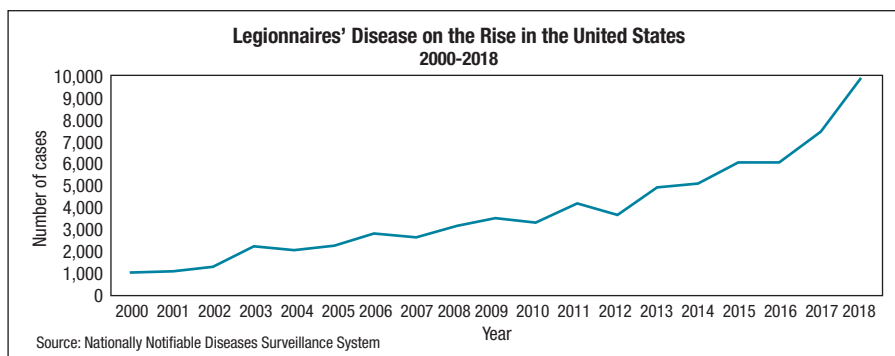
**HPAC:** Did we have lots of outbreaks of Legionnaires' Disease during the pandemic?

**Dr. Stout:** Certainly, we had cases, and sometimes they actually got confused with the diagnosis of Covid because they present so similarly in terms of pneumonia. But actually, what happened was the number of (LD) cases nationally went down. After all, everybody's wearing masks, nobody's going out, etc., so that was interesting. We actually presented that information at the National Infection Prevention Conference a couple of years ago, that during the Covid pandemic, cases actually went down. But we're returning back to baseline now. Because the problems persist, which is very frustrating for a 'legionellogist.' But we can talk about that 'til the cows come home.

**HPAC:** And ASHRAE also just developed its first-ever pathogen mitigation standard



Dr. Stout shares her "chill pills."



for infectious aerosols. It recommends several HVAC-related measures to reduce the risk of transmission of Covid-19, influenza, and other airborne viruses and homes, offices and hospitals, etc. Once adopted this summer, will those measures also help in the renewed fight against Legionnaires' Disease?

**Dr. Stout:** Anything that improves air quality has the potential of mitigating risk from anything that may be transmitted through the air. So, I applaud ASHRAE, and because I've been on these committees myself, I know they work long and hard to get across that finish line. But the thing about Legionella is that we need to stop it before it ever gets into the HVAC system, because it's in the water.

If we control this bacteria in the water, prevent its replication, then we can prevent the disease entirely. So this is part of the reason why we have this mission to end Legionnaires' Disease. Because no one needs to become infected with this bacteria if we control it in the water. So what ASHRAE had done, and I was first invited to sit on an ASHRAE committee

back in 1995, I think, when they were first working on Guideline 12. That was then published in 2000.

And then that morphed into Standard 188, which is a paradigm of water management, recognizing the risk, assessing the risk, both in the potable water system, as well as in devices like cooling towers, hot tubs and spas and decorative water features—places where we know outbreaks have occurred—and then address that risk directly. The most recent work that ASHRAE has done, and I'm also on that committee for Proposed Standard 514, is about managing the risk of physical, chemical and microbial hazards. So, these are other bacteria that are in water, particularly in hospital water systems that can cause infection.

**HPAC:** Overall, where do you think we are now on that spectrum of actually controlling Legionnaire's Disease? How would you say the fight is going?

**Dr. Stout:** Yes. So, you know, some of your listeners might have read some of the popular books by **Jim Collins**. In one of his books, *Successful Habits of Visionary Companies*, he talks about

setting BHAG's, which stands for "Big, Hairy, Audacious Goals." For me, ending Legionnaires' Disease is that "big, hairy, audacious goal." But I say it's not so much audacious, as achievable. As we get people to test for Legionella in their water systems, if they find it, particularly the type that causes a lot of infection, Legionella pneumophila 1, then they can prevent it. They can control it.

But first, we need to know whether your building is positive for Legionella. About half are. But more importantly, half are not. So, find out which half you're in by testing for Legionella. Then you'll know what to do next in terms of prevention.

**HPAC:** When you say half are, do you mean that half are susceptible? Or that half already have it?

**Dr. Stout:** Half are colonized. They have Legionella in their water systems. Half do not. One of the myths about Legionella is that it's everywhere, or ubiquitous. It is not everywhere. And our studies and other people's studies have shown that when you go out and you look at buildings in a large metropolitan city, whether it's a hospital or a high-rise building, the rule of thumb and the results show that about half have legionella in them.

And so there's risk there that can be mitigated and disease prevented. And one of the points that I wanted to make about this disease—which is a very serious form of pneumonia—is that if someone goes into the hospital for some other reason, and that hospital has Legionella in its water and it has not mitigated, and they get Legionnaires' Disease, the risk of death from that pneumonia is 25 to 30%. That is huge.

And so that's why the emphasis has to be on prevention. Because once somebody becomes infected, it's a downhill spiral of inflammation, even if they get the right antibiotic. They're trying to control the inflammation in the lungs, and they get adult respiratory distress syndrome, and 25 to 30% of them die. It's completely unnecessary. **G**

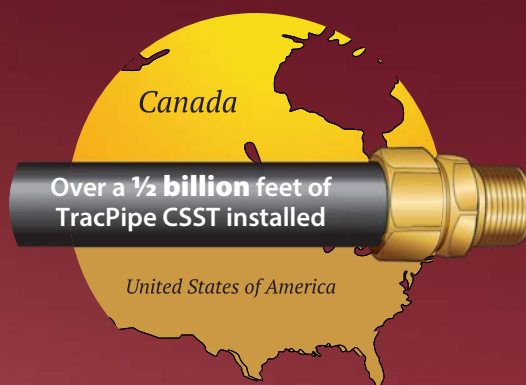
For much more on the ongoing battle against Legionella, read the full interview on [contractormag.com](http://contractormag.com).

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by Al Schwartz  
PLUMBING CONTRACTOR



# Newer = Better? (Or Not... )

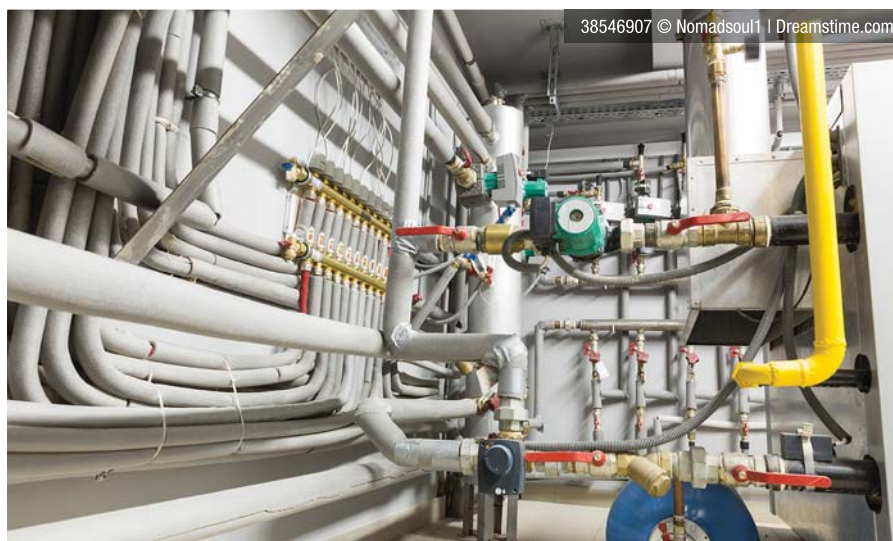
**D**oesn't it seem that there is some new product that you just can't live without being advertised every day? Whether it's a new type of computer, cellular phone, interactive gewgaw or downloadable jimcrack, we are constantly bombarded and bedazzled with technological advances designed to improve our lives, engage our intellect, or amuse us. As an example, the venerable automobile has been "electronicized" to a fare-thee-well, to such a degree it is almost impossible for a non-mechanic to do anything other than lift the hood and scratch his head in dismay when something goes haywire. "Shade tree" mechanics are, for the most part, a thing of the past. The construction industry has been no less impacted by the advances in modern technology.

## That's How We've Always Done It...

As I've noted before, change in the industry is usually resisted by those of us who toil in the trades every day. The "we've always done it this way" mantra has served us well for a long time and blindly accepting some new product or method of installation is, by and large, like pulling teeth. There is a good reason for this attitude. Over the years we have been sold a bill of goods on products that have not performed as advertised, and the guys in the field or the shops they work for get to hold the bag for the failures in most cases.

When PVC/DWV and ABS/DWV came on the scene way back when (I'm talking the late 1950s and early 1960s) we were using Hub and Spigot Cast Iron with galvanized pipe for venting and small drains, occasionally we used DWV Copper. "Yarning" a joint and pouring molten lead into it was the tried and true (albeit slightly dangerous) method of putting two pieces or fittings together. Rubber joints (TySeal) were only marginally accepted over the old lead and oakum method. NoHub Cast Iron was highly suspect and many inspectors around during this transition gave the plumber a hard time at first when he installed that material.

I remember well the first time I installed schedule #40, PVC/DWV for a



Over the years we have been sold a bill of goods on products that have not performed as advertised.

drain line. It was so easy! 20' of pipe in one shot! No joints! Wow! It felt like I was getting away with something. Obviously, the plastic pipe was a superior product for many installations and it's almost universal acceptance by building officials and testing agencies, as well as a long history of performance bears this out, but it was a hard sell at first because "we've always done it this way."

## New, Cheaper—But is it Better?

On the flip side though, that attitude didn't save us from Polybutylene water tubing or Polysulfone direct hot water heating solar panels, among others. Products like those were instrumental in keeping the attitude that "newer isn't necessarily better" alive when it came to having to warranty a bad product no matter what the code would allow.

As newer products come to market using space-age materials and micro-electronics, skilled craftsmen evaluated them on their merits, with a sharp eye out for defects and limitations in either materials or performance.

The flip side of that equation is that these products also allow the semi-skilled or unskilled person to install those products, diluting the skill level of

the trade in general. Why is it necessary to learn to braze or solder copper tube when you can use PEX or press gasketed copper? Short answer? It's not, unless you are working on an existing system and need to modify it with adapters.

It's true, also, that the unskilled or semi-skilled worker does not have the knowledge to understand the whys and the wherefores of the system he's installing, and many times the installation has systemic defects that the installer is unaware of (venting of a drainage system comes to mind). That said, however, the advent of newer, easier to install products is a boon to the modern contractor in terms of time, money and manpower.


## Everything is "Green"

A previous column dealt with the "green" revolution and addressed skepticism on the part of those of us who have to put these products and systems together. Everything even remotely environmentally friendly (or touted as such) is now a new "green" product. It is specified and coveted by the agencies that have the power to dictate these things. Architects, engineers and every building professional you can think of love going green.

According to a friend, who is a manufacturer's representative, the drive now is for more and more micro-electronic control of building and grounds environments. From electronically controlled flush valves, faucets and soap dispensers to paper towel dispensers, the push is to minimize the human factor and control the resource (water or conditioned air, etc.) when using plumbing or HVAC products. The market for retrofitting existing systems to comport with the "green" theme is one which can be very lucrative. Outside of major metropolitan areas, the drive to "go green" is intensifying.

Automatic lighting and exhaust fans are more prevalent as well, making commercial restrooms and kitchens practical testing grounds for a technology whose time has apparently come. So, as always, the craftsman will have to learn to install, repair and service this new group of products or fall behind the advance of modern technology.

## Still a Place for Skepticism

In our hyper-competitive marketplace there is still a place for skepticism though. Just because the products are specified doesn't mean that they will perform. The craftsman has a responsibility in this process of integrating new technology into the field. In fact, the guy doing the installation and having to deal with the fallout if the product fails to work as advertised, should be the final arbiter of what works and what doesn't. Who better to tell the testing agency, administrative authority or the manufacturer of a product whether or not that product works as it is supposed to than the guy who has to install and service it? 

*The Brooklyn, NY-born author is a retired third generation master plumber. He founded Sunflower Plumbing & Heating in Shirley, N.Y., in 1975 and A Professional Commercial Plumbing Inc. in Phoenix in 1980. He holds residential, commercial, industrial and solar plumbing licenses and is certified in welding, clean rooms, polypropylene gas fusion and medical gas piping. He can be reached at allen@proquilldriver.com.*





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# Artificial Intelligence in Mechanical Contracting

BY PHILLIP PERRY, SPECIAL TO CONTRATOR

**A**rtificial intelligence is dominating headlines around the world. But how practical is it? Can it be integrated into business operations in a way that boosts the bottom line without introducing costly errors?

Some companies in the mechanical contracting sector believe it can. “AI presents opportunities to increase efficiency, reduce costs, and improve the safety and quality of our operations,” said **Jeff Danley**, Associate Technology and Innovation Consultant at Burns & McDonnell. “We are in the early stages of exploring its use and look forward to integrating innovative technologies into our workflows.”

Other companies in the sector have also entered AI waters. “We have started using AI to help our field technicians prepare method statements and pre-task safety plans,” said **Edwin Buckley**, Senior Director of Facilities Operations at TDIndustries. “The AI program takes the knowledge and best practices accumulated over the years, and tailors it to suit many different situations.”

Every job is slightly different, and AI is able to catch those differences and adjust its instructions. “So far, it’s been very effective in applying a common method of work to very different environments,” said Buckley. “That helps our technicians make sure the steps they take are exactly what needs to be done to be safe and effective.”

An example of a method statement would be a preventive maintenance protocol for a rooftop unit. The procedure needs to deal safely with the inherent risks, while being flexible enough to provide guidance on what to do when complications arise.

AI has also been instrumental in managing TDIndustries’ buildings at the macro level. “In some of our facilities, we have hundreds if not thousands of pieces of equipment, with tens of thousands of sensor points,” said Buckley. “Part of the art of facilities management is being able to actually ascertain what’s a real alarm and what’s just system noise. AI will help recognize the important items



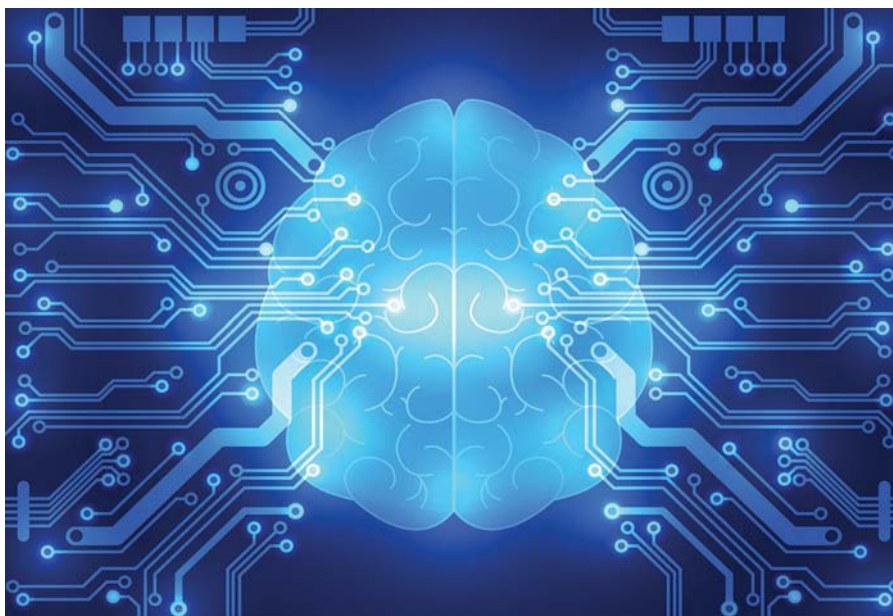
**Jeff Danley**, Associate Technology and Innovation Consultant at Burns & McDonnell



**Edwin Buckley**, Senior Director of Facilities Operations at TDIndustries



**Jamie Dabbs**, Vice President of Safety, Health at TDIndustries



**AI could help contractors reach new levels of efficiency, safety and profitability—but implementation may hold unexpected risks.**

that need to be actioned.”

AI allows the company to deal with issues early in the process, often at a time when only minor adjustments need be made. In contrast, picking up a problem maybe three months down the road during routine preventative maintenance can result in a much more costly repair or replacement as the problem has grown much bigger.

As an example of such a scenario, the company posits a hypothetical

40-story downtown office building in which critical elements of the HVAC system are about to go out. AI will allow the company to spot any developing problem with the system so that it can be fixed before everything melts down. Left unchecked, the problem could result in a crisis requiring an inordinate amount of money to repair.

“This kind of fault detection and diagnostics has become a lot more sophisticated now than it was a few years

ago, thanks to improvements in AI,” said Buckley. “What the latest generation of AI is allows us to do is to go much heavier on the diagnostics.”

## Safety checks

TDIndustries is also using AI to measure and enhance its safety systems and engagement. “A company of our size completes hundreds of thousands of safety engagement processes over the course of a year,” said **Jamie Dabbs**, CSP, the company’s Vice President of Safety, Health, and Environmental. “We need technology like this to be a resource multiplier to help us define, analyze, measure, and control safety processes and scale our large volume of safety engagement. We started using AI to help us score pre-task safety plans through our app (SmartTagIt by FactorLab) in 2019. The AI provides an analysis that humans could not do, or not do as efficiently or at this scale.”

This approach taught the AI model to score text-based pre-task safety plans by first using TD Safety managers to manually score 2,000 completed plans.

The AI is able to take unstructured human data and group it in ways that allow for structured reporting. That allowed the company to be more insightful, intentional, and predictive. “Prior to having this safety technology, the work of the EHS professional was a little more hit or miss,” said Dabbs. “They would use a paper checklist and create a manual gap analysis. The benefits from AI derive from its service as a

➤ **Turn to AI page 42**

# ESSENCE EXR. THE WATER HEATER REINVENTED.

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# Trade Schools for All:

A look at how lender Fynn ensures that career and technical education schools are options for everyone, especially young people living in poverty. **by Kelly L. Faloon**



**Many Gen Z students are unable to afford a trade school.**

Last year, tuition at US private colleges and universities grew to nearly \$40,000 per year; for public in-state college tuition, the cost was \$10,500, according to data collected by US News & World Report and reported by CNN Business. Add in housing, food, books and other cost-of-living expenses for a four-year degree, and a secondary education becomes very expensive for America's college students.

Alternatively, going to a trade school for a career and technical education (CTE) will cost about \$33,000 from start to finish, notes Career School Now, an online education network.

"Because there is such a need for skilled tradesmen and women, vocational school grads often find employment in their field relatively quickly, letting them start earning right away," the site notes. "While everyone needs skills to support themselves, people are finally beginning to realize that these skills exist outside of four-year university degrees."

However, a \$33,000 trade school education can still be out of reach for some people.

"A very disparate and low amount of financial aid opportunities are available for students pursuing trade education compared to a traditional four-year university," explains Eric Menees, CEO of Fynn, which provides students of all income levels with secure loans to attend qualifying trade schools. "The demographic of many of these students is at or near the poverty line."

Many Gen Z students don't have a credit history yet and may have a low-paying job that makes them unable to afford a CTE school, he adds.

"We work with many trade schools across the country; they may have 200 to 300 millennial or Gen Z applicants for 100 seats, but only 30 students end up in the classroom," Menees says. "And the answer every time is financial. It's not that they don't want to go to the school; they just don't know how."

It's a difficult problem for the schools, too, he adds, an "existential threat. They're seeing so much demand from the employer side and so much interest from the supply side, but they're unable to grow and do their business and get it through. They have good programs and so many people applying, but they don't have any capital sources to help these students get in."

Growing up in Houston, many of Menees' family members worked in



Eric Menees, CEO of Fynn.

the construction trades. And many of his high school friends had aspirations of being mechanics, HVAC techs or welders but had financial hurdles to overcome.

"The trades were always a normal part of life for me," he recalls. "However, moving around the country, pursuing my passions in research and mechanical engineering, I realized that the trades were not as normalized and accessible as they were for my family and friends. Starting this business in the last couple of years, I wanted to do something about that. I knew a lot about it and was very passionate about the need for helping lower-income people achieve a lucrative career in the trades."

### Invested in Students' Success

Of course, CTE students have financial aid options, but not as diverse as their college/university counterparts. Many trade organizations offer scholarships for students pursuing a trades career.

Federal aid also is an option. "Federal

student loans offer fixed interest rates that are usually lower than what you'd get with a private lender," explains LendEDU.com. "They also come with certain benefits and features that private loans don't, making them the best first option when it comes to funding trade school."

However, many CTE institutions find it difficult to meet federal loan requirements. "Federal aid doesn't reach more than 70% of these post-secondary training institutions," Menees says.

Private loans are available for CTE students, but only a few financial institutions offer them, including College Ave, Sallie Mae and Ascent, LendEDU.com notes. Some have minimum credit score requirements, making them unobtainable for Gen Z students. Or they are offered loans with extremely high APRs, making them difficult to pay back.

This is where Fynn comes in. It offers fair and affordable loans to students of all backgrounds to attend qualifying trade schools. "We had to build a product that worked for the 60% to 80% of students applying to these schools," Menees explains.

Fynn loans cover the full cost of the career program, unlike federal loans that only cover half the costs, requiring students to take out private loans for the remainder. No credit or co-signer is needed. It's a fully automated process with same-day decisions.

Payment options are affordable. The initial grace period for starting payments is 60 days after finishing a program; Fynn sets up an income-based repayment schedule generally the same for all students enrolled in a specific program at a specific school campus.

The firm offers three big benefits for students accepting its loans:

**1. Payment reduction.** If income drops below a certain level, Fynn will

*"A very disparate and low amount of financial aid opportunities are available for students pursuing trade education compared to a traditional four-year university,"  
— Eric Menees, CEO of Fynn*



# Vocational Training Resources

**USA.gov** has a job training resources page that includes state-by-state Department of Labor links, as well as career training links for specific groups such as veterans, young adults or people with disabilities.

<https://www.usa.gov/job-training>

**Job Corps** offers free training in a variety of construction trades, including electrical, carpentry and plumbing. The Job Corps program can even offer housing, food aid, medical care and a living allowance to those who qualify.

<https://www.jobcorps.gov/industry/construction>

**The United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada** (UA) offers a comprehensive five-year apprenticeship program that involves classroom, workshop and on-the-job training.

<https://ua.org/education-and-training/become-an-apprentice/>

**The Mechanical Contractor Association of America** (MCAA)'s Career Development Initiative helps MCAA members connect with students for internships or full-time employment. Interested students can look for employers on the Great Futures Job Board, or search for scholarships, grants, and awards.

<https://www.mcaa.org/career-development-initiative/>

**The Plumbing-Heating-Cooling-Contractors Association** (PHCC) has a training and education page with links to workforce readiness/pre-apprenticeship programs, plumbing & HVAC/R apprenticeship programs, construction management training and more.

<https://www.phccweb.org/training-education/>

**SkillsUSA** is a partnership of students, teachers and industry working together to ensure America has a skilled workforce. On their students' resources page you can locate a chapter in your area, as well as discover information on scholarships, grants, awards, educational resources and more.

<https://www.skillsusa.org/membership-resources/students/>



**Student in plumbing professional training, working on copper.**

cover up to 20% of the monthly payment—no fees, no penalties, and you never have to pay back the amount Fynn covered.

**2. Payment pause.** If income drops significantly below an average salary for the occupation or loan recipients becomes unemployed, they can apply to pause payments. Interest also stops accruing during a payment pause.

**3. Loan forgiveness.** Fynn will forgive any outstanding balance if recipients haven't finished paying off their loans within 15 years.

"We want our students to succeed," Menees says. "We only work in trades that we see a significant supply-and-demand mismatch such that any student who graduates one of these programs will get the job because there's such a need for that career. Whether we're talking about nurses, truck drivers, plumbers, HVAC techs or welders, these trades have a good outcome for the students."

Fynn is lending to about 100 schools in 14 states. And the company only works with schools that have been around for five, 10 or 15 years and have a proven track record of good outcomes for students.

"We don't want somebody to take out a loan for something they're passionate about and then not be able

*"We need to get the government and regulators a little more involved, a little more aware of how certain policies around federal funding impact the ability for students to enter these very essential careers."*


to succeed in that career; that's the worst case," he notes. "We want this to be affordable and not a debt burden to them. And we never try to pursue something in bankruptcy, as many lenders do. That's horrible; it's a person's last chance to get back on their feet."

Fynn's customer service team works with students throughout their CTE programs. The career success and job placement team helps students if they struggle with a resume or

interview prep because some have never interviewed for a job.

"We're much more hands-on with students, much more interactive than run-of-the-mill lenders," Menees explains. "So, we'll help students if they need that extra push or connection with the employer. We succeed and the students succeed because we've aligned our incentives together."

He points out that CTE funding is a huge issue; one company can't affect the change needed.

"This is a massive market, and we're just one company doing it, but it's not something that one company solves," Menees says. "We need to get the government and regulators a little more involved, a little more aware of how certain policies around federal funding impact the ability for students to enter these very essential careers." 

*Kelly Faloan is a contributing writer to CONTRACTOR magazine and principal of Faloan Editorial Services. The former editor of Plumbing & Mechanical magazine, she has nearly 35 years of experience in B2B publishing, with 25 of those years writing about the plumbing, heating, cooling and piping industry. Faloan is a journalism graduate of Michigan State University. You can reach her at [kelly@faloaneditorialservices.com](mailto:kelly@faloaneditorialservices.com).*



**Fynn works with schools that have a track record of good outcomes for students.**



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# STIEBEL ELTRON

Simply the Best



by Patrick Linhardt

HYDRONICS MANAGER AT CORKEN STEEL PRODUCTS CO.



## Reverse Flow

**W**e were at one of the Catholic compounds not too far from the office. Besides the Kid and I, his boss was along to look at some air conditioning opportunities. We met the contractor, found the custodian and all went down to the boiler room. Full disclosure, I was raised and schooled at a compound, although a small one by Cincinnati standards.

When I say compound, I mean there is a church, a couple of school buildings, a rectory, and a convent. This whole operation takes up more than a city block. The boiler we came to look at heats the couple of school buildings. Just like other parishes, there was a sudden surge of kids to educate in the '50s and '60s, so new buildings were built or existing buildings got an addition.

This one looked to be from the sixties. It was a high mass, cast iron sectional hot water boiler, which is very typical for the era and application. From the twenties to the fifties, steam systems were the norm for institutional buildings. Around the mid-century mark, the tide turned to hot water, the modern way to heat.

For you oil guys, Cincinnati has always been a gas town. Oil was for the outskirts, and one rich neighborhood that held out until the seventies. So, this boiler was the atmospheric draft style, a few tons of cast iron sections sitting on a base with ribbon burners burning natural gas.

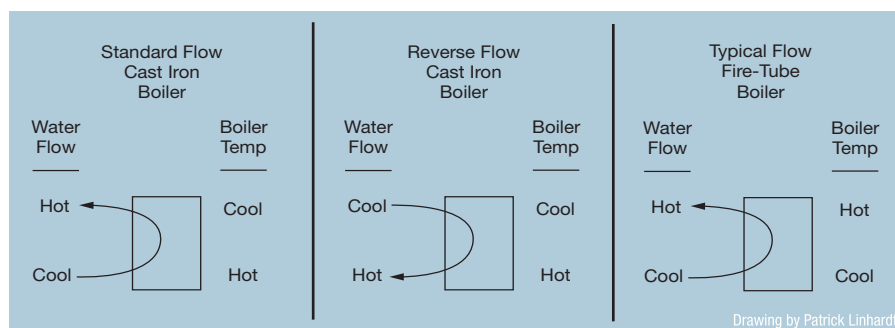
### Pumps Tell No Lies

The flue gasses warm the cast iron sections as they travel up, along their path to the giant chimney, formerly used for a coal boiler. The cooler water from the return of the system usually enters the boiler at the bottom, where the flames are and the temperature is the hottest. That's what I was expecting.

One of the first things I do at a job site visit is determine the direction of flow in the pipes I can see. Sometimes you don't see too much, but this boiler room wasn't keeping any secrets. I saw the typical pipes on the boiler, one on the bottom and one towards the top,



A steam boiler on gas fuel.



on opposite sides. Nothing out of the ordinary so far.

There were a couple of pumps on the pipe going to the bottom, while straight pipe left from the top. Pumps tell no lies, when it comes to directional flow—at least the single phase motor pumps. These couple of pumps were single phase in-line style, with a directional arrow clearly marked on each. Three phase pumps can go backwards if not phased correctly.

### Going Which Way Now?

Usually when you find the pumps on the pipe leading to the bottom of a cast iron atmospheric boiler, the flow is towards the boiler. However, here the flow was leading away from the boiler. How strange to have the flow going in the opposite direction through the boiler. Definitely wasn't piped according to the boiler manufacturer.

I pointed this out to the Kid and his boss. I wanted the Kid to see a job

like this and wanted his boss to be impressed with my knowledge of boiler systems. We've been working in the same office for the past ten years or so and he has been keeping a journal of some of my observations/rules of life (like, "buy a house with a flat driveway.") I thought he might like this one, "never assume the flow in a system."

I remembered that long ago, when I was reading up on the available literature of the boiler manufacturer we were selling, there was an engineering bulletin about reverse flow in hot water boilers. I don't remember much about it, just that it was a semi-popular idea in the 1960's. I have only seen it once before in the field and never in any manufacturer's installation instructions, so it must not have been a very good idea. Usually the good ones stick around.

### Old Boilers and New

It got me thinking about the flow in the

high efficiency boilers we were going to be quoting on this replacement job. They are the fire-tube heat exchanger design, with the burner on the top and the flue gases going down through the boiler, pushed by the modulating inducer fan. This is opposite of the typical cast iron boiler, where the burner is at the bottom and the flue gases naturally rise up through the boiler.

The old design of the gas atmospheric was adapted from the older design of a coal fired boiler and gravity circulation of the water. The cooler water had to return to the bottom to be warmed up and leave at the top as hotter water. Both had the cooler water from the system entering the boiler where it is hottest.

The not-so-popular-at-the-time idea of reverse flow was just the opposite. The cooler water entered the boiler where the boiler was the coolest, and left the boiler where it was the hottest. The modern fire-tube boilers now use the same concept. The cooler return water enters at the bottom of the boiler where the flue gasses are the coolest and the warmer supply water leaves at the top of the boiler where the burner is located and the temperature is the hottest.

"What once was old is new again," the Kid's boss has a new truism for his journal.

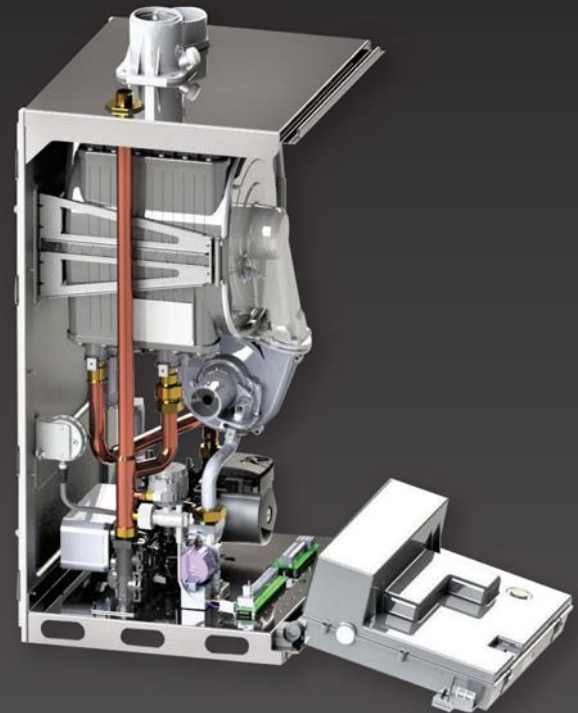
### Final Note

I would like to note the passing of a fellow Air Force and boiler trade veteran, **Dale Schweitzer**. Dale was Viet Nam era, spending too much time on Johnston Atoll in the Pacific Ocean with Agent Orange. The cancer took him too early. War has many side effects. God's speed Airman. **C**

*Patrick Linhardt is a thirty-seven-year veteran of the wholesale side of the hydronic industry who has been designing and troubleshooting steam and hot water heating systems, pumps and controls on an almost daily basis. An educator and author, he is currently Hydronic Manager at the Corken Steel Products Co.*

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## Intellihot Launches telliSize, a Six-Dimension Dynamic Sizing Tool for Heat Pump Water Heaters

CHICAGO, IL — Intellihot, an innovative designer/manufacturer of built-environment systems that challenge legacy approaches for sustainability, recently released telliSize, a six-dimension dynamic simulation software tool for correctly sizing heat pump water heaters. This tool allows plumbing engineers to design commercial heat pump water heating systems quickly and confidently without time-consuming calculations and ambiguous assumptions—guaranteed.

The telliSize ([www.intellihot.com/sizing-calculator/](http://www.intellihot.com/sizing-calculator/)) tool uses real-world data and advanced mathematical models to simulate performance over 365 days to provide



guaranteed sizing for plumbing engineers and architects. Three different



### Intellihot

sizing options are provided to meet varying needs: an option with the least upfront cost, one with the lowest operational expenses, and one that balances both.

#### Easy to Use

Users simply need to select their property type and input its zip code, fixture count, and desired outlet temperature


online at telliSize. Then, the calculator uses real-world data from similar properties and runs an advanced dynamic mathematical model on cloud computers using parallel computing technology. The users are emailed configuration options within three business days.

Intellihot is so confident in its telliSize tool that it even offers a guarantee: if any of the selections fail to meet the user's hot water demand, Intellihot will supply additional equipment at no extra cost.

"Until now engineers could not confidently or accurately determine how many heat pumps a specific application will need, and how the entire system will perform," says Intellihot Chief Technology Officer Siva Akasam. "The current methodologies are fraught with assumptions and prone to errors. They either oversize or undersize applications, resulting in excess space and power needs, or failure to meet hot water demand. Now they have a sizing tool that's guaranteed."

#### Sizing with Confidence

Since states like New York and California banned the use of natural gas in commercial buildings, heat pump water heaters are the most viable solution for the future. However, heat pump technology's performance is tied to external parameters that change constantly, including the weather, ambient air temperature, ground water temperature, price of electricity (which fluctuates hourly), and hot water consumption patterns.

Intellihot's telliSize calculator allows users to enjoy the space-saving and cost-reducing advantages of its Electron Heat Pumps. Previous difficulties in confidently sizing heat pump water heaters have led to businesses being unable to adopt this sustainable water heating solution. Intellihot's tool, coupled with the manufacturer's recent launch of the world's first tankless heat pump water heater, positions the Chicago-based company to assist commercial properties in installing sustainable, efficient, and safe heat pump water heating systems. 

## A. O. Smith University Announces In-Person and Virtual Summer Courses

ASHLAND CITY, TN — A. O. Smith, a leader in water heating and water treatment, will use its July and August A. O. Smith University classes to educate professionals on its broad line of gas and electric water heating solutions. In addition to its monthly virtual classes, A. O. Smith will also host an in-person contractor class at its Ashland City, Tennessee training facility.

Held July 18-20, the in-person course will cover installation, maintenance and troubleshooting for commercial gas, commercial electric and tankless gas water heaters. Individuals can register online for in-person classes, but please note registration is not guaranteed until participants receive a confirmation from A. O. Smith.

"We're excited to share the upcoming July and August A. O. Smith University classes," said Kenneth Ezzell, A. O. Smith technical training supervisor. "As we navigate the evolution of water heating technology, we remain committed to offering both virtual and in-person learning



experiences to ensure we're providing contractors with the knowledge they need to excel in the field. Continued education is vital to our commitment to excellence, and we're excited to share these valuable learning opportunities with industry professionals in-person and online, so more professionals can participate."


#### July and August virtual classes include the following:

- **July 12, 8:00 a.m. CDT** — *Tankless Water Heaters – Single Heater Installations*
- **July 25, 8:00 a.m. CDT** — *Residential Atmospheric Gas*
- **July 26, 8:00 a.m. CDT** — *Commercial Gas*
- **August 8, 8:00 a.m. CDT** — *Residential Gas Power and*

#### Power-Direct Vent

- **August 9, 8:00 a.m. CDT** — *Tankless Water Heaters – Multiple Heater Installations*
- **August 22, 8:00 a.m. CDT** — *Residential Electric*
- **August 23, 8:00 a.m. CDT** — *Commercial Electric*

The A. O. Smith University state-of-the-art broadcast studio in Ashland City allows instructors to provide real-time, full-scope demonstrations on a range of A. O. Smith products. Virtual classes are taught on a two-way meeting platform to ensure participants have a high level of engagement with instructors and the opportunity to ask questions.

For more information on virtual and in-person training classes, visit [www.university.hotwater.com/virtual-campus/](http://www.university.hotwater.com/virtual-campus/). 





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## New Hampshire Hydronics

■ BY THOMAS RENNER, SPECIAL TO CONTRACTOR

JACKSON, NH — The forecast for the growth of Smart Homes in the next four years is staggering. Revenue is expected to grow at a rate of more than 10 percent until 2027, according to figures from Statista, with the household penetration forecast to rise to more than 68 percent.

“Advances in technology are making homes safer, more efficient, more comfortable and more enjoyable, saving homeowners time and money,” a report from Nasdaq said last year. The Statista report said the smart home market is expected to amount to 93.59 million users by 2027.

One of the primary heating/cooling sources for smart homes are hydronic systems. Like the smart home market, hydronic systems are looking at significant growth. The hydronic underfloor heating market is anticipated to grow at over 6% from 2022-2030, according to Global Market Insights. “The increasing demand for cost-effective heating solutions coupled with government incentives and support for the adoption of underfloor heating solutions will sway the industry landscape,” the report said.

Hydronics are already changing the heating landscape in Europe. Changes in the US landscape are under way as well, as demonstrated with the elaborate installation of a hydronic system at a home in New Hampshire. In partnership with Ripcord Engineering, Messana Hydronic Technologies designed the system for a four-bedroom, 3,500 square foot house.

A hydronic system provides heating or cooling by using water as a heat transfer medium, which is pumped through a series of pipes throughout the house. Hydronics pairs well with heat pump technology, which delivers a low carbon footprint, can reduce costs, and can be used for heating and cooling, among other advantages. “We’re seeing more and more air to water heat pumps,” said **Bryan Rossi** of Messana. “Hydronics have a much longer life span and the flexibility to use gas and electrical sources. It’s very normal in Europe, but in the United



An exterior shot of the Jackson residence.

### Messana Hydronic Technologies’ latest install is part of a growing trend in the US.

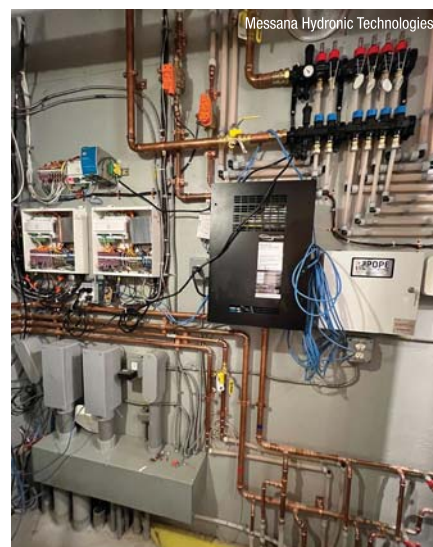


The 5-ton Aermec heat pump that is the heart of the system.

States there’s a very small amount of hydronics on the market.”

#### Pump It Up

The New Hampshire home illustrates a trend that is taking root in several pockets of the US, notably New England and some Western states. Hydronics are slowly infiltrating the US market, and those are the regions where hydronics



The system, designed by Messana Hydronic Technologies includes 13 zones.

are establishing a foothold.

The home in Jackson, NH includes a barn that serves as a guest house. The system includes 13 zones, a 5-ton heat pump and Messana’s mSense room comfort sensors and controls. They monitor relative humidity, temperature, and Volatile Organic Compounds (VOCs), which is essentially indoor air quality.

A 5-ton Aermec air-to-water heat pump serves as the heart of the hydronic system. It supplies hot and cold water to several radiant floors and Jaga hydronic fan coils.

The home’s first floor utilizes a radiant floor for first stage heating and cooling, and six fan coils for second stage heating and cooling. The second floor uses Jaga Briza 22 fan coils to provide heating and cooling to the upstairs bedrooms, and electric radiant floor for heating the bathrooms. The barn uses a concrete radiant floor for both heating and cooling.

While it seems complex, Rossi said the system is quite simple. Messana designs systems for residential and commercial buildings of all shapes and sizes. The New Hampshire project covered 5,000 square feet, including 1,500 square feet in the adjacent barn.

“It’s a fairly simple system for the most part,” Rossi said. “It’s a single tank with radiant floor heat on the first floor. They used 1-inch thick hardwood floors, which is extremely thick. The BTU output in cooling is not super high. The fan coils are designed to supplement those areas, to ramp up and down as needed. The upstairs has no radiant heat. The barn has its own radiant floor for heating and cooling but no supplemental fan coils.”

#### Perfect Temperature

One of the features in smart home technology is room comfort sensors, which play an important role in maintaining the proper setting for the homeowner.

The mSense device measures the operative temperature by combining the influence of air and radiant temperature in a way similar to a person’s skin receptors.

Sensors also pick up relative humidity and air quality. A gas sensor measures CO<sub>2</sub>; and other substances that directly affect a person’s health.

“People typically respond to thermal discomfort by continually readjusting their thermostat,” Rossi said. “An air-based thermostat never represents the real human thermal exchange. mSense comfort sensor is an essential element



of a climate control system especially in presence of radiant ceiling panels but also in conventional radiant floor and air systems.”

Many of the smart home systems have apps that allow for remote control of the heating system. That allows for more efficient use of the heating system and saves money for the homeowner.

## Ready in Reserve

New Hampshire winters can call for a significant heating load, and the thick flooring can make it harder to get the room to higher temperatures.

Messana also included an HTP Phoenix high-efficiency water heater in the project. The PH130-55 has a Btuh/input range of 35,000-130,000.

“The Phoenix is a backup for the heating side of the house,” Rossi said. “When the required buffer tank temperature is not being met, Messana’s controls activate the HTP water heater to assist the air-to-water heat pump in reaching the required buffer tank temperature.”

The Phoenix has up to a 96 percent thermal efficiency rating, and its modulating burner operates at a 5:1 turndown ratio, which provides high system efficiency even during low



**The system also includes an HTP Phoenix high-efficiency water heater as a backup for the heating side of the house. The Phoenix has a 96 percent thermal efficiency rating.**

load conditions. A laser welded tank constructed with 316L stainless steel resists corrosion and a hybrid cupronickel/stainless steel heat exchanger offers superior heat transfer capabilities and expands and contracts rapidly, eliminating scale build up and promoting self-cleaning.

“It’s going to provide plenty of heat, and we were able to add another stage of heating by adding in a pump block without having to buy a whole other boiler,” Rossi said.

## Pros and Cons

Efficiency is the primary advantage of hydronics, but there are others as well.

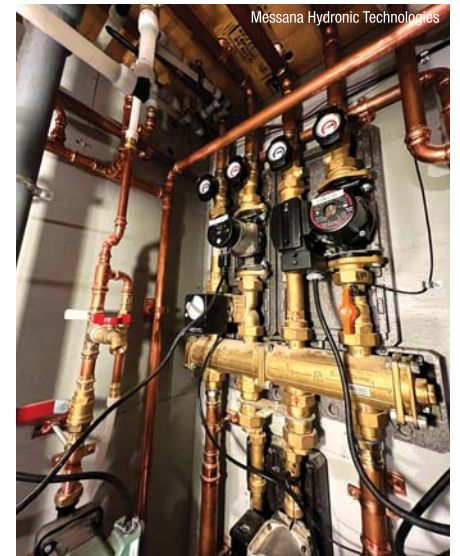
Hydronics reduce allergens, and separate zones allow for individual control of bedrooms and living areas. They also provide ambient heat, which helps maintain comfortable humidity in contrast to forced air systems, which heat air and dry it out.

Hydronics systems are quiet, do not require ducts and require little maintenance while offering durability.

There are however cons as well. The system can take longer to heat up, and potential freezing can damage the system. Installations must be carefully planned and installing a system in an older home can be expensive. If a pipe leaks or bursts, walls or floors will need to be torn up to fix the issue.

Those issues, however, are not stopping the migration to hydronics.

“You’re going to see more and more demand for hydronics,” Rossi said. “They have a much longer life span and the flexibility to use gas and electric, or



**A bank of circulators distributing to the radiant floor zone.**

to even use them together. That’s the long-term plan for cooling and heating in the US. Right now, hydronics is such a small market. But it’s very normal in Europe, where a lot of homes already have the infrastructure in place. I think we’re definitely going to see that shift over to the US.”

*Thomas Renner writes on building, construction, engineering and other trade industry topics for publications throughout the United States.*

# German Court Postpones Heating Law

Germany’s top court on Wednesday instructed the country’s coalition government to postpone further proceedings regarding a proposed heating law, in a blow to parliament’s plans to phase out fossil fuel heating systems.

The new law would have subsidized up to 70% of the costs of switching to a climate-friendly boiler.

The Federal Constitutional Court ruled in favour of conservative lawmaker Thomas Heilmann of the Christian Democratic Union, who argued in an injunction that the government needed more time to deliberate on the bill, which aims to make the country’s building sector more environmentally sustainable. He argued that rushing the bill through parliament violated his constitutional rights as a parliamentarian.

“The deliberations on [the heating law], which were shortened as much as possible by parliament, do not allow the



conceptual weaknesses of the law to be identified and changed,” Heilmann said in a tweet. He added that the government

## The Federal Constitutional Court ruled in favor of conservative lawmaker who argued in an injunction that the government needed more time to deliberate.

“is ruining the heating transition with a last-minute legislative package and an unconstitutional procedure”.

The decision to postpone final deliberations, which were set to take place at the end of this week, was passed by five votes to two.

Last week, leaders of Germany’s three ruling parties, the SPD, the Greens and the Free Democrats Party (FDP), reached an agreement on the details of the regulations within the proposed law, which included subsidies for low-emission boilers. The coalition had said

previously that it wanted to move the bill through parliament quickly, with a final vote planned before summer recess this week.

In April, the government finalised plans to limit the use of fossil fuel heating systems in new installations. The law states that by 2024, all newly installed heating systems must use a minimum of 65% renewable energy.

The Greens have been pushing for ambitious climate targets, while the pro-business FDP insist on greater scope for heat pump alternatives.



by Patti Feldman  
COMPUTER AUTHORITY



# Solutions for Time Tracking, Payments and More

**b**usybusy ([www.busybusy.com](http://www.busybusy.com)) is a time-tracking solution for construction which enables field employees to track labor materials and heavy equipment in one mobile app. Jobsite data is organized by project and is instantly available to team members. The app is available in a free version, with several core functionalities, and in for-fee Pro and Premium versions carrying added capabilities.

The core app, which can support an unlimited number of users, features time tracking, including clock-in and clock out (with overtime calculations) and clock-in and clock-out location reminders; clock-in GPS; digital time-card signatures, job costing with charts showing budget and actual costs for each project, with breakdown of sub-project budgets, and the ability to analyze job costing data from past and current projects; and equipment tracking. In remote areas with no cell phone service, the Automatic Offline Mode allows you to track time without service. Time entries, actions, and GPS locations are saved and uploaded when back in range.

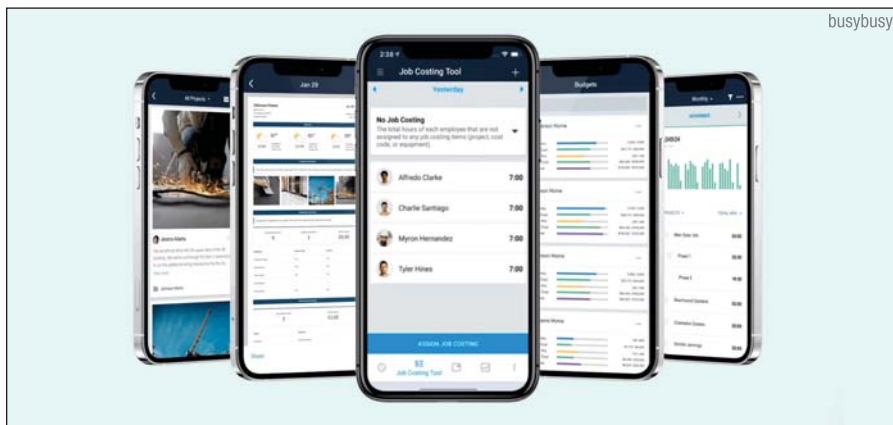
The Pro version adds scheduling, GPS breadcrumbing; safety reports; photos and notes; and supervisor tools, including the ability to clock in individual workers or crews and view time-cards with project name, time entry descriptions, and GPS stamp. Pro also can apply cost codes and track equipment. Data can be exported to most payroll systems.

The Premium version also includes daily project reports tracking employees, cost codes, and equipment, and documents and progress tracking.

**Pricing:** 14-day free trial of any version. After that, Pro and Premium are billed per user, per month or annually.

## Square

**Square** ([squareup.com](http://squareup.com)), a technology company that enables customer payment at the point of sale or service using phones or tablets, offers several integrated software solutions suitable for home and repair service contrac-



Various screens from the busybusy mobile app.

## Reviews of the busybusy time tracking solution, the Square payment platform, the Finturf multi-lender direct-to-merchant financing solution and more.

tors. These include: *Tap to Pay* for securing taking contactless payments on Android phones and iPhones at a jobsite, *Square Appointments*, and *Square Invoices*.

**How it works:** Using a compatible Android or iOS device, you open the Square Point of Sale, Square Appointments, or Square Invoice app, enter the sale, and present the smartphone to the customer, enabling contactless payment at the project location. The customer will see the total amount owed along with the contactless payments symbol and can choose to complete the payment with a contactless credit or debit card or a digital wallet.

*Square Appointments* is an all-in-one point of sale booking and payments app that allows contractors to manage appointments on the go on Android and iOS. Square Appointments is also available on Square Terminal (a mobile payments terminal). Appointments also offers Buy Now, Pay Later through the integrated *Afterpay*, an option which contractors can select that gives customers the ability to pay in four payments over a six-week period.

*Square Invoices* allows you to send digital invoices and estimates, accept payments, send reminders, and track which invoices are paid and unpaid.

*Square Contracts* provides you with predefined templates as well as the ability to create your own contract from scratch. You can customize contact information, fees, and policies unique to your business and can edit a contract until it is signed. Because it is natively integrated with *Invoices* and *Appointments*, you can attach relevant files and purchase order to contracts.

**Pricing:** Tap to Buy is 2.6% + 10 cents per tap; Square Appointments Free is free for a single location with Square Plus and Premium carrying fees per month per location; Square Invoices Free has no monthly fee while Invoices Plus, featuring various advanced features, has a monthly fee. Both Invoices options allow sending unlimited invoices.

## Finturf

**Finturf** ([www.finturf.com](http://www.finturf.com)), a multi-lender direct-to-merchant financing

solution, has entered into a partnership with **Microf** ([www.microf.com](http://www.microf.com)), a consumer financing and leasing platform that includes services for credit-challenged homeowners. This collaboration provides a way for HVAC contractors to receive funding from customers looking to purchase a new HVAC system.

Microf's lease-purchase program typically requires two to three business days for contractors to receive funding for approved customers and does not entail any dealer fees. Approved homeowners have the flexibility to set up monthly payments over a period extending from 36 to 84 months. This financial agreement has no balloon payment at the end of the contract and offers early payoff discounts.

The process is straightforward: homeowners complete an application through a URL link that the contractor generates using Finturf. Upon approval, the contractor is notified in real time and receives funds in two to three business days.

## Zuper Update

**Zuper** ([www.zuper.co](http://www.zuper.co)) field service management and customer engagement platform (reviewed in my March 2021 column), which already featured a booking widget, recently enhanced customer portal capabilities to enable heightened efficiency for businesses with field service operations. The customer portal provides end consumers with easy web-based access to real-time status of all their jobs, including scheduling dates, completion status, field service employees assigned, and real-time location of service employees. It also allows field service teams to give customers a unified view of quotes (approved or denied), outstanding and paid invoices, contracts and a one-click ability to write reviews of their business on third-party platforms, including Google. **G**

*Patti Feldman writes articles and web content for trade magazines and manufacturers of building products. She can be reached at [productpad@yahoo.com](mailto:productpad@yahoo.com).*



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by Matt Michel  
MARKETING AUTHORITY



# When Things Go South

**S**ometimes despite your best efforts, something screws up. You screw up. Your plumber screws up. The result is your customer is screwed up. To handle the occasional screw up with aplomb, you must have a service recovery procedure. Here are nine vital steps to build one.

## 1. Listen

When the customer is explaining how something went wrong, listen intently. It is easy to race along, thinking you have heard all of this before so that you seek out a solution before the customer has finished describing the problem. Force yourself to listen. You might discover new information. Plus, part of the service recovery process is showing respect to the customer by actively listening.

You have two ears and one mouth. Use them proportionately.

## 2. Clarify

After the customer pauses, clarify to ensure you understand what was said. Repeat back to the customer what was just told to you in your own words. "So, Mr. Customer, if I understand correctly, what you are saying is..."

Sometimes people explain things poorly. It reminds me of a quote by Robert McCloskey that hung in my father's office. It read, "I know you believe you understand what you think I said, but I'm not sure you realize that what you heard is not actually what I meant." Confused? Probably. So, clarify.

## 3. Whoever Receives the Complaint Owns the Complaint

Do you find it frustrating when you have a customer service problem, and you have to explain it over and over again to the different employees of the offending company? Your customers are no different. So don't make them repeat the problem. Direct whoever receives the complaint to own it until it is successfully resolved.

Resolution becomes the obligation of the first person the customer reaches. If he or she cannot solve the problem,



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## To handle the occasional screw up with aplomb, you must have a service recovery procedure.

he remains the point person with the customer while working internally to get it the issue satisfactorily addressed.

## 4. Own Up to Mistakes

If the company erred, admit it and apologize. When you try to avoid admitting a mistake, you merely make the customer madder. It is better to admit an error, then do something about it.

Of course, the customer is not always right. There are times when the customer is wrong, not the company. If the company did not err, but the customer believes the customer did, apologize for the circumstances the customer is in.

## 5. Act Fast

Whatever you do, do it as fast as possible. Every second you delay resolution is a second where the customer anger builds. Fast resolution helps turn a bad experience into a positive one. Fast resolution also saves money. The longer a

problem drags out the more expensive it becomes.

## 6. Make It Right

You should have a warranty reserve fund where a percent or so from every invoice is contributed. This is tapped into to cover problems. Since the money is already budgeted, there should be no hesitation to fix the problem or refund money if necessary and appropriate. While you may not be able to satisfy every customer, you can at least mollify them to help neutralize the worst reviews.

Put yourself in the customer's shoes. Look at the world as the customer sees it. Be fair from the customer's perspective.

## 7. Empower Your People to Solve Problems

One of the best ways to handle problems fast is empowering your front line to make decisions even if they cost

money. Maybe you do not want to give them carte blanche, but you can give them a limit, such as \$500. Let the front line, most junior person act unilaterally for anything up to the budget without the need to seek management approval. If a problem requires you to get involved, it is costing a lot more than \$500 in hidden costs and opportunity costs.

## 8. Prevent Your People from Saying No

Sometimes the toughest people on customers are your front-line personnel. To stress the need to "recover" the customer, do not allow them to tell any customer no. Instead of saying no, instruct them to say, "Well, here is what I can do..."

## 9. Give Away Something Extra

When there is a problem, it may be a hassle for you, but it is worse for the customer. Even if you do not feel you did anything wrong, find something extra to give the customer. Often, you can ask the customer what she thinks is fair. It is usually less than you would be prepared to do anyway, so do a little more. Give the customer something extra. Make the customer almost glad you screwed up.

The art of service recovery means keeping the big picture at the forefront. Do not get into fights you cannot win with customers over little things. Solve the problem. Make it go away. Move on to bigger issues. Revisit your processes if it comes up again.

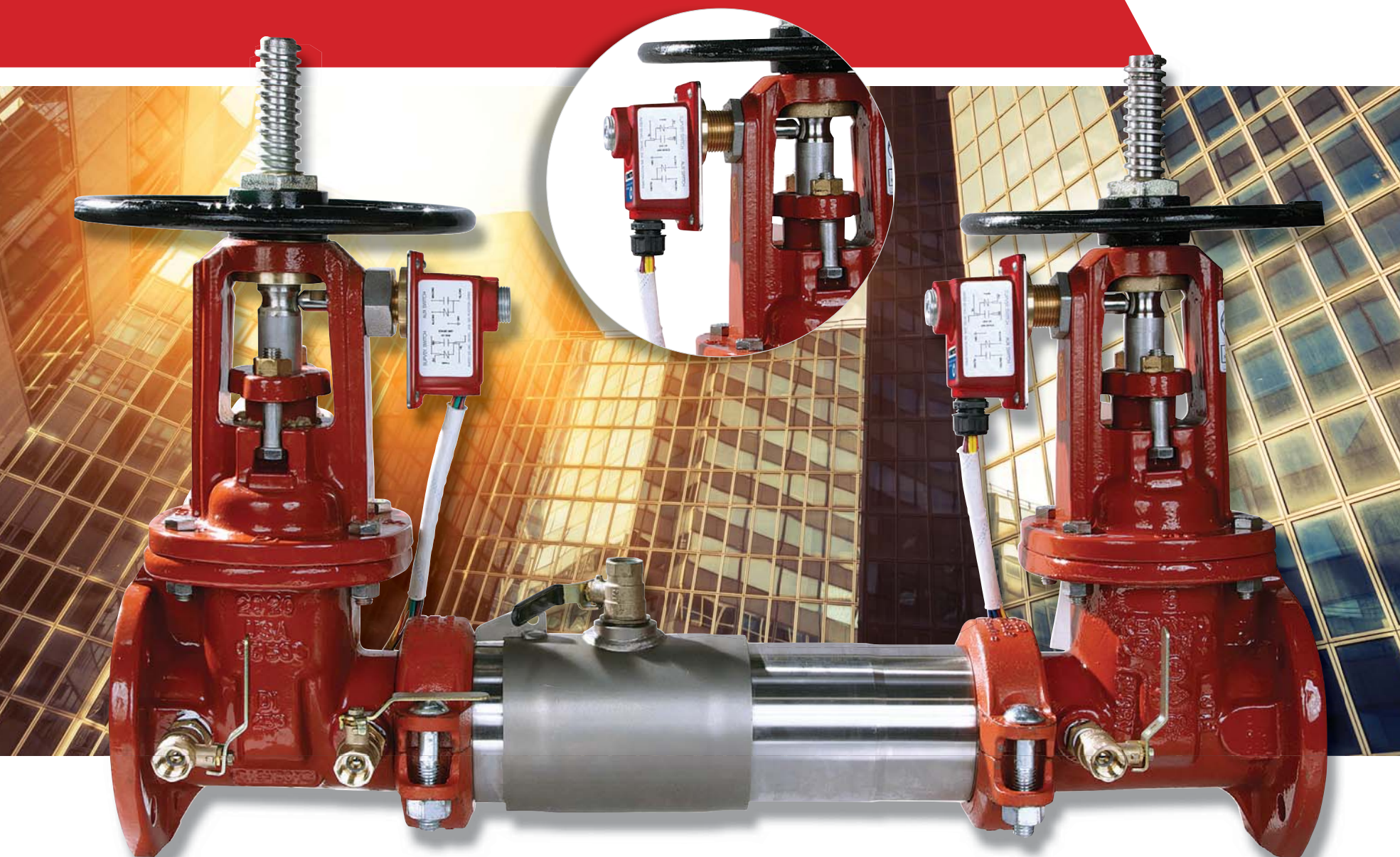
Ultimately, a good service recovery procedure will turn disgruntled customers into some of your greatest advocates. Design it. Teach it. Review it. Post it around your company.

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by Heather Ripley  
CEO RIPLEY PR



# Your Reputation is Only as Good as Your Last Review

It probably comes as no surprise to most home service business owners that a customer's journey to find them starts online.

Of course, most potential customers immediately turn to Google or other search engines these days. But, did you know that nearly 60% of consumers run an even deeper internet search on your company and a whopping 90% also read online reviews before they pull the trigger?

And, human nature being what it is, it should also be expected that when people are happy with their service, they are less apt to write a review unless they're prompted by a friendly reminder to do so. However, when someone is very unhappy with their service, they are far more likely to take to the internet to complain.

If you aren't paying attention to your online reviews, you might be missing an opportunity to correct misconceptions and assure readers that you are paying attention to your customer complaints.

This is not an area to take lightly. A home service public relations agency or reputation management firm might be necessary to keep up with these reviews if you don't have an employee who can be dedicated to this task.

As you begin to seriously consider your online reviews, here are a few tips to handling reviews professionally.

## Don't Write False Reviews!

This has been tried many times and it rarely ends well. Keep in mind that this is not only unethical but can make your company seem petty and seriously damage your credibility and trustworthiness if consumers find out that you've been writing good reviews for yourself while bad-mouthing your competitors.

Consumers aren't dumb. No matter how sneaky you might think you're being, you probably aren't as inconspicuous as you think you are. Internet users can generally figure out which reviews are real and which are fake from the tone and issue. And, if your competitor



**If you aren't paying attention to your online reviews, you might be missing an opportunity.**

follows a few cues and internet bread crumbs, they can call you out or even sue you. It's not worth it.

## Read and Respond Promptly

If you are operating a healthy business, this task can be daunting because of the sheer number of reviews. But you need to stay on top of all your reviews—good and bad. For good reviews, simply acknowledging them should be enough. If someone takes the time to write a good review, it's just good business to respond with a "thank you" or other form of recognition.

For bad reviews, remember that your response will be seen by everyone. Even if you plan on calling the reviewer, you need to respond to the complaint online so that future readers will see that you are responsive.

You can keep your responses simple and still get the point across to potential clients that you are working on or have already remedied the situation. There is no need to rehash the issue online. Simply note that you are acknowledging the complaint

with empathy and state that you are contacting the reviewer offline.

But, whether the review is good or bad, you should try to answer them quickly. Letting reviews languish online for months with no acknowledgment tells potential customers that you don't care enough about your customers to recognize their efforts to provide feedback.

## Don't Try to Sell

You have a website, a sales team, customer service representatives and an advertising budget. And, with all those options, you don't need to drop sales pitches onto your reviews platforms. People know when they're being sold to, and they don't like this maneuver when they are trying to register a complaint.

The best way to handle a bad review is to talk to the customer as though they were a friend. You wouldn't try to sell your friend a new service if they were less than pleased about the service they'd already received. So, don't do it to your customers, either.

## Make Your Response Meaningful

It's also imperative that you put some thought into your responses.

If you've ever gone to other review platforms and read through a series of answers to reviews and they all sound the same, you know that these responses are canned and probably not heartfelt. Customers can see that, too.

People want to see that a real person is responding to their reviews because they are looking to make a connection to have their good word or complaint heard.

## Ask for Reviews

If you're looking at your reviews platforms and don't seem to be getting many positive reviews, there's only one thing you can do to spur that action: ask your satisfied customers for reviews.

Many home service business owners and their service technicians have a hard time asking customers for these reviews but given how much stock potential clients put in real reviews today, it's a necessity.

And, since so many consumers now read these reviews, it's perfectly acceptable to request your clients contribute to your Google Reviews and Yelp pages. Getting your techs to ask for reviews can be easy if you provide them with incentives.

You can also encourage your customers to leave good reviews by printing out cards or instructions on invoices that provide them with advice on how to leave a review.

But the most important thing to remember is to not take bad reviews so personally that you act out. It's understandable that you are proud of the work you've done to build your business so when you see a bad review, it might be difficult not to be defensive.

Don't take it personally and lash out at the reviewer. Just keep in mind that everyone on the internet can

➤ **Turn to Reputation, page 46**

By Bartholomew Jae  
EDUCATION & DEVELOPMENT, NFPA



# Skilled Trades Prove to be Recession-Resilient

**T**he number of companies conducting major layoffs is rising. However, the skilled trades industry can't get enough workers. Baby boomers are leaving the industry at alarming rates in what's being called The Great Retirement, and there are simply not enough young people stepping in to fill their shoes.

The skilled trades are essential, making them more resistant to recession or economic downturn than other sectors. Think about it: there will always be a need for new construction, renovations, and other projects as humans modernize their physical environments. But recession-resiliency isn't something that just happens to the trades: organizations still need to be proactive and engage in technology innovation to ensure resiliency. Being proactive about resiliency means training employees in current and future industry needs and evolving alongside technology.

## Emerging Trends

Recession resiliency starts at the employee level with training and education. As the next generation explores alternative methods to gain skills, the skilled trades industry is ripe with opportunities for digital and hands-on learning. And, as industry codes and standards evolve, it's important organizations continue to educate and upskill employees on the latest information they need to know to do their jobs.

Gamification through virtual training is an emerging digital learning design approach to creating workers that are built for a resilient industry. Immersive simulations in construction can be critical to gauging how workers respond in certain situations, which can then inform their fit to certain roles. For instance, organizations currently conduct virtual reality (VR) simulations in which workers walk on a high-altitude beam to gauge how well they respond to working at great heights. This information is critical to ensuring workers are placed in roles and environments



**Recession resiliency starts at the employee level with training and education.**

suited to their strengths. If you place a worker with a fear of heights on a beam for most of their workweek, odds are they won't stick in that role—or at that company—for very long. Immersive digital training can ensure happier employees, resulting in greater employee retention and overall productivity for the organization—and therefore stronger workforces in the face of economic downturn.

VR simulations can also be cheaper and safer alternatives to real-life simulations, which is critical when costs begin to soar. VR headset equipment can often be more cost-effective than the fuel and equipment needed to set up physical training scenarios for workers. In person training can also be more dangerous. In the above construction example, it's much more dangerous to put an employee on a high-altitude beam—even with the proper gear—than it is to perform the same exercise in a simulated environment. By putting workers in a simulated environment in place of a physical one, organizations can create safer training modules that don't put workers at risk.

As Apple is joining the virtual and augmented reality space with Apple Vision, its advanced spatial computing technology coming out in 2024,

“Spatial Learning” will continue to gain momentum in improving skilled workers with immersive simulations. Just the eye tracking capabilities alone will provide much better feedback to the individual learner and his or her trainer on how the learner responds to simulated incidents. Additional wearables with biometric monitoring and gamification experiences, learners will be engaged to perform better with each simulation

## Keeping Up with Technology

As the industry continues to modernize through the increased use of technology, its ability to complete projects increases exponentially as it streamlines communication and workflows via future-proofed digitization. In fact, according to a recent study from the NFPA, 25% of workers believe technology will improve accuracy and safety, resolve code and inspection disputes more quickly (13%), and increase customers' confidence in their organization's ability (10%), leading to more work in the future.

While a recessionary environment may slow down new construction as owners tighten their purse strings, there will always be a need for inspection, testing and maintenance (ITM) on existing buildings that

require skilled trade experts. And with this continued ITM comes the opportunity to implement technology to make processes more efficient and safer. Modern fire protection systems employ IoT technology to constantly provide data of their performance. Therefore, fire protection system technicians will need to add big data analysis to their skill set. They will need to learn how these digital technologies produce data and interpret the data into actionable insights.

To remain resilient, organizations need to be nimbler and more evergreen when it comes to technology disruptions. Machine and human partnership to perform a trades job is no longer science fiction. Contractors must continue to embrace digital transformation and ensure that new talent is ready to work side by side with robots, big data, and AI to get the job done. Part of embracing new technology is educating workers—partially via digital training methods noted above and partially learning to work with new technology.

## The Relentless Pursuit of Curiosity

The skilled trades industry has faced its share of difficulties as the economy fluctuates and the labor market goes with it. The perseverance of the industry amidst external factors is due not only to the need for continued building upkeep, but to the curiosity of the leaders and learners within the industry. Skilled trades professionals are known for being curious, and their knack for figuring out how things come apart and go together lends itself to more than just being excellent at their craft. This relentless pursuit enables them to function in the now while keeping an eye on advancements that are coming down the pipeline.

Contractors and organized labor organizations need to go beyond structured, training time. In addition to training retreats or similar programs,

➤ **Turn to Skilled Trades, page 46**



by Lynn Karam  
FOUNDER AND CEO OF LEK MANAGEMENT INC.



# Top Tax Tips for Contractors From an IRS Enrolled Agent

**A**s an independent contractor, or the owner of a contracting company, you are no stranger to tight margins, scope changes, price increases on materials, and many other daily challenges. In the midst of managing all these situations, it is imperative that you do not forget a vital component of your overall business strategy: taxes.

## How Should I Structure My Business?

First off, consider your Corporate Structure. Having the correct structure will facilitate your growth plan, as well as determine the tax benefits your company will receive. This is not a “one-size-fits-all” solution by any means. For instance, if the priority is to protect your personal assets, an LLC (Limited Liability Company) is a good business entity to consider, though you will incur higher self-employment taxes on all net earnings from your business. Whereas if you opt for an S (Subchapter) Corporation classification, it allows you to pay only those taxes on the salary you draw from your business.

However, itemized deductions could make an LLC a more lucrative option than an S Corporation for purposes of tax filing. Despite the fact that standard deductions can simplify tax preparation, many contractors wonder whether itemized deductions are worth it. It’s possible that itemizing on your return could serve you well, as long as you have the receipts to back it up. Changes in tax laws year after year can eliminate certain itemized deductions, so it’s always advisable to consult a tax professional who is knowledgeable about the current tax laws. Remember, good tax planning never leaves money on the table.

LLCs and S Corporations are often discussed in the same breath, but that can be misleading. It’s important to recognize that an LLC is a business entity and an S Corp is a tax classification. However, many people don’t realize that an LLC can also choose taxation as a corporation, and owners can



**Most CPAs and financial advisors will tell you it’s best to think about tax planning year-round and not just at tax time.**

save money by electing S Corp tax status. A third example is a C Corp, which provides the ability to raise capital by issuing stock, with an ownership represented by shareholders. This is not something typically recommended for contractors since it involves time-consuming corporate requirements, such as annual meetings—and more paperwork! An LLC is great for smaller businesses with its simple management structure and the flexibility it provides to the owners.

Ultimately, whatever decision you make regarding your company’s structure directly affects your tax obligations and benefits. For example, one of our clients who was a contractor had an LLC, but discovered after consulting with us that he would probably reap greater benefits for his business with a different structure. Ultimately we helped him understand the nuances and he decided to create a Corporation for his company, which has enabled his business to grow and thrive.

## Think Before You Hire

One area that consistently concerns owners is the hiring of independent

contractors or, in many industries, the practice of paying workers “off the books.” This can result in Financials that do not show an accurate picture of the health of the company when it comes to obtaining new or additional financing to grow the business or to fund a big project.

More importantly, not setting up the proper system (including the employee profile) can create an employment tax issue down the line, especially if there is an audit later on. It’s always best to consult with your accountant or tax professional to ensure you are compliant with all the current tax laws pertaining to employee taxes.

## Keeping Proper Records

One very basic area that all contractors can easily address is their record-keeping methods. The way that you record and log daily business expenses can make a big difference to the amount of taxes you’ll pay each year on the local, state, and federal level. A good rule of thumb is to keep your records organized all year long in order to support the expenses you plan on reporting.

All too often, busy owners and contractors just don’t have the time to keep track of receipts and purchases, when they are immersed in daily troubleshooting, dealing with urgent situations that pop up during the course of a job. One popular way to handle business expenses is to establish accounts with frequently used suppliers, who will typically store the receipts for your purchases for several years.

Unless it’s an immediate need (an emergency purchase), make all purchases through these supplier accounts, and if possible, use a credit card, in which case you’ll have your statements at the end of each month as well as the store receipts. When you make cash purchases, scan those receipts to a USB drive and have them available to provide upon request. This will ensure their legibility should you need to provide them, since the ink can easily fade on the originals as time passes. If receipts are not legible, they are useless to the IRS or the State Tax authorities, so the USB is the perfect method of proof if you ever find yourself in the middle of a tax audit. Accurate record-keeping means your accountant or tax preparer will be able to maximize your deductions and minimize your liabilities.

Consistently reporting business losses is another trap to avoid as it could be a red flag to the IRS, and might result in an inquiry or even an audit. While losses can minimize a business’s tax liability, it can be detrimental to the company’s ability to acquire capital. Speaking of acquiring capital, it should be noted that a company’s ability to repay a loan is one of the most important criteria of all in a lender’s decision on whether to approve a new loan. Keeping flawless financial records can also help greatly when applying for a loan.

## Benefit From Tax Planning

As a contractor/small business owner, year-end tax planning is a solid routine that should be considered in order to

➤ **Turn to Tax Tips, page 46**



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by Michael Dickran  
DIRECTOR OF ENTERPRISE SALES AT ARCORO



# Death by a Thousand Paper Documents

**M**odern technology enables construction companies to complete bigger, better projects at record speeds and with reduced costs. Despite the regular adoption of advanced tech like BIM software and drones, many companies continue to lag behind in terms of their routine HR recordkeeping practices—and it's costing them countless workforce hours and dollars.

Construction is a paper-heavy industry, with traditional pen and paper methods encompassing a range of tasks, from managing submittals to handling crucial HR documents. Unfortunately, this slows time to productivity, heightens the likelihood of human error and amplifies safety and compliance risks within a strictly regulated industry.

## Onboarding

Finding qualified professionals for a new project is half the battle; onboarding them efficiently is the other.

New hires must fill out a variety of onboarding paperwork before stepping foot on a job site, which can prevent contractors from getting workers to building systems quickly. Here are just the basic requirements construction companies must fulfill during the onboarding process:

- Tax-related documents, including a W-4 for employees or W-9 for contractors, I-9 Employee Eligibility Verification form, State Tax Withholding form and Direct Deposit form.
- E-Verify
- Voluntary self-identification form mandated by the Office of Federal Contract Compliance Programs (OFCCP)
- Company-specific HR documents, such as employee agreement forms, policy acknowledgment forms and non-disclosure agreements.

Electronic onboarding systems enable new employees to complete required forms online from home. This way, full crews can hit the ground running on



## Why digital HR recordkeeping is a must-have on and off the jobsite.

their first day. The digital system can also be set up to verify that every box is filled out correctly before submission, so no information is ever missing. And it can ensure you're using the most up-to-date forms instead of having to download them for each new hire.

Additionally, new employees are asked to provide sensitive information when they go through the onboarding process. This means that piles of personal data are potentially sitting in an unsecured location until the onsite manager can transport the documents from the job site to the company's corporate office. Just think about it: would you feel comfortable knowing that your Social Security number is potentially sitting in the open on a truck dashboard until the end of the workday?

These examples immediately impact the professionals on the job site, but the inefficiencies follow companies all the way to their headquarters. Once the files arrive at the main office, businesses will spend additional resources for HR teams to begin the process of properly and securely storing the new information.

When this paper-based process is repeated across multiple jobs, the numbers quickly add up.

## Time and Attendance

Paper timesheets offer a familiar method of recording employee work hours but present key drawbacks that businesses should consider—especially when there are plenty of time and attendance software solutions to choose from.

The American Payroll Association estimates that time theft costs businesses up to 7% of their total payroll. Not only do manual time entries make it easy for employees to accidentally or purposefully add extra minutes to their workweek, employees typically fill these out at the end of the week when they've likely forgotten their exact hours. This results in under- or overpayment, neither of which is good business practice.

Meanwhile, gathering stacks of paper at the main office and matching each timesheet to the corresponding employee—and don't forget deciphering illegible handwriting—can extend the payroll process and undermine its accuracy.

Additionally, since time tracking serves as a job costing tool for many companies, inaccuracies can impact project budgets and profitability. As a contractor, you want to know if you're on budget; and if you're over budget,

you want to know why. Did your team misbid the project? Did some aspects take longer than expected? Did the project go over budget because of a reason that is outside of your control? Time tracking accuracy is a key cost estimating component.

## Safety and Compliance

Construction companies must comply with strict government guidelines that regulate safety and workforce management or risk paying huge fines.

So how do you ensure that employees stay current with their government-mandated safety training and certifications? One effective solution is implementing a digital learning management system (LMS) that can efficiently track compliance and even send timely notifications when certifications are nearing expiration. While some construction companies still rely on spreadsheets or paper binders to store this information, it requires manual monitoring and sending updates to employees. However, even with notifications in place, motivating workers to actively participate in updating their credentials can present a challenge.

During audits, companies are asked to provide substantial documentation to prove compliance. Businesses that keep their records in filing cabinets will waste valuable time searching and retrieving the physical copies mandated by auditors. Loss of documents and inaccurate or incomplete files can further complicate these situations.

## Final Thoughts

These are just a few examples of the type of paper trails that are important to maintain in the construction industry. But they truly don't need to be in physical form. Investing in digital and cloud-based solutions can save companies valuable time, money and provide peace of mind on the job site and in the office—both short- and long-term. **C**

*Michael Dickran is director of enterprise sales at Arcoro. Reach him at michael.dickran@arcoro.com.*

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# Artificial Intelligence in Mechanical Contracting

► **Continued from page 20**

resource multiplier, allowing our personnel to be more effective by being extremely intentional with their time.”

“Now that we have advanced,” he says, “SmartTagIt’s Large Language Model helps us fill in knowledge gaps and add specific, critical steps that could have been missed as we build our pre-task safety plans.”

## Larger Issues

For companies large and small, AI offers a new way of sharing information throughout the enterprise, and new ways of working and communicating. Here are some special areas of business operations for which AI is now being utilized in this way:

- **Scheduling and resource management** - “AI can optimize scheduling and resource allocation based on historical data, real-time inputs, and predictive modeling,” said Danley. “Intelligent algorithms can consider various factors like resource availability, project deadlines, and workforce skills to create efficient schedules. AI will also help with demand forecasting and mitigating potential resource conflicts.”
- **Document management** - “Integrating generative AI and the capabilities presented by a Large Language Model (LLM) has potential

## The Green Revolution

While AI introduces many operating efficiencies at the plant level, at a larger societal level it is expected to be instrumental in bringing about an increase in sustainability, efficiency and comfort.

“AI will be a game changer in allowing us to move forward toward cleaner, more efficient systems,” said Buckley. “If we look at the bigger picture of sustainability, it is a fact that the built environment contributes considerably to our energy consumption and has a huge impact on people’s individual well-being. So, anything that we can do that will result in our buildings performing more effectively and efficiently, and being able to use resources in a more effective and considerate way, is important.”

AI will be one welcome solution to the decades old problem: How can the construction industry develop smart buildings that provide monetary and energy savings? To date, said Buckley, the industry has been

thwarted by the proliferation of data that exists inside modern buildings, and the real limits of the human mind. “A typical large facility may have 30,000 sensor points or more across different pieces of equipment,” he said. “That data is often held in very disparate systems that don’t talk to each other. That makes it very difficult for our industry to deliver on its sustainability promise. AI is super important because it provides the real capability to deal with all of that unstructured data and make sense of it in a way that we have not been able to do because we have not had the necessary human resources.”

Today, thanks to AI, conditions are changing. “For the first time in 20 years I believe we will soon be able to deliver what we’ve been promising to do across our large portfolios,” said Buckley. “We’re on the cusp of a revolution in real estate and facility construction, and it’s an exciting place to be.”

to have a positive impact on how our business development teams work with RFPs,” said Danley. “AI can quickly read and interpret RFP requirements and identify previous similar works, which will help with benchmarking key elements of our response. With enough training, the system will also generate a win

probability score for each new RFP loaded into the system.”

## Avoiding Risk

New initiatives are not without peril. “While it’s easy to get excited about the potential benefits introduced by AI, many unknowns still exist,” said Danley. “Our tech and innovation

teams are exploring new use cases for AI in the office and on our job sites. However, before moving forward with any implementation we will conduct thorough reviews to assess any risks or compliance concerns.”

Danley points to two areas of concern:

- **Data security** - “We take the protection of our internal data and our clients’ data very seriously,” said Danley. “When we hear major tech companies make statements such as, ‘Our AI is learning things that it was not trained to understand,’ that gives us some concerns about what might be happening behind the scenes with commercially available AI systems.”
- **Legal and IP considerations** - “AI is breaking new ground in many industries,” said Danley. “Legal precedence has not been set in many cases. If AI is used in any part of a construction project, and an adverse event happens, could any part of the AI system be at fault? If so, who bears the liability? The developer, the system operator, the designer, engineer, or the builder?”

## The Human Factor

As impressive as it is, AI is not perfect. In these early days of the technology, companies must be vigilant about spotting and correcting errors in its output. “We can’t blindly follow what the AI says,” said Buckley. “A human needs to be a buffer, because AI, being a learning model, can give erroneous answers. I’m sure it will get better in the future, but no matter the quality of results, today it is important that we take ownership for our own work.”

Despite that risk, the new technology allows companies to move faster and increase profitability. “AI allows us to be safer as well,” said Buckley. “It ensures that certain conditions get recognized that we might otherwise overlook in the rush of business.”

*Phillip M. Perry is a journalist and syndicated columnist who lives and works in New York City. He can be reached at [linkedin.com/in/phillipmerry](https://www.linkedin.com/in/phillipmerry).*

## IAPMO Launches the IAPMO Codes Portal

ONTARIO, CA — The International Association of Plumbing and Mechanical Officials (IAPMO), publisher of the Uniform Plumbing Code (UPC) Uniform Mechanical Code (UMC) Uniform Solar, Hydronics and Geothermal Code (USHGC), and the Uniform Swimming Pool, Spa and Hot Tub Code (USPSHTC) is launching its new IAPMO Codes Portal.

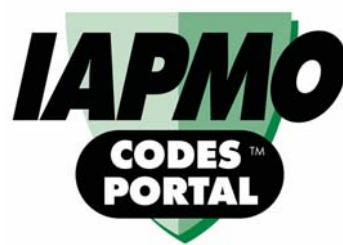
The new Codes Portal is intended to connect the industry with the IAPMO code development process. Upon creating a profile, users will be able to:

- Submit code public proposals
- Submit code public comments
- View the Report on Proposals (ROP)
- View the Report on Comments (ROC)

- Save your draft proposals and comments
- View your submitted proposals and comments
- Obtain contact information for the codes technical liaisons
- Quick access to the codes development timeline
- Access to read-only publications.

The portal can be accessed at: <https://codeproposals.iapmo.org>.

IAPMO urges its members and other interested parties to get involved in the code development process to ensure effectiveness in preserving the public health, safety, and welfare through development of the *Uniform Codes*.



Please contact **Alma Ramos** at 909/230-5528 or email at [alma.ramos@iapmo.org](mailto:alma.ramos@iapmo.org) for assistance. For questions about submitting proposals for the *UPC*, please contact **Enrique Gonzalez** at 909/230-5535 or by email at [enrique.gonzalez@iapmo.org](mailto:enrique.gonzalez@iapmo.org). For the *UMC*, contact **Taylor Duran** at 909/218-8126 or email at [taylor.duran@iapmo.org](mailto:taylor.duran@iapmo.org).

# ABC Opposes OSHA's Injuries and Illnesses Final Rule



WASHINGTON, DC — ABC announced its opposition to the US Department of Labor's Occupational Safety and Health Administration's Improve Tracking of Workplace Injuries and Illnesses final rule, issued today, which will undo the ABC-supported provisions of the 2019 final rule promulgated under the Trump administration and reprise the 2016 Obama-era rule.

"Unfortunately, the Biden administration is moving forward with a final rule that does nothing to achieve OSHA's stated goal of reducing injuries and illnesses," said **Ben Brubeck**, ABC Vice President of Regulatory, Labor and State Affairs. "Instead, the final rule will force employers to disclose sensitive information to the public that can easily be manipulated, mischaracterized and misused for reasons wholly unrelated to safety."

"For open shop construction contractors, these are not hypothetical concerns. Over the years, high-quality, safety-conscious contractors have been targeted by unions and union-front organizations making false or distorted claims of 'unsafe' contracting based on isolated incidents taken out of context. The records at issue in the final rule are not reliable measures of a company's safety record or of its efforts to promote a safe work environment, as they provide no context about the injuries or illnesses reported."

The final rule requires establishments with 100 or more employees in certain designated industries to electronically submit information from their OSHA Forms 300 and 301 to OSHA once a year. Establishments with 20 to 249 employees in certain industries will continue to be required to electronically submit information from their OSHA Form 300A annual summary to OSHA once a year. All

establishments with 250 or more employees that are required to keep records under OSHA's injury and illness regulation will also continue to be required to electronically submit information from their Form 300A to

OSHA once a year. OSHA intends to make much of the data it collects publicly available online. The final rule becomes effective on Jan. 1, 2024.

These OSHA forms contain sensitive and personal medical information

about individual employees, which the government has historically kept private.

ABC submitted comments to the DOL outlining its concerns in June 2022. [C](#)



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# Oatey Women's Resource Network Sponsors Plumbing Day

► **Continued from page 1**

As a Premier Sponsor of the program, Oatey's Women's Resource Network (WRN), an associate resource group dedicated to women's professional, personal, and leadership development, volunteered at the camp on Tuesday, June 27. Thirteen WRN members attended the plumbing day, teaching campers the art of installing Oatey's Quadtro Washing Machine Outlet Box and other plumbing products that Oatey donated to the program. The group also hosted and led a Lunch-and-Learn about careers at Oatey, informing campers about the endless possibilities that exist for women in the construction industry.

Each camper received a copy of the book *The House That She Built*, empowering them to help spread



Campers were instructed in how to install the Quadtro Washing Machine Outlet Box and how to use other plumbing products.

the word about careers in construction. The book educates young readers about the people and skills that go into building a home and tells the true story of a home built by all female tradespeople.

## Hands-On Experiences

"The Women's Resource Network is proud to support a program that aims to inspire and equip young girls with knowledge of a traditionally male-dominated industry," says **Amanda Keiber**, co-chair of the WRN and Director, Corporate Communications, Oatey Co.

"The hands-on experiences offered at the camp allowed these girls to learn on their feet, build camaraderie with one another, and realize their potential. It is not just about

teaching plumbing skills, but also about imparting life skills, exposing them to possible career paths, and helping them break barriers to explore new possibilities."

**Oatey associates volunteered at Northeast Ohio camp, imparting life skills and encouraging young girls to explore career opportunities in the trade.**

## ABC Members Invested \$1.5 Billion in Workforce Education in 2022

WASHINGTON, DC — Associated Builders and Contractors member contractors invested more than \$1.5 billion to provide nearly 1.3 million course attendees with craft, leadership and safety education in 2022, according to its 2023 Workforce Development Survey, down from \$1.6 billion in 2021. The annual assessment quantifies the scope of ABC members' workforce development initiatives to advance their employees' careers in commercial and industrial construction to build the places where Americans live, work, learn, heal and play.



**Associated Builders and Contractors**

- Trade and specialty contractors boosted their share of the total workforce development investment, growing to 42% in 2022 from 33% in 2021.

## All-of-the-Above Approach

"ABC member contractors are building the people who build America by investing billions to cultivate their long-term skill sets, creating a brighter future for both workers and workers' families," said **Greg Sizemore**, ABC's vice president of health, safety, environment and workforce development. "ABC member contractors are investing in flexible, competency-based and market-driven education methodologies to build a construction

workforce that is safe, skilled and productive. Continually upskilling our people, our most valuable asset, means the merit shop construction industry is ready to build the infrastructure, manufacturing plants, data centers and other buildings that will keep America competitive in the global marketplace."

ABC's all-of-the-above approach to workforce development has produced a network of ABC chapters and affiliates across the country that offer more than 800 apprenticeship, craft, safety and management education programs—including more than 300 government-registered apprenticeship programs across 20 different occupations—to build the people who build America.

Industry consulting firm FMI conducted the 2022 Workforce Development Survey from Jan. 4 to May 5, 2023. Aggregated data was derived by calculating the average amount spent on education by each respondent and multiplying that by the total number of ABC contractor members. **C**

Oatey learned about Let's Build on its The Fix podcast featuring guest **Plumber Paige**, a 20-year-old Skilled Trades Advocate and Social Media Influencer, who attended another recent Let's Build camp that took place in Lehigh Valley, PA. After learning about Let's Build, Oatey was eager to support the NE Ohio camp, as the program aligns well with Oatey's mission to support the trades and help grow the pipeline of talent into the industry.

## A Lasting Impact

"We are grateful for the Oatey Women's Resource Network's involvement in Northeast Ohio Let's Build Construction Camp for Girls," says **Shelly Higgins**, Camp Director of NE Ohio Let's Build Construction Camp for Girls. "The plumbing day that the WRN members hosted was a great opportunity for the campers to learn about installing Oatey's innovative products and gain hands-on experience."

"Oatey's dedication to supporting the trades has created a lasting impact on the campers," she continues. "We hope other industry leaders follow Oatey's example and help us continue providing campers with these invaluable experiences." **C**

## Key Findings:

- ABC contractors invested an average of 8.0% of payroll on workforce development in 2022, up from 7.4% in 2021, responding to the need for more than half a million additional construction workers in 2023.
- Safety education for more than 700,000 course attendees accounted for the greatest share of spending, at 59%, up from 56% in 2021.

NEW EBOOK FROM CONTRACTOR

# WORKFORCE DEVELOPMENT

The workforce crisis is as bad as it has ever been. Call it a perfect storm: older workers retiring, younger people choosing not to enter the trades, and a tight labor market that has contracting firms fighting tooth-and-nail to find and keep the existing skilled hands.

Here is a selection of 5 articles that will help you navigate this labor turbulence and enable you to develop and maintain your 21st century workforce.

<https://www.contractormag.com/learning-resources/whitepapers/whitepaper/21120429/ebook-workforce-development>

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## WORKFORCE DEVELOPMENT



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# Your Reputation is Only as Good as Your Last Review

► **Continued from page 36**

see your response and remember that the internet is forever—deleting an inappropriate response to a bad review won't get rid of the screenshots others may have taken of your poor judgement.

This might be another reason to hire a public relations agency to keep up with your reviews. These experts can stay on top of answering these reviews, won't take them personally and will develop responses that are professional and timely.

Just remember that everyone gets good and bad reviews. The way to mitigate bad reviews is to respond quickly and be sincere and professional in your response. And, if you resolve the customer's problem well, you could always ask for an updated review. This can turn a negative review into a positive, which makes for great review reading. **C**

*Heather Ripley is founder and CEO of Ripley PR, an elite, global public relations agency specializing in the*

*skilled trades, B2B tech and franchising. Ripley PR is recognized as the top PR agency for the home service industry. It also has been listed by Entrepreneur Magazine as a Top Franchise PR Agency five years in a row and was named to Forbes' America's Best PR Agencies for 2021. Ripley is the author of "NEXT LEVEL NOW: PR Secrets to Drive Explosive Growth for your Home Service Business," which is now available on all audio-book platforms. For additional information, visit [www.ripleypr.com](http://www.ripleypr.com).*

## Skilled Trades Prove to be Recession-Resilient

► **Continued from page 37**

skilled workers need to be able to learn on the go and in the moment. Training approaches, such as on-demand micro-learning, remote video coaching, online trade communities for crowdsourcing, and subscriptions to trade publications all help skilled workers stay abreast of latest technology disruptions and emerging trends, best practices, and issues.

With gamification, workers may earn digital badges when they have demonstrated that they learned a new skill. This will be helpful for job assignments in the modern gig economy.

Through proper digital training and technology implementation, professionals can hone their skills and put the industry in a better position during recessionary environments. **C**

*Bartholomew Jae has 25 years of experience helping companies develop their leaders, talent, and organization. He spent half his career as a Learning & Development Leader, and the remainder providing strategy and management consulting to Fortune 500 companies and government agencies around the world. In his current role with NFPA, Bartholomew heads up the Education and Development line of business.*

## Top Tax Tips for Contractors From an IRS Enrolled Agent

► **Continued from page 38**

fully prepare for the new year. It's the perfect time to assess your business's financial health. To avoid last-minute tax planning, it's wise to set aside time each week in your schedule to assess your business

objectively. Ideally, you'll want to recap the previous year, analyze the lessons learned, and determine whether your business is growing, holding steady, or declining.

Most importantly, sitting down with your tax professional or CPA at the end of the year tax-planning session will help you make realistic decisions about how to streamline your business in the coming months and years.

Working with an expert advisor, you'll discover new ways to lower your tax rate or reduce the amount of taxable income that you file. With the right guidance, you can maximize the tax credits for your business while avoiding costly mistakes.

We invite you to learn more about tax planning

services for contractors. If you are being audited, our IRS Enrolled Agents have many years of experience acting on behalf of contractors, representing businesses from multiple industries including plumbing and heating, electrical, repair and maintenance (both residential and commercial), as well as construction. **C**

*Founder and CEO of LEK Management Inc., Lynn Karam has two decades of experience in finance, operations, and strategic planning. Karam is an Enrolled Agent authorized by the United States Department of the Treasury to represent clients who are undergoing an audit and to negotiate with the IRS on her clients' behalf. Her success rate in resolving even the most challenging of IRS scenarios has become the cornerstone of her success.*

## Bradford White Label a Commitment to Pro Installation

AMBLER, PA — Bradford White Water Heaters, an industry-leading manufacturer of water heaters, boilers and storage tanks, introduces a new primary branding label for the company's range of storage tanks and tank-style water heaters.

"The new label clearly and consistently communicates the Bradford White Water Heaters brand with customers and elevates brand awareness with end users," said Neal Heyman, Director of Marketing for Bradford White Water Heaters. "Our previous labels had been developed at

different times and for a variety of applications, and as a result did not offer a consistent presentation of our brand. Now, we're confident that our label effectively highlights the Bradford White brand and reinforces the message of our commitment to professional installation."

The new label will be featured across Bradford White Water Heater products as well as all Bradford White technical documents and marketing collateral.

For more information visit [www.bradfordwhite.com](http://www.bradfordwhite.com). **C**



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## Rheem Family of Brands Releases 2022 Sustainability Progress Report

ATLANTA, GA — Rheem®, a leading global manufacturer of water heating and HVAC products, released its 2022 Sustainability Progress Report showcasing notable updates on its environmentally-focused programs. Since the company launched its sustainability initiative, A Greater Degree of Good™, in 2019, the Atlanta-based manufacturer has proactively implemented programs to provide more environmentally sustainable solutions in North America and abroad. Two of the case study examples included within the newly released report showcase Rheem's Friedrich® and IBC™ businesses.

### Zero Waste to Landfill

To achieve an industry leading Zero Waste to Landfill goal by 2025, Rheem's global manufacturing facilities are re-designing, reducing, reusing and recycling materials that would otherwise become trash.

As a member of the Rheem family of brands since 2021, Friedrich plays an active role in the company's commitment to sustainability. Friedrich's Monterrey, Mexico, plant began with a landfill diversion rate of 63%. In 2022, employees switched to reusable plates and cutlery in the cafeteria, routed left-over food scraps to a local pig farm and identified a specialized recycler for nine tons of foam. Employees also brought the spirit of Zero Waste to Landfill into the community, filming videos with their families about how to help the environment and engaging kids in a recycled toy competition. By the conclusion of 2022, Friedrich's manufacturing plant increased its landfill diversion rate to an impressive 88%.

Friedrich's sustainability efforts don't stop there. At the Friedrich headquarters in San Antonio, Texas, in 2022, employees placed recycling bins throughout high-traffic areas to promote increased recycling, expanded electronic and battery recycling, and evaluated the opportunity to implement composting for organic waste. Friedrich's dedication to recycling and sustainability recently earned it a Gold Certification from ReWorksSA, an environmental program led jointly by




The IBC plant in British Columbia, Canada, is doing energy-saving boiler testing.

the City of San Antonio's Solid Waste Management Department and Office of Sustainability.

### Conserving Water, Reducing Emissions

Innovation is a driving force for sustainability. IBC, another Rheem family brand, is innovating its manufacturing processes for residential and commercial boilers to conserve water and reduce emissions from avoided gas consumption, saving money and creating a more comfortable environment.

Before any boiler at Rheem's IBC plant in British Columbia, Canada, finishes production, its ability to bring large quantities of water to a high temperature is tested. Without a recovery mechanism, all the heat is rejected into the outdoor air, leading to an unfortunate waste of warmth in a cold climate. IBC's production, operations and R&D teams developed a creative in-house solution. First, they diverted the hot water to air handling units to cool and cycle it back into production for continued use in testing. Next, they engineered the air handler system to push the concentrated hot air back into the building to warm the plant during cold weather, achieving both energy and cost savings.

Comprehensive updates on Rheem's A Greater Degree of Good efforts are provided annually in Rheem's Sustainability Progress Reports at [www.rheem.com/progress](http://www.rheem.com/progress). 

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# John W. Danforth Company Supports 'Pawsitive for Heroes'

► **Continued from page 3**

the American Bulldog that Danforth is sponsoring to participate in the "Pawsitive for Heroes" program. Thanks to Danforth's financial support, Piper will now undergo special training to be a service dog for a local military Veteran.

## Extended Family

"We are proud to have dozens of Veterans with several decades of combined service to our country among our Danforth employees," said Danforth Chairman

**Kevin "Duke" Reilly.** "Our Veterans live a code of service and sacrifice on behalf of others. Danforth is thrilled to do our part in supporting WNY Heroes and the work they do to assist our Veterans and their families. We could not be prouder to have Piper as part of our extended Danforth family."

Launched in 2014, the "Pawsitive for Heroes" program helps facilitate service dog training for local Veterans. Dogs and their owners go through an 18-month training program, properly preparing the dogs for this important role. Through the support of sponsors like

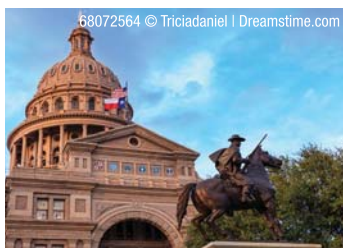
Danforth, WNY Heroes pays for the training and related treatments and services for the dog, as well as the dog's service vest and patches, along with grooming for one year. Since launching the program, WNY Heroes has successfully paired more than 170 dogs with Veterans in need of support.

## Partnership with WNY Heroes sponsors service dog training to aid local Veteran.

## Texas State Plumbing Board Adopts ASSE Professional Qualifications Standard for Medical Gas Systems Personnel

AUSTIN, TX — The Texas State Board of Plumbing Examiners (TSBPE) has adopted a rule recognizing ASSE 6010, a professional qualifications standard for medical gas systems personnel. This decision expands qualification opportunities for medical gas piping installation and ensures the highest standards are upheld for the safety of healthcare facilities and patients. This rule will go into effect July 26.

The ASSE 6010 standard establishes uniform and comprehensive minimum requirements for medical gas installers, based on the trusted guidelines of NFPA 99. By requiring certification to this standard, the TSBPE ensures that medical gas systems in Texas



The Texas State Capitol in Austin.

are installed and serviced by competent and qualified individuals. This recognition highlights the TSBPE's commitment to upholding public safety and promoting excellence in the plumbing industry.


## A Significant Milestone

"We are thrilled that the Texas State Plumbing Board has accepted the ASSE 6010 standard," said **Joe Cooper**, training director for Local Union No. 286 and president of the Central Texas ASSE chapter. "This decision represents a significant milestone in enhancing workforce development and ensuring the highest level of expertise in medical gas systems installations within the state."

The acceptance of the ASSE 6010 standard not only provides an additional pathway for licensed individuals to become certified to work on medical gas systems, but also promotes increased workforce development in Texas. Nearly 85,000 individuals across the nation hold this certification. This new rule allows certified and licensed professionals from out of state to contribute their expertise to healthcare facilities within Texas, opening doors for qualified professionals to make a valuable impact on healthcare infrastructure in the state.

## About ASSE

ASSE International is an American National Standards Institute (ANSI)-accredited standards developer and product certification body that represents all disciplines of the plumbing and mechanical industries. The mission of the institute is to continually improve the performance, reliability, and safety of plumbing and mechanical systems.


ASSE's product performance standards, professional qualifications standards, professional certification and product listing programs are developed in the interest of public health and safety. ASSE's motto, "Prevention Rather Than Cure," has guided the organization for more than 100 years. 

## Unseen Challenges

"Veterans deal with many unique, and often unseen and unexpressed, challenges as a result of their service," said **Chris Krieger**, President and Co-Founder of WNY Heroes and an Iraq War Veteran. "A service dog is trained to assist with that single individual's need or purpose, so this is a very special and specialized role. When they wear their vest, the dog is in uniform, ready to serve those who served. Thanks to committed partners like Danforth, we are able to train and pair dogs with Veterans who need support."

Founded in 2007, WNY Heroes provides Veterans, members of the armed services, and the widows and children of deceased Veterans with access to essential services, financial assistance and resources that support their lives and sustain their dignity. The organization has grown exponentially over the past 16 years, becoming a critical life-sustaining vehicle for Veterans and their families by providing immediate financial and programming assistance to those in need.

For more information on WNY Heroes and the services it provides, visit [wnyheroes.org](http://wnyheroes.org).

Founded in Buffalo in 1884, Danforth has more than 1,000 employees across a geographic footprint that includes operations in Buffalo, Rochester, Syracuse, and Albany, New York, Columbus, Ohio, and Burlington, Vermont. The company works collaboratively with its union labor partners including the United Association of Plumbers and Pipefitters, the Sheet Metal, Air, Rail and Transportation (SMART) Workers, and several other labor partners across many local union jurisdictions throughout the northeast and beyond. Danforth operates an Employee Stock Ownership Plan, giving the company's workforce an ownership stake in the company. For more information, visit [jwdanforth.com](http://jwdanforth.com). 

*J. W. Danforth was named CONTRACTOR's Contractor of the Year in 2021 -- Ed.*

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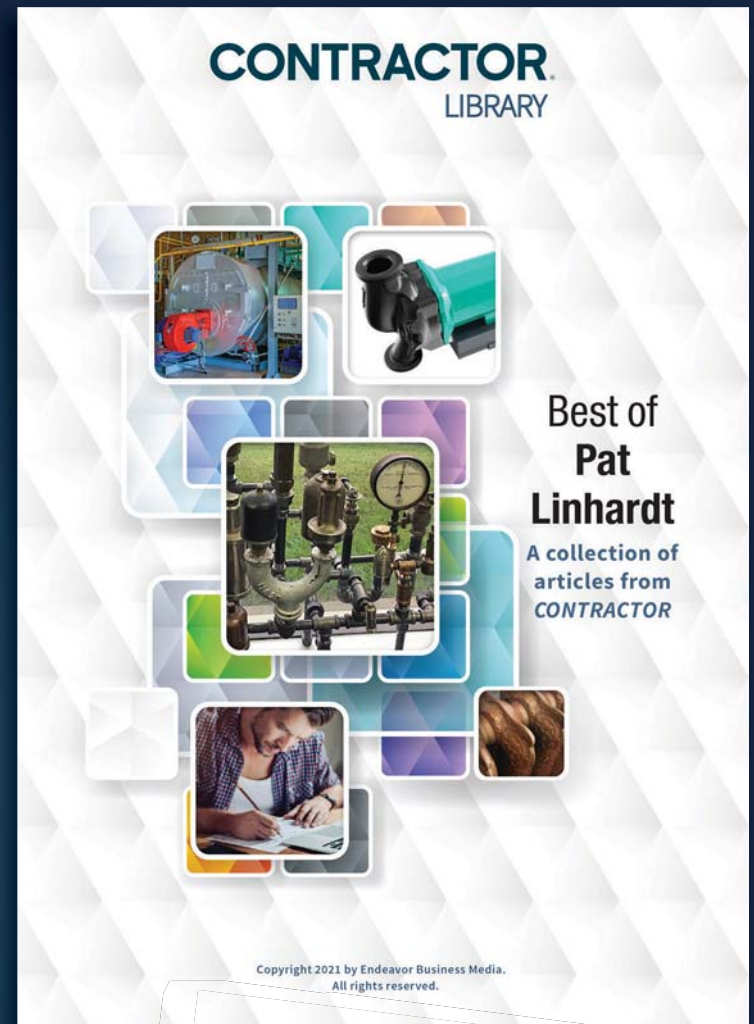
NEW EBOOK FROM CONTRACTOR

# Download the Best of Pat Linhardt

Patrick Linhardt is a thirty-seven-year veteran of the hydronics industry who has been designing and troubleshooting steam and hot water heating systems, pumps and controls on an almost daily basis.

Pat has been a regular monthly columnist for CONTRACTOR Magazine since 2019, where his column has become the cornerstone of our Hydronics & Radiant section. We are proud to publish this selection of his recent work, and hope these columns serve to educate and inspire a new generation in the industry.

<https://www.contractormag.com/learning-resources/whitepapers/whitepaper/21182872/download-best-of-pat-linhardt>





# Home Improvement Professionals: Mild Optimism for Q3

## ► Continued from page 3

June 22 through July 1, 2023, the Barometer provides timely insights into the impact of recent economic volatility on the home improvement market. Slightly more professionals across sectors anticipate business growth rather than declines in the third quarter of 2023, following slowed activity and homeowner requests to postpone or reduce the scope of their projects in the first half of the year.

“Pent-up demand and macro-economic conditions, such as aging housing stock and high mortgage rates, which continue to drive home improvement activity, are instilling a sense of optimism among builders, remodelers, architects and interior designers as they look ahead to the second half of the year,” said **Marine Sargsyan**, Houzz staff economist. “We continue to monitor the industry to identify whether improvements to inflation and other economic indicators create more stable pricing for businesses and an environment in which homeowners proceed with their full project scope. That said, ongoing labor shortages and product and material delays will continue.”

Backlogs have lengthened across the construction sector to a record high of 13 weeks, up 2.5 weeks compared to the same period last year. In fact, construction businesses in the New England region report wait times of 21.8 weeks before they can begin work on a new midsize project. Business in the architectural and design services sector report backlogs of 6.4 weeks.

## Q3 2023 Construction Sector Barometer

In the construction industry, both build-only and design-build professionals have a favorable outlook on anticipated business performance. Build-only remodelers anticipate an increase in business activity in Q3 (54 compared to 50 in Q2), while expectations among design-build firms remains the same for Q3 at 53. This follows an uptick in both project inquiries and new projects for both groups (from 51 in Q2 to 54 in Q3 and 52 in Q2 to 53 in Q3, respectively).

## • The Expected Business

**Activity Indicator** related to project inquiries and new committed projects increased to 54 for Q3 (compared with 51 in Q2), which indicates that more businesses expect quarter-over-quarter increases than quarter-over-quarter decreases. Expectations for project inquiries increased to 54, compared with 51 in Q2, and new committed projects are at 53, up 1 point relative to expectations in Q2 (52).

## • The Project Backlog Indicator

is 13 weeks in the beginning of Q3, which is 2.5 weeks longer than a

## • The Expected Business Activity

**Indicator** related to project inquiries and new committed projects decreased to 52 in Q3 (down 4 points from Q2). The decline in the overall indicator is primarily driven by a 6-point drop in expectations for new committed projects to 52 in Q3. Expectations for project inquiries are down by only 3 points in Q3 (52 compared with 55 in Q2).

## • The Project Backlog

**Indicator** is 6.4 weeks in the beginning of Q3. Backlogs are 1.1 weeks shorter than they were one year ago.

## Despite three consecutive quarters of slowed activity, professionals report record high backlogs.

year ago and more than double pre-pandemic levels in Q3 2019. This increase is primarily driven by wait times reported by businesses in the New England division.

## • The Recent Business Activity

**Indicator** related to project inquiries and new committed projects declined to 43 in Q2, down 2 points from Q1. This is driven by a 4-point decline in project inquiries in Q2, relative to the previous quarter. New committed projects remained steady at 47 in Q2.

## • The Recent Business Activity

**Indicator** related to project inquiries and new committed projects slightly increased to 43 in Q2 (compared with 42 in Q1), with interior designers at 46 versus architects at 41. Following a continuous decline over eight consecutive quarters, the overall indicator is up 1 point at 43 relative to Q2. The recent project inquiries remained steady at 40 and the new committed projects increased to 46 in Q2 (compared with 44 in Q1).

## Q3 2023 Architectural and Design Services Sector Barometer

More firms in the architectural and design services sector reported increases in their business expectations for Q3 than reported decreases, although both subsectors reflect a decline in business performance expectations compared to the previous quarter (from 55 in Q2 to 52 in Q3 and 57 in Q2 to 52 in Q3, respectively). This follows a 3-point decrease in project inquiries (from 55 in Q2) and a 6-point decrease in new projects (from 58 in Q2).

## Regional Backlogs

For the construction sector, the New England division (including Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont) has the longest backlog (21.8 weeks) driven by wait times reported by build-only and design-build firms in the region (21.2 and 22.4 weeks, respectively). Businesses in the West South Central division (including Arkansas, Louisiana, Oklahoma, and Texas) report backlogs of 7.9 weeks before they can begin a new project, the shortest wait time reported by construction firms among the nine

Census divisions. Compared with the same quarter one year ago, backlogs for the construction sector are longer across eight of nine Census divisions (across all but the West South Central division).

Backlogs also vary across all regional divisions among businesses in the architecture and design services sector. Businesses in the East South Central division (Alabama, Kentucky, Mississippi, and Tennessee) reported backlogs of 9.2 weeks, while the West North Central division (including North Dakota, South Dakota, Nebraska, Kansas, Missouri, Iowa, and Minnesota) showed much shorter backlogs at 2.5 weeks. Backlogs reported by architects in the East South Central division (12.9 weeks) are the driving force for long wait times, whereas the wait to begin a new project with an interior designer in that area is only 3 weeks. Compared with the same quarter one year ago, backlogs for the architectural and design services sector are longer across only two of the nine Census divisions (East South Central and South Atlantic divisions).

## Methodology

The *Houzz Renovation Barometer* is based on a quarterly online survey sent to a national panel of businesses with an online profile on Houzz. The Barometer keeps a pulse on home renovation market conditions via three distinct indices that track expected, current and recent business activity in two related industry sectors, the construction sector and the architectural and design services sector.

The *Expected Business Activity Indicator* is based on survey questions that ask businesses to report whether they expect the number of project inquiries and new committed projects to increase, decrease or stay unchanged in the upcoming quarter relative to the prior quarter. Scores for each component are then computed as a seasonally adjusted diffusion indices on a scale of 0 to 100, with index values over 50 indicating that a greater proportion of firms reported quarter-over-quarter increases than those reporting decreases. **C**

# PMI Report Highlights 'Upstream, Downstream' Water Solutions

McLEAN, VA – Plumbing Manufacturers International's 2023 Annual Report, titled "Upstream, Downstream," illustrates how plumbing manufacturers and allied industries contribute to solutions along the entire water value chain to assure access to safe, clean water for future generations. A brief video that can be viewed at [vimeo.com/842598062](https://vimeo.com/842598062) summarizes the report.



Including contributions from all of PMI's 37 members, the report highlights their achievements relating to water efficiency, sanitation, hand hygiene, sustainability, green building, and more. The report also explains how PMI highlights these innovations when representing members' interests in technical, regulatory and legislative forums on issues such as water-efficiency standards, tariffs, counterfeit product protection, and extended producer responsibility. By delivering value through its work with policymakers, PMI helps members to achieve further successes in a fair and open marketplace.

## Thinking Holistically

In letters prefacing the report, PMI Board of Directors leaders **Sal Gattone** and **Martin Knieps** and PMI CEO/Executive Director **Kerry Stackpole** encourage plumbing and water industry stakeholders to think holistically about water resources and to collaborate with policymakers to develop synergistic solutions across the entire water value chain.

"Water shortages around the world will come with increased expectations for us and other stakeholders along the water value chain to decrease water use," Gattone and Knieps state. "However, as we face this challenge, we must approach it holistically by focusing policymakers' attention along the entire water value chain, both upstream and downstream from where our products are located within residential, commercial and public buildings."

While summing up PMI's latest accomplishment in his letter, Stackpole also renews an ongoing conversation among members about the question of where the manufacturing industry can make the greatest environmental


impact at this moment in time.

"The PMI Board of Directors gave a great deal of consideration to this question over the past year," Stackpole stated. "After much discussion, the board decided to focus on how

PMI and its members could contribute to sustainable water management through our Rethink Water initiative, as climate change and other factors cause water shortages."

► **Turn to PMI, page 52**

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# PMI Report Highlights 'Upstream, Downstream' Water Solutions

## ► Continued from page 51 Rethink Water

Creating a proactive water-saving scenario through PMI's Rethink Water initiative will require industry leaders to spearhead a comprehensive and collaborative approach to water sustainability, in cooperation with government and various other stakeholders. This public-private partnership can drive a large-scale operation to achieve sustainable water management, spurring innovation and bringing a huge influx of jobs and manufacturing capabilities back to the US, the report explains.

The report emphasizes how dwindling water resources can be preserved through the enactment of systemic solutions and accelerated innovation. For example, legacy product replacement can quickly save significant

amounts of water. Plumbing manufacturers have carried forward a long tradition of developing water-efficient, safe and durable products. The latest toilets, showerheads, faucets and other fixtures and fittings have built upon this history to achieve even greater water savings, convenience and environmental responsibility while delivering the safe and clean refreshment so essential to health.

To solve seemingly insurmountable problems relating to water and sanitation, the plumbing manufacturing industry must take small steps. "The first of these steps is simply talking about the problem. These discussions lead to actions, first on a small scale, then on a larger stage as the evolution toward better water and sanitation solutions progresses," the report states.


## PMI's Accomplishments

The report also summarizes PMI's recent accomplishments, including:

- With calls for extended producer responsibility legislation arising in various states, PMI partnered with the leading packaging industry advocates—the American Institute for Packaging and the Environment (AMERIPEN)—to assure PMI members benefit from "over the horizon" insights about new legislation and compliance schemes on the drawing board.
- With counterfeit plumbing products entering the U.S. marketplace through online venues, PMI filed complaints with the Department of Energy, Department of Homeland Security's Custom and Border Protection and with owners

of various online marketplaces including Amazon. PMI also supported the recently passed Integrity, Notification, and Fairness in Online Retail Marketplaces (INFORM) Consumers Act to address the loopholes in online marketplace accountability.

- PMI renewed industry opposition to tariffs on Chinese goods in comments to the US Trade Representative and Secretary of Commerce. PMI continues to deliver frequent updates on tariff issues that first arose in 2019.

Read more about how the plumbing manufacturing industry is meeting challenges upstream and downstream at <https://www.safeplumbing.org/communications/pmi-annual-report-2023>. 

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by Steve Spaulding  
EDITOR-IN-CHIEF



# PFAS, Microplastics, Water and Us

It's a story as old as *Frankenstein*. Science unlocks some new discovery. Technology is developed to reap the advantages, but in the implementation unexpected disadvantages come to light. By the time those disadvantages gestate to the point of crisis, the technology is out in the world, near-impossible to control.

Today, one Frankenstein's Monster in the news is Artificial Intelligence. Yes, AI shows fantastic potential. You can read about how some contracting companies are making use of it in our Forum that starts on pg. 20. But the downside is there for everyone to see. Deepfakes so convincing that no news source remains trustworthy. School students that no longer need to learn how to write a coherent sentence. Economic catastrophe as workers are replaced in their millions. Even weapon systems no longer controlled by human beings.

Back in May more than 300 executives and researchers working on AI signed a letter just one sentence long: "Mitigating the risk of extinction from AI should be a global priority alongside other

societal-scale risks such as pandemics and nuclear war." It remains to be seen if any comprehensive regulation will result.

Our other monster currently on the rampage is climate change. 2023 is shaping up to be the hottest year on record. As I write this, Phoenix has seen

If you're reading this, it means you and your business have something to do with moving and/or heating water. So—at the risk of sending you home depressed at the state of the world—there are two more monsters particular to our industry I'd like to bring to your attention.

**There are plenty of man-made monsters out there in the world. Luckily, there are some people who make fighting monsters their life's work.**

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It is interesting to contrast these two monsters. AI seems to have sprung on the scene just this year with ChatGPT grabbing headlines. While the terms "global warming" and "climate change" have their origins in the 1980s, the use of fossil fuels that underly the present crisis goes back to industrialization in the 19th century. One came at us much too slow; the other, much too fast.

This is our annual water quality issue and starting on pg. 6 we have an update on the fight against Legionella with **Dr. Janet Stout** of the Special Pathogens Lab. It is a fight that Dr. Stout believes—with good testing and proper safeguards—we can win. But there is more than bacteria in the water supply.

Concentrations of microplastics in the oceans have surged with researchers now estimating there are 2.3 million

tons floating in the sea. And they are making their way into human beings, with scientists finding the tiny particles in almost 80% of people tested according to a report in *The Guardian*. They absorb heavy metals, can break down into toxic substances, and their long-term effects are unknown.

Next, PFAS (per- and polyfluoroalkyl substances) or "forever chemicals" were developed in the 1940s and used in products like non-stick coatings and fire-fighting foams. A recent review from the CDC associated them with a host of health problems including cancer and liver disease. In June, chemical and manufacturing company 3M agreed to a \$10.3 billion settlement for testing and clean up.

Just as in the fight against Legionella the fight against them will fall on plumbing professionals. You are the ones who will do the testing, remediation, and the system design that will help keep the public safe. It's a noble, worthwhile fight. Let's work now to get the resources and training you'll need for it. **C**

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DCC-115

Type	Wall Mounted [W x H x D]	Floor Standing [W x H x D]	CH Mode Input	DHW Mode Max.	DHW Flow Rate
COMBI	<b>DCC-115</b> [17 3/4" x 30" x 13 9/16"]	<b>DCCF-115</b> [24 3/4" x 43 3/4" x 17 1/2"]	16.6 - 93.5 MBH	115.5 MBH	2.5 GPM
	<b>DCC-150</b> [17 3/4" x 30" x 13 9/16"]	<b>DCCF-150</b> [24 3/4" x 43 3/4" x 17 1/2"]	22.0 - 125 MBH	153.0 MBH	3.5 GPM
	<b>DCC-205</b> [17 3/4" x 30" x 21 1/2"]	<b>DCCF-205</b> [24 3/4" x 43 3/4" x 23 1/2"]	29.5 - 164 MBH	205.0 MBH	5.0 GPM
HEAT ONLY	<b>DCB-75</b> [17 3/4" x 30" x 13 9/16"]	<b>DCBF-75</b> [24 3/4" x 43 3/4" x 17 1/2"]	16.6 - 75 MBH		
	<b>DCB-100</b> [17 3/4" x 30" x 13 9/16"]	<b>DCBF-100</b> [24 3/4" x 43 3/4" x 17 1/2"]	16.6 - 93.5 MBH		
	<b>DCB-125</b> [17 3/4" x 30" x 13 9/16"]	<b>DCBF-125</b> [24 3/4" x 43 3/4" x 17 1/2"]	22.0 - 125 MBH		
	<b>DCB-165</b> [17 3/4" x 30" x 21 1/2"]	<b>DCBF-165</b> [24 3/4" x 43 3/4" x 23 1/2"]	29.5 - 164 MBH		



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