

# Contracting Business

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HELPING HVACR MANAGERS RUN BETTER BUSINESSES SINCE 1944



## Education Thrives

## at AHR Expo

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## NEW DIGITAL CONTENT

### Popular Stories in Contracting Business

#### January Highlights



- AHR Expo Set for Atlanta  
<https://contractingbusiness.com/21256434>
- 2023 Salary Survey  
<https://contractingbusiness.com/21257315>
- Obtaining Federal Govt. HVAC Projects  
<https://contractingbusiness.com/21256376>

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## News @ Presstime

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### EGIA, Pearl Certification Partner in Key Areas

<https://contractingbusiness.com/21258778>

### Joseph Groh Foundation Achieves Goal

<https://contractingbusiness.com/21253598>

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<https://contractingbusiness.com/21255530>
- VISIT THE EGIA RESOURCE LIBRARY:  
Searchable database can be found at  
[mycontractoruniversity.com](http://mycontractoruniversity.com).



### POPULAR ONLINE GALLERIES

**LEFT:** Tech Update: Software & Apps  
<https://contractingbusiness.com/21258210>

**RIGHT:** Service World Expo Meets  
<https://contractingbusiness.com/21255692>



HVAC Intelligence  
eNEWSLETTER

### Duct System Assumptions to Duck on Equipment Changeouts

Don't assume everything is fine with a new customer's existing duct system.

<https://contractingbusiness.com/21258151>

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BY TERRY MCIVER, EDITOR-IN-CHIEF

# AHR Expo an Educational Treasure

When you arrive at the 2023 AHR Expo, much of your time will be spent visiting exhibits, but don't neglect the educational sessions.

There are four presentation categories: free industry sessions, ASHRAE Learning Institute courses, new product and technology presentations and panel discussions. Many speakers also have exhibits at the show, so you can follow-up with them as needed. Here is a sampling of topics in each category.

## Free Industry Sessions

- Marketing intelligence, by Nicola Fallowfield-Smith and Socrates Christidis of BSRIA Ltd., on how to use market intelligence to craft growth plans in an uncertain economy.
- Turning Chaos into Creativity. Brad White, Ken Sinclair and Scott Cochrane will discuss how the trend of "reinvention" offers new opportunities in building automation.
- Electrical Troubleshooting for HVAC: Presented by emerging educational superstar, trainer/contractor Bryan Orr of HVAC School and Dirk Nauman of HVAC Simulator, this class will cover basic to intermediate electrical troubleshooting.
- Cultivating Talent to Tackle the Tech Shortage: Presented by RSES and RSES Journal, this session is intended to help inspire and motivate attendees to actively participate in making the HVACR trade a more inviting place for new recruits and the next generation of workers.
- Pricing for Profit in Inflationary Times, by Ruth King. King will share how to bring all cost increases, both direct and overhead, into the pricing formula to ensure bottom line profitability despite high inflation.

## ASHRAE Learning Institute

- Best Practices in Energy Management, by Richard Pearson. This course provides a gateway to applicable industry guidelines, standard and other ASHRAE ALI courses.
- Introduction to Decarbonization, by Dru Crawley. This course describes the primary sources for carbon emissions in buildings and explains the key drivers for decarbonization.
- Humidity Control Design Tips & Tricks, by Mark Nunnally. Excess humidity and moisture promotes mold, mildew, and uncomfortable conditions for occupants. This course helps the designer achieve true control of humidity.

- Air-to-Air Energy Recovery Applications, by Paul Pieper. This course reviews real-world examples of where and how air-to-air energy recovery technologies are integrated into some of the most common, used commercially available systems.
- Laboratory Design: The Basics and Beyond, with John Varley. A comprehensive overview of HVAC design for laboratories is examined in this course.
- Plus 15 more topics.



If all you do is wander the Expo aisles, you'll miss a lot.

## Panel Discussions

- Cyber security for BAS, by Greg Fitzpatrick, Cochrane Supply & Engineering and four others. Many typical MEP BAS specs do not have any cyber security built in. Speakers will discuss new frontiers to ensure the security and reliability of future BAS systems.
- IAQ in Commercial Spaces, Best Practices and Financial Resources, by AHRI
- State of the Industry, with Chuck White, PHCC; Dominick Guarino, NCI; ASHRAE 2023 Chairman Farooq Mehboob, and more.
- Principles of Building Commissioning: ASHRAE Guideline O and Standard 202 will be explained. The course presents defining characteristics of the new construction commissioning process defined by Guideline 0, The Commissioning Process, and ASHRAE/IES Standard 202, Commissioning Process for Buildings and Systems.
- Plus 16 more topics.

The Products and Technology category will have presentations by 144 manufacturers.

Podcasters continue to make a presence at the show. Many of them are working business owners and technicians using podcasting technology to expand their numbers of followers. Visit [ahrexpo.com](http://ahrexpo.com) and click on "Education Schedule" to view the titles of all educational presentations.

Enjoy the entire three days, and apply what you learn to improve your business. **CB**

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## Skilled Labor Battle: Trade School Vs. College

The United Service Workers Union partners with plumbing and HVACR contractors to offer apprentices technical education and on-the-job learning.

by Kelly L. Faloon

When it comes to preparing for their work future, today's young people have some difficult decisions ahead of them: what they want to do in their work life, where to obtain the knowledge and training, how to pay for their education, and what the job prospects will be when they complete their schooling.

For anyone desiring a college degree, the price can be daunting in any field.

"The cognitive competencies that are in high demand in the workforce are generally associated with higher levels of education," notes a report from the Georgetown University Center on Education and the Workforce (CEW). "Today, two out of three jobs require postsecondary education and training, while three out of four jobs in the 1970s required a high school diploma or less. Yet while young people today need more education than ever to compete in the labor market, a college education is more expensive than in the past."

The 2021 report "If Not Now, When?" ([bit.ly/eucreport](https://bit.ly/eucreport)) illustrates that between 1980 and 2020, college costs rose 169%.

Safety comes first at the United Service Workers Union's Joint Apprenticeship Training Fund. Apprentices learn what they need to keep themselves and each other safe and healthy, including learning CPR.

"The costs of higher education have risen rapidly over the past few decades, making cost a barrier for many young people who wish to pursue a degree or credential," the report says. "It used to be possible to work one's way through college; today, college costs are generally too high—and young people's wages too low—for that to be feasible. Consequently, more students have to take on larger amounts of debt to get a college degree."

Work experience is "crucial for young adults, especially those who cannot access or complete postsecondary education," the report adds. Working after-school or summer jobs allows them "learn new skills and accumulate human capital so they can qualify for decent jobs that pay more than subsistence wages." However, over the last two decades, youth employment has fallen.

### Jobs are fairly recession-proof, can't be outsourced overseas

The CEW report explains that the three recessions since 2000—the "dot.com bust," the Great Recession and the COVID-19 pandemic—hit younger workers hard. Many find jobs in fast-food restaurants and personal service positions (barbers/hairstylists, child care workers, fitness trainers,



animal care workers, recreation workers, etc.). “These occupations provide basic skills but not the higher-level general and technical skills that facilitate movement into good entry-level jobs on promising career pathways,” it notes.

So how can young people obtain a secondary education that will provide them with a good standard of living but not cripple them in debt?

Whether you call it trade school, vocational school or career and technical education (CTE), these learning institutions can teach young people the skills and training they need to enter a career with financial stability, such as plumbing, HVAC or electrical. These jobs are fairly recession-proof and cannot be outsourced overseas.

The market size of U.S. trade and technical schools is \$15.1 billion in 2022, notes an IBIS World market report ([bit.ly/3kdyOAO](https://bit.ly/3kdyOAO)).

A *Bloomberg* article notes that more young people are entering apprenticeship programs in many industries.

“U.S. companies are increasingly tapping high school students for skilled jobs,” the August 2022 article notes. “As a result, apprenticeships are seeing a renaissance after failing to gain a foothold over the past few decades. About 214,000 people aged 16 to 24 were in apprenticeships in 2022, more than double the amount a decade ago, according to July data from the U.S. Department of Labor.” See [bit.ly/3Xps3Ko](https://bit.ly/3Xps3Ko).

Bloomberg adds that it’s “part of a national rethink by employers scrambling to fill about 10.7 million vacancies by developing their own talent pipelines.”

Regarding trade careers in construction, plumbing and HVACR are some of the highest-paying trades today. Candidates can obtain a two-year associate’s degree or certification, but many go directly into four- or five-year apprenticeship programs.

The plumbing and heating industries have long experienced the struggle to replace those workers who retire or who, because of job loss during the Great Recession or job dissatisfaction, left for work in other industries,

“Everyone is so focused on college, college, college that the apprenticeship programs have fallen by the wayside as much as the government is trying to push them,” notes Brian Keating, director of the United Service Workers Union (<https://www.uswu.org/>) Joint Apprenticeship Training Fund (<http://jatf.uswu.org/>). “Many younger people don’t even seem to know they exist, nor do their guidance counselors, who are steering them in a particular direction, which is troubling.”

## On-the-Job Learning

The JATF trains enterprising construction workers as part of USWU, located in New Rochelle, N.Y. The USWU, an affiliate of the International Union of Journeymen and Allied Trades (<https://www.iujat.org/>) covers employees working in many

industries. Its construction division includes plumbing, HVAC, fire sprinkler, steamfitting and sheet metal workers.

The “joint” aspect of the apprentice program illustrates the partnership between the JATF, which provides the technical education, and the signatory contractors, who offer on-the-job “learning.”

“We don’t call it on-the-job training anymore because what we’re teaching here, we want it to be expounded upon at the job-site, so now you’re teaching it out in the field,” Keating explains.

“So, it’s on-the-job learning combined with classroom-related instructions. It allows apprentices to apply the knowledge they acquire in the classroom to their work during the day. They don’t forget.”

Keating has spent most of his 45-year career in the HVAC industry and headed up the USWU JATF for the last 12 years. He is an OSHA-approved trainer for occupational safety and health, also approved by the New York City Department of Buildings. Keating also is a master trainer for the National Center for Construction, Education and Research.

One of Keating’s main goals for the school is to attract more young people into the construction specialty trades.

“I’ve spoken at some women’s groups, and there’s such an opportunity here for them,” he says. “They can make a living wage, with full medical, dental, and life insurance, all paid for by the employer. Say you’re making \$2 an hour; that \$2 is all yours. You don’t have to contribute 25 cents to your medical, 10 cents to this, and 20 cents to that.”

Keating notes that some colleges promise young people “ridiculous” six-figure salaries once they obtain a college degree. “You’re not going to get that salary right out of college because you have no experience,” he explains. “How can I possibly pay you that kind of money? However, with an apprenticeship, you’re not only getting a formal education at a college level, but you’re also getting the experience because you’re working full time.”

Before prospective apprentices commit to the JATF, Keating brings them in to discuss the program. He encourages young people to include their parents and explains the curriculum. Keating demonstrates the tools and projects they may work on.

“I want them to have a good idea of what the job entails,” he says. “And I want them to research it. If you want to be a sheet metal worker, go online and research sheet metal work and what’s involved in it. Is it something you’d be comfortable doing and making a career out of?”

The US Bureau of Labor Statistics (BLS) reports that the median annual salary of plumbers, pipefitters and steamfitters was \$59,880 in early 2021. The lowest 10% earned less than \$36,700, and the highest 10% earned more than \$99,920.

Of course, plumbing wages depend on years of experience and whether you are an apprentice, journeyman or master plumber, union or nonunion. The BLS figures do not make that distinction.

‘... we want people who want careers.’

—Brian Keating

COMPILED BY TERRY MCIVER, EDITOR-IN-CHIEF



The four-year USWU JATF sheet metal program includes a 100-hour safety program divided into 25-hour segments.

### Safety First

Safety comes first at the United Service Workers Union' Joint Apprenticeship Training Fund. Apprentices learn what they need to keep themselves and each other safe and healthy—including learning CPR. USWU's JATF program began nearly two decades ago, Keating says. The plumbing, fire sprinkler, sheet metal and steamfitting programs are approved by the New York Department of Labor.

Keating explains that apprentices begin with the four-month core program, introducing them to hand tools, power tools, blueprints and construction math. First, however, apprentices must attend a 30-hour OSHA course.

"We want to make sure these new individuals going out into the field will work safely on a ladder or using a hand or a power tool so we can minimize or eliminate any injuries happening on the jobsite," Keating says.

When apprentices return after the holidays in January, they start Level 1 courses in their particular disciplines. The piping programs—fire sprinkler, steamfitting, plumbing and HVAC—are all five-year programs. They go to class for four hours two nights a week and work full-time during the day.

"We don't bring anyone into our program unless we have a job for them," Keating states.

The USWU JATF sheet metal program is a four-year program, which includes a 100-hour safety program divided into 25-hour segments over those four years. "I think it comes to around 175 hours of safety training throughout their apprenticeship," Keating notes. "So they're well-versed in safety."

He adds: "I'm pretty big on safety. Life-changing, on-the-job accidents can affect an entire family. Maybe they must deal with a family member's disability, or what was once a two-income household is now only one. So, their safety is very important. We want to ensure that apprentices recognize hazards and know how to deal with them appropriately."

### A Career, Not a Job

Keating attends high-school job fairs, but he prefers one-on-one time with guidance counselors and teachers to educate them on what the USWU JATF is about and what resources are available to them and students.

He is also trying to recruit more women into the trades. Keating works with the global organization Dress for Success at its Long Island location. Its mission is to "empower women to achieve economic independence by providing a network of support, professional attire and the development tools to help women thrive in work and life."

Keating explains: "If you look at any study throughout the country, thousands and thousands of construction jobs are available, looking to be filled. I've been trying to get the young women at Dress for Success to look at our apprenticeship program. It's not all grunt work, and it's not all terrible: it's education, money and benefit packages available to them and, if they are single moms, their children. The work is here and a great opportunity for them to build a career."

He also battles with plumber stereotypes. "It's a different profession than it used to be many years ago," Keating remarks. "We're your next-door neighbor. We're the same person you see at church, the soccer field or the grocery store."

"When you say plumbing, they think of the plumber under your kitchen sink. We're talking about putting office buildings up with plumbing running up 42 floors. If not sized and installed correctly, those systems you put in aren't going to be working properly. These construction trades involve many technical aspects you must be properly trained on."

Keating acknowledges that the construction specialty trades aren't for everyone, but the union isn't looking for bodies to fill spaces.

"We're not looking for people who want jobs; we're looking for people who want careers," he explains. "This is a viable and lucrative career path. This isn't like getting a job at a big-box store and making a career there. Many people do and that's great, but we're looking for career-minded people because of what we offer." **CB**

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**Kelly Faloon** is a contributing writer to *CONTRACTOR Magazine* and owner of Faloon 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. Faloon is a journalism graduate of Michigan State University. You can reach her at [kelly@falooneditorialservices.com](mailto:kelly@falooneditorialservices.com).

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# HARDI Conference Sets Attendance Record

Heating, Air-conditioning & Refrigeration Distributors International (HARDI) concluded its Annual Conference -- IGNITE -- December 6 in Houston TX, with reported record-breaking attendance.

HARDI welcomed more than 1,840 attendees to the event, including 536 wholesaler attendees from 187 companies and a sold-out exhibit space featuring 250 vendors. This was the highest number of attendees in the history of HARDI's Annual Conference, which sources said is a testament to the appetite the HVACR industry has for networking and educational content regarding trends, tools and practices that impact growth. "We are thrilled to see so many members come together to share ideas, grow and connect," said Allison Greene, marketing director, HARDI. "Our team worked incredibly hard to provide a collection of speaker content and networking opportunities that would enable our members to super-charge their strategic business planning as well as their personal growth initiatives."

The event featured six keynote speakers whose presentations aligned with the conference's four main themes: Business Growth, External Impacts, Organizational Development and Personal Advancement. HARDI welcomed Billy Beane, executive vice president of baseball operations of the Oakland Athletics, whose engaging and informative presentation, "Moneyball: Lessons for Life & Business from Baseball's Best General Manager," was highly attended and praised. Anirban Basu, chairman and CEO of Sage Policy Group, returned to the HARDI mainstage with a witty analysis of major factors shaping economic outcomes. The show concluded with comedian and actor Dion Flynn's interactive improvisation-centered keynote presentation which was rife with lessons about the art of connection.

The conference featured 26 breakout sessions, many of which showcased valuable insights and benchmarking data made possible by HARDI's Market Intelligence team. Four Regional Forecast sessions examined how economic and regulatory factors will impact specific regions of the country in the coming months. The Voice of Supplier, Voice of Contractor, and State of the Channel sessions gave attendees a look at the association's yearlong research initiatives.

HARDI used the event as a platform to make important announcements regarding changes to its Board of Directors. In 2019, HARDI adopted a new governance model designed to take the growing association to yet another level of sophistication and scale. One of those changes included instating two-year chair terms. It was announced that Rhonda Wight, Refrigeration Sales Corp, will become the first ever HARDI Chair to serve a second year.

Outgoing board members Scott Weaver, APR Supply and Carlton Harwood, Ferguson Enterprises were thanked for their "exceptional and dutiful" service.

## New Directors Approved

HARDI's new slate of directors were unanimously approved by general membership, and will serve three-year terms, concluding at the 2025 Annual Conference: Lauren Roberts, cfm Distributors, Kansas City, Mo. (2nd term); Steve Roe, Heating and Cooling Supply, Waterloo, Ia; and Kevin Baxter, Munch's Supply, New Lenox, Ill.

"A key attribute of our governance model is a very strategic nomination process in which we inform the membership what kinds of skills and talents the Board is prioritizing for the next class. This results in multiple exceptionally well-suited nominees and ultimately makes for a difficult nomination process, which we think is a great problem to have. Kevin, Steve, and the return of Lauren for a second term, are perfect expressions of the process and are already making valuable contributions to the board and HARDI", said HARDI CEO, Talbot Gee.

HARDI recognized 20 graduates from its Emerging Leaders program. "Program participants from distributor and supplier member companies have worked incredibly hard over the course of a 3-year curriculum to develop their executive skill sets, and we're honored to be able to recognize them for their achievements in front of a large audience of their colleagues and friends," said Nick Benton, vice president of operations, HARDI.

Next year's Annual Conference will be held in Phoenix, AZ at the JW Marriott Desert Ridge, December 2-5. [hardinet.org](http://hardinet.org)

## Scholarship Partnership Returns

Fieldpiece Instruments has announced the second annual #MasteroftheTrade Scholarship. Fieldpiece partnered with SkillsUSA to administer the distribution of more than \$25,000 in 2023 scholarship opportunities designed to give back to the HVACR industry it proudly serves.

The #MasteroftheTrade Scholarship will support 13 SkillsUSA students studying HVACR in their junior or senior year of high school, or as college or postsecondary students, granting them funds to continue their education in a college or postsecondary HVACR technology program. Seven \$2,500 criteria-based postsecondary education scholarships will go

Fieldpiece hopes to help spread the word about the positive career opportunities the industry offers.

to SkillsUSA HVAC students and a total of \$10,000 in scholarships will go to the six gold, silver and bronze medal-winning high school and college/post-secondary students who top the leaderboards of the National Leadership & Skills Conference

(NLSC).

“As a sincere advocate for the HVACR community, Fieldpiece strives to support both new and seasoned professionals in the HVACR industry,” said Tony Gonzalez, technical training manager at Fieldpiece Instruments. “Our commitment goes beyond simply designing and developing HVACR tools that enhance the way techs work. Fieldpiece is devoted to the future of the industry and is proud to help ensure young up-and-coming professionals are well-equipped with tools, knowledge and resources to support their future success. Whether supporting techs through free online training resources like Fieldpiece University, an online platform designed to keep industry professionals at the top of their game; or supporting the path to an HVACR career with scholarships like #MasteroftheTrade, we want to see our community thrive.”

The scholarship offering enables Fieldpiece Instruments to shed light on the shortage of trained labor in the HVACR industry. With more than 110,000 unfilled HVAC technician jobs, Fieldpiece hopes to help spread the word about the positive career opportunities the industry offers.

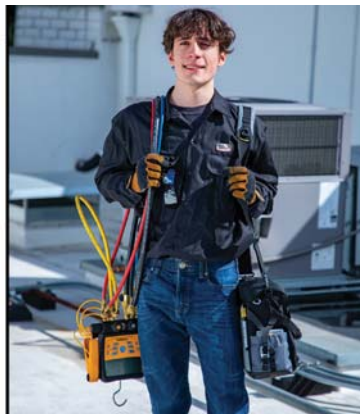
“There is a critical need for more HVACR technicians,” said Chelle Travis, executive director at SkillsUSA. “We sincerely

Fieldpiece

**\$25,000 IN SCHOLARSHIP OPPORTUNITIES**

#MASTEROFTHETRADE SCHOLARSHIP

SkillsUSA | Fieldpiece



thank Fieldpiece Instruments for supporting SkillsUSA and our nation’s future workforce. We are rolling up our sleeves every day to support career and technical education as we forge meaningful partnerships with industry. Working together with Fieldpiece Instruments, we can help close the skills gap.”

To apply for the seven #MasteroftheTrade Scholarships, applicants must be SkillsUSA members enrolled in its HVACR

or general construction programs who plan to study HVACR at the college or postsecondary level in the class of 2023-2024 (high school seniors) or 2024-2025 school year (high school juniors). The scholarship application must include a resumé and either an essay (300 words or fewer) or a video (1-3 minutes) answering the question: “Why have you chosen a career in HVACR?” The scholarship opened on Dec. 1 and applications must be submitted by April 1, 2023. Scholarship recipients will be announced on May 16, 2023. Scholarships are based on the merit of the application, including the essay or video and the proficiency of the Skills USA Framework skills demonstrated in the application materials. To receive the funds, scholarship recipients must provide an acceptance letter from their post-secondary education program or their first semester tuition invoice. [www.fieldpiece.com/Scholarship](http://www.fieldpiece.com/Scholarship)

## Rinnai Names New Executives



Beyer

Rinnai America Corporation reported three new senior positions in efforts to drive growth and strengthen its vertical segments. Bernard Beyer joins as vice president of information technology; Sean Boyer joins as vice president, quality assurance; and Buster Kennett joins as vice president of finance.



Kennett

“As we look to expand Rinnai’s global footprint, our North American region promises to serve as a critical growth engine for the company,” said Frank Windsor, president, Rinnai North America. “As such, it is imperative to have a strong management team in place to achieve our brand promise of ‘Creating a healthier way of living’ and to realize the company’s full potential in the market.”

Bernard Beyer, vice president of information technology, is described as a transformative leader with a broad range of experience in large, complex organizations. Most recently, he was assistant chief information officer and director of information technology at Butterball LLC, leading a team of business

analysts and developers to support the largest U.S. producer of turkey products.

Sean Boyer, vice president, quality assurance, has a record of leading premier global organizations in various industries. His prior position was with LG Electronics as senior director of operations, where he influenced LG’s sales growth and expanded its online presence and user engagement. He was also a member of the executive management team that shaped and implemented high-priority programs to align with LG’s overall business strategy.



Boyer

Buster Kennett, vice president of finance, has many years of finance and business transformation experience driving sustainable growth and profitability in manufacturing, logistics and branded consumer products. Having worked as CFO of CHEP, the world’s largest pallet supplier, and as CFO of Sara Lee’s global coffee business, he delivered significant improvements to both forecasting and cash delivery, while maintaining a clear focus on technology to drive simplification and standardization of processes and systems.



## SEER2 HVAC

Rheem® has introduced the all-new Endeavor™ line of gas furnaces, air handlers, split and packaged air conditioners, split and packaged heat pumps and packaged gas electric units. This new line is fully compliant with the new 2023 Department of Energy regulations.



Rheem reports these products will be further improved in time for additional, 2025 efficiency regulations.

Endeavor features higher AFUE ratings and increased energy savings, many Endeavor models carry an ENERGY STAR® certification and apply for utility service rebates. Endeavor gas furnaces offer the latest in sensor technology and the EcoNet monitoring system is on more models, allowing on-the-go control and receipt of system alerts by the homeowner via the EcoNet® Smart Thermostat and EcoNet App.

The units are designed with sound-dampening features such as insulated cabinets, solid bottoms and innovative airflow technologies. Smart features include built-in Bluetooth connectivity for the Endeavor air conditioners, air handlers, heat pumps and packaged air systems, which makes it faster and easier for the contractor to install and service on select *Classic®* and *Classic Plus®* Series systems using Rheem's Contractor App. Offerings have one of the top industry warranties with up to 10 Year Limited Parts + up to Limited Lifetime Heat Exchanger + up to 10-Year Conditional Unit Replacement.

The Endeavor line of **air conditioners** include leading industry warranties with up to 10 Year Parts + up to 10 Year Conditional Unit Replacement. Other integrated sound-dampening features include refrigerant tubing and fan blade design, the composite base pan, compressor sound blankets and innovative compressor and drive technologies.

Endeavor air conditioning units provide increased energy savings with higher efficiency, with SEER2 and EER2 ratings. A 7mm condenser coil reduces refrigerant requirements by up to 15%, in line with Rheem's sustainability mission.

Rheem's Endeavor **heat pumps** feature super-efficient technology and outstanding durability, and provides

more energy savings with higher SEER2, EER2 and HSPF2 ratings due to the higher efficiency of Rheem's heat pump. With households generating 72% of greenhouse gas emissions, switching to a heat pump can make a big difference for the environment, sources say.

Rheem Endeavor air handlers offer high energy efficiency and dependably quiet operation. They use variable speed motor technology that allows for modulating (between 40% and 100% of capacity), three-stage (high, medium, low) or two-stage (high, low) heating and cooling operation, ensures a steady stream of just-right airflow to maintain the customer's comfort level preference while providing superior humidity control.

Endeavor **packaged air systems** will help the homeowner save space and realize dependable comfort. These units are also energy efficient, with a higher SEER2, EER2 and HSPF2 rating. New models launching in 2023 will feature the latest in sensor technology, and the EcoNet monitoring system, as mentioned earlier. Additional features and benefits apply to the entire Endeavor family of products. Find those at [Rheem.com/HVACKnowZone](https://www.rheem.com/HVACKnowZone) and [Rheem.com/Endeavor](https://www.rheem.com/Endeavor).

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Carrier's Infinity 24 heat pump with Greenspeed Intelligence is Carrier's highest efficiency and most advanced heat pump with up

to 22 SEER2 for premium energy savings with extremely quiet performance and premium comfort features. The Performance 17 heat pump provides up to 17 SEER2 for enhanced energy savings with enhanced comfort features. The Performance 15 heat pump provides up to 15.2 SEER2 for enhanced energy savings with standard comfort features. Winner of the 2022 AHR Expo Innovation Award in the Heating category. [bit.ly/carrierSEER2](https://bit.ly/carrierSEER2)



.....  
The new Trane Platinum XV20i Heat pump is part of a new line of equipment featuring Trane Link, a revolutionary communication technology that simplifies installation, commissioning, and remote monitoring of Trane's variable speed systems. Created to provide technicians with a plug and play experience, Trane Link assists with installation accuracy of the XV20i through automated configuration, charging and system testing. Technicians can ensure a speedier setup as Trane Link self-identifies the equipment,

provides automatic connection through Bluetooth mesh, and utilizes standardized color-coated wiring.

Through Trane Link, technicians also can experience more efficient service calls and troubleshooting, as the technology provides the exact data they need on their own smart device. Available now.

[trane.com](http://trane.com)



The Goodman® brand GVZC20 heat pump capitalizes on inverter technology to drive up to 10 HSPF heating and 21 SEER cooling performance.

Goodman's inverter-driven systems provide tremendous efficiencies, helping reduce compressor wear and tear. They run at more energy-conserving speeds, reach indoor comfort settings more quickly, balance heat load through continuous dehumidification, and operate at lower sound levels, avoiding the constant on/off cycling compared to single- and two-stage systems.



The GVZC20 is ComfortBridge™ communicating technology compatible, allowing for easy commissioning and diagnostics using the CoolCloud™ phone/tablet application. [www.goodmannmfg.com](http://www.goodmannmfg.com)

Lennox has developed the Dave Lennox Signature® Collection SL25XPV heat pump, which sources describe as the most precise and efficient heat pump on the market. The variable-capacity, inverter-driven, ultra-efficient heat pump features system ratings up to 24 SEER and up to 11.8 HSPF, earning it the 2022 Most Efficient ENERGY STAR® designation.

Part of the Ultimate Comfort System™, the SL25XPV features Lennox TruHeat Performance, which delivers a greater amount



of heat compared to traditional heat pumps, resulting in a feeling similar to the rich, warm comfort of a gas furnace—even during the coldest outdoor temperatures. Precise Comfort® technology adjusts heating and cooling output in precise increments to perfectly match energy use with comfort. Plus, with a special sound-dampening system and the ability to primarily run at low speed, the SL25XPV absorbs outdoor noise and drastically minimizes the sound of air kicking on or off inside the home. [Lennox.com](http://Lennox.com)

The Connect Series from GE Appliances, a Haier company, has the flexibility to allow application with a 24-volt conventional ducted air handler. Various sound-dampening features in the indoor and outdoor sections maintain operating sound levels as low as 47dB. The air handler ships as an upflow or horizontal left configuration. This unit is compatible with the AUH2436ZGDA outdoor unit, and offers a SEER of 18.

GE Appliances now carries a full line of residential ducted HVAC products, including gas furnaces, packaged units, air conditioners, heat pumps, air handlers and evaporator coils.

Residential air conditioners by GE Appliances come in 16-SEER single-stage, 17-SEER single-stage, 18-SEER two-stage and 23-SEER inverter, variable capacity.



Gas furnaces are 80% AFUE in 1-stage ECM, 2-stage ECM, or 2-stage variable speed. GE Appliances 96% AFUE gas furnaces are 1-stage or 2-stage ECM or 2-stage variable speed. The 97% AFUE gas furnaces are modulating. Low- and ultra-low NOx models are available. A 2023 product catalog can be found at [geappliancesairandwater.com](http://geappliancesairandwater.com)

## HEAT EXCHANGERS

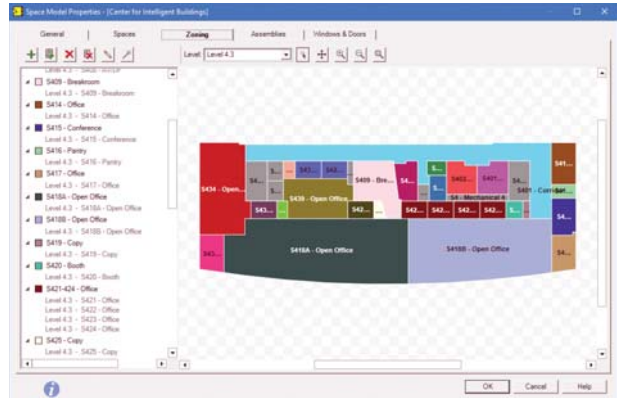
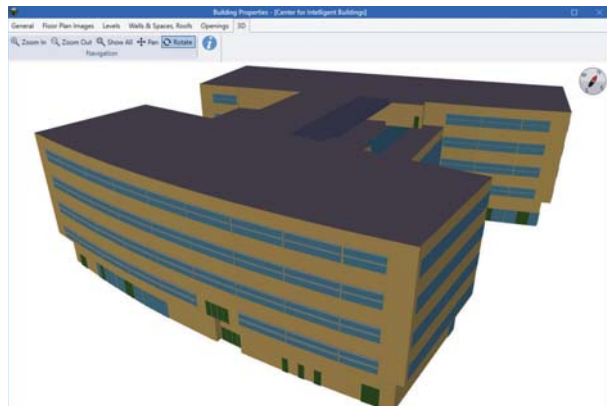
Xylem has introduced new high-efficiency “X” plates for the GPX P86 and P110 gasketed plate and frame heat exchangers, with the following benefits reported:



- High-efficiency technology delivers increased performance in a smaller footprint and supports heat transfer applications
- Provides reduces operating costs and environmental impact, including up to:
  - 20% increase in heat transfer thermal performance
  - 20% reduction in surface area
  - 15% reduction in material
- Standard configurations for high-efficiency plate designations include XL, XK, XM, XKXM, XMXL.

## NEW CONSTRUCTION/RETROFIT SOFTWARE

To meet the needs of HVAC design engineers, Carrier now offers a new version of Hourly Analysis Program (HAP), its peak load and energy modeling software. To reduce the time and effort required to create high-quality building models, HAP v6 combines a streamlined workflow with



an extensive array of advanced 3D building modeling features, all woven into a core design that continues to be easy to learn and use.

Out of the discussions with consulting engineers, design/build contractors, HVAC contractors and facility engineers arose the key features and approach for HAP v6. New, powerful features were added for graphically defining the building model. An engineer sketches over building floor plans to define boundaries of rooms, and the software automatically calculates dimensions and areas.

HAP v6 offers many technical upgrades to reduce days of labor into hours. It integrates with the U.S. Department of Energy’s EnergyPlus™ calculation engine to provide cutting edge system simulation capabilities. It utilizes the ASHRAE Heat Balance load calculation method to represent building physics more accurately. Most current users can transition to HAP v6 for free at their own pace, continuing to use the current HAP v5 as long as necessary. For upgrade information, visit [carrier.com/HAP](http://carrier.com/HAP) or email [software.systems@carrier.com](mailto:software.systems@carrier.com).

ECI Software Solutions provides industry-specific business software solutions and services, focusing on cloud-based technologies. For over 30 years, ECI has served small to medium-sized manufacturing, wholesale and retail distribution, building and construction and field service organizations.

ECI’s contractor scheduling software lets managers eliminate worry about digging through piles of folders or throwing out notes. ECI software keeps all important information in one system. Whether you have a lead or are working on an installation or service maintenance agreement, it can all be tracked in one place.

ECI’s smart dispatching makes it easy to match technicians to the right jobs. Using factors like role, time conflicts, technician skill, location and performance, smart dispatching helps the business owner maximize revenue. [ecisolutions.com](http://ecisolutions.com)

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## COMMERCIAL HYDRONICS

Hydrovar Nexus™ is Xylem's new integrated motor and variable speed drive solution that features market leading efficiency, built-in intelligence and embedded



IoT connectivity. When paired with Xylem's wide range of pumps, this technology extends the lifecycle of the asset while reducing the total cost of ownership. The built-in pump application intelligence combined with the intuitive color interface makes this the easiest drive to commission, program and operate, enabling virtually any configuration of pumps. Hydrovar Nexus™ uses sustainable permanent magnet assisted synchronous reluctance motor technology to deliver IE5 Ultra Premium efficiency in compact and lightweight design with ratings up to 30HP (22kW). [bellgossett.com](http://bellgossett.com)

From U.S. Boiler, the high efficiency Alta and Alta Combi boilers feature next-generation gas adaptive technology that provides the shortest installation time and lowest operating costs.

This technology provides true “no touch” combustion setup. There are no manual throttle or offset adjustments. The boiler's control system provides continuous, automatic self-calibration of burner combustion by adapting to component wear, variations in fuel, environment, and vent air pressure.

Heat-only boilers are available in 120, 150 and 180 MBH models, and Combi boilers

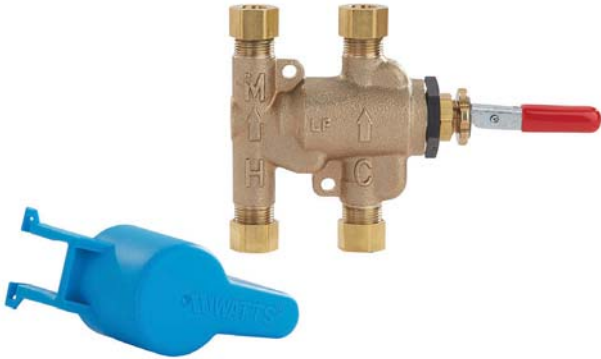


are available at 136 and 200 MBH. The Alta also includes sensor-less reset technology, which performs the functions of conventional outdoor reset without the need to install an outdoor sensor. Each Alta comes with value-added components and features, including three-sided access, boiler flow safety switch and display indicator, a five-year parts warranty, and a 12-year limited warranty on the heat exchanger. [usboiler.net](http://usboiler.net)

Carrier introduced the all-new AquaSnap® 30RC air-cooled scroll chiller featuring Greenspeed® intelligence and R-32 refrigerant, which complies with Jan. 1, 2024 low global warming potential (GWP) requirements, with best in class energy-efficiency while delivering quieter operation within a tiered design for a broader operating range and design flexibility\*. Carrier is a part of Carrier Global Corporation a leading global provider of healthy, safe, sustainable and intelligent building and cold chain solutions.



The AquaSnap 30RC was developed with advanced features to ensure performance and efficiency with a new compact tier unit design, providing customers with the option to choose the chiller that fits their business and sustainability needs. The optimizations boost the integrated part load values (IPLV) up to 18 for a wide range of applications from 60 to 150 tons using GWP R-32 refrigerant to further reduce impact on the environment. The chiller's new compact tier design, with a physical footprint less than standard chillers, enables it to be deployed where space is tight without compromising performance. With the high cost of real estate, Carrier developed the smaller footprint chiller for a range of applications where optimum space utilization is crucial.



Watts has introduced the LFUSG-HWP, a new Under Sink Guardian point-of-use mixing valve with hot water purge.

This unique four-port valve features a hot water purge lever that allows facilities to perform a sanitization at the faucet with “the flip of a switch.” Sources report these benefits:

- Increased safety with quick sanitization at the point of use. The rest of the facility can continue to function without a full system shutdown, allowing uninterrupted water distribution.
- Savings on labor; no tools are required to initiate sanitization. The valve comes standard with a cover to ensure only authorized users can initiate sanitization.

Visit the “products” page on [Watts.com](http://Watts.com) for additional information.

With the growth of the company’s PP-RCT piping solutions business continuing to expand, Uponor North America in October 2022 launched hot potable pipe and fittings to help meet the demand for commercial domestic water systems.



Uponor began offering PP-RCT pipe and fittings in 2020 with more than 300 parts for mechanical piping in sizes from ½” to 12” and cold potable piping in sizes from ½-in. to 8-in. Now, with the addition of hot potable piping in sizes from ½” to 8”, Uponor has a comprehensive offering for mechanical and potable applications, all covered by a 10-year limited warranty.

## Superior Boiler Milestone

Superior Boiler recently manufactured its 20,000th registered National Board boiler. The National Board of Boiler and Pressure Vessel Inspectors was established in 1919 to “formulate uniform qualification and examination requirements for boiler inspectors to be used by all states.” Its goal was to regulate safety and quality standards used for boilers and pressure vessels and to standardize them across state lines.

“This is a major milestone in our company’s more than 100-year history,” said Superior’s President & CEO Doug Wright. “It’s a testament to the exceptional team members who have worked at Superior Boiler since the company was founded in 1917. The same principles exist today as then of delivering boilers with the highest-quality craftsmanship and providing exceptional customer service and support.”

On December 6, 2022, Superior Boiler issued National Board #20,000 to a Wichita steam boiler. At more than 13 feet tall, 25 feet long and 8 feet wide, the unit is large enough to fit the National Board #1 boiler inside its furnace (see photo).

The 2-pass wetback boiler features a 2,000-horsepower capacity and a design pressure of 200 psi steam. Sold by



Superior Boiler’s first unit next to today’s 20,000th registered National Board boiler.

Mechanical Sales, one of Superior’s representatives, it will be delivered to a Midwest soybean processing facility. The customer will use the equipment to create process steam as it creates domestic, renewable energy for the biodiesel industry. The National Board #20,000 Wichita boiler will be paired with a twin boiler, a 3,300-gallon spray deaerator and a blowdown separator to complete the customer’s boiler room.

# REPAIR v. REPLACE

The decision to continue repairing or replace an older HVAC system is easy to make when you have a multitude of facts.

**A**s the years go by, residential HVAC systems creep closer and closer to the end of their useful operating life. That's when the HVAC consultant is relied upon to present the homeowner with advice on whether to continue repairing the system, or if a replacement is in order. Read what some of the industry's top contractors and leading consultant Drew Cameron have to say about repair v. replace. —ed.

## System age, condition, repair history, budget

Over my 33 years in commercial HVAC service, the decision to repair or replace a system has always been something to consider carefully, but in recent years has become more complex. With changes to refrigerant, parts obsolescence, microprocessor technology, current supply chain issues, and of course, inflation, there are many factors to consider when making this decision.

For HVAC systems working with gas-fired heat, there are potentially two major component repairs—the AC compressor(s) and the furnace heat exchanger(s). These components are comparable to an engine or transmission in a car and are required to operate. Larger unitary systems can be complex

and even designed to be rebuilt periodically, which will extend service life. In addition, the split system can present piping challenges due to a change in the refrigerant. However, they can all be evaluated with the same thought process.

Similar to a car, age, condition, and performance history are critical items when deciding about repairing or replacing an HVAC system. Equipment under 10-15 years old that is in decent condition with competent maintenance and repairs over its lifetime indicates repairing may be the way to go. Particularly if any component is still under warranty and the repair doesn't exceed the replacement cost. Another important consideration

is how long the system can be offline without significantly impacting building protection (mold, ventilation, freezing, etc.) and occupants.

### Component questions

The next level of decision-making is to evaluate which component is broken, the cost, and how long it will take for parts to be available and the repair completed. Consulting with their service provider can answer all these questions to help customers move forward. New equipment arriving promptly, with warranties and a potential maintenance agreement (depending on what you can negotiate), can provide significant relief to building owners. With this capital investment,

## The Rule of 7s

Everyday homeowners all across the country are faced with the dilemma of repairing their existing heating and air system or upgrading to a new one. The question in the customer's mind is "When does it make sense to repair rather than replace my system?" The professional answer is, "It depends".

In a southern heat pump market, we recommend the Rule-of-7s. If the system is either seven-years old or requires more than \$700 in repairs, we should at least have a conversation about if it makes more sense to put any substantial repair monies towards a down payment on a new, more efficient system.

Another, less regional or system specific recommendation is to take the age of the system in years and multiply it by the repair cost. The result is your RR-value. If it's \$5001 then replacing it is probably better.

One crucial factor to evaluate is, how does the current system perform relative to the client's goals? Systems that fail to live up to expectations may be stronger candidates for upgrading for more than just repair v. replace dollars and cents. After all, the heating and air system is about being comfortable year-round.

Another often overlooked factor is operating costs. Many times, the client may already be paying for a new system in the form of utility overpayments, just not actually getting it. Monthly utility savings often can make the payment or a substantial part of it.

—Tom Casey, Jr., Chief Quality Officer, Griffin Service, Ponte Vedra, Fla.



Casey, Jr.  
Anthony Williams/  
Service Nation



Hobaica  
Anthony Williams/  
Service Nation

## Multiple repairs?

We use multiple factors to determine if there is an HVAC replacement opportunity with a customer. Here is our order of importance:

- Customer is interested in replacement options
- Current system is no longer capable of maintaining the customer's preferred comfort
- Equipment is no longer covered under manufacturer parts warranty
- Repairs required to current system exceed \$1000
- Multiple repairs have been quoted over the past 2-3 years, performed or not
- More than three repair visits have been made in the past 2-3 years
- Reliability of the HVAC system to keep the family safe and comfortable
- Utility savings comparison, existing system v. new system options
- Customer would benefit from new technology options to improve their comfort, such as zoning, modulating systems, or WiFi control.

—Lou Hobaica, president, Hobaica Services, Inc., Phoenix, Ariz., the Contracting Business 2011 Residential Contractor of the Year.



Owens  
Owens Cos.

## Help customers plan ahead

On the residential side, our rule of thumb is to begin thinking of replacement when units are in the 15-year-old range. Of course, if equipment is having a lot of issues before that time, we talk to the homeowner about replacement. In both cases, we like to try to get at least budget proposals in

they can rest assured that the new HVAC system won't break down during extreme weather.

Other advantages worth considering for equipment replacement are federal tax incentives (section 179d) and possible utility incentives for more efficient technology to help offset the overall cost. Plus, the system should save some energy expenses.

This decision is very situational and isn't always clear-cut. For example, recently at Atlantic Westchester, one of our clients was faced with a choice that wasn't straightforward. They had a 7-year-old condensing boiler, but the maintenance was neglected, causing the heat exchanger to fail. The client

was given a choice to repair or replace. The replacement option was three times the cost of repair, and we felt confident that with our Atlantic Westchester team performing maintenance after the repair, we could extend the life of the existing boiler beyond any return-on-investment period for new equipment. While this instance was a difficult choice, the client now understands the importance of ongoing maintenance to the equipment's life expectancy and performance which, in turn, will help guide their decision-making in the future.

### Short-term budget, long-term cost

Other considerations are the financial health of the client and the appetite for

risk. For many years, we worked on a college campus with some equipment almost as old as I am. The approach of the operations department was to maintain a specific temperature range and, if it broke, "fix it," if possible and as soon as possible. They did replace some equipment, but those components were well past their life expectancies and were getting expensive to keep running. Their perspective of the short-term budget ended up costing them more in the long run.

—Bud Hammer, president, Atlantic Westchester, Inc., Westchester, NY



Hammer  
Atlantic Westchester



## HVAC MAINTENANCE

their hands so they have them should something fail. That way they can be a step ahead if the need arises. And we all know failures don't happen on Tuesdays at 10:00 am. More like Fridays at 4:00, when it is usually extremely hot or cold, and/or the homeowners are expecting a house full of guests.

On the commercial side, a big part of what we do for our contract customers is provide budgeting for equipment replacements. We do this on an annual basis as a part of our contract review process. The account manager will review the service history for the past year and look for any recurring problems or increase in equipment failures. We also consider the age, condition, type of refrigerant, overall repair history, and efficiency of the unit, chiller, boiler, etc. By assisting in the budgeting process from the start, we let our customers know when equipment is either past its useful life or getting close to it. Of course, today, refrigerant has become more and more of a factor for replacing equipment. R-22 is still everywhere and needs to be replaced, so budgeting for this systematically is effective. In our proposals for replacement for some customers, we provide energy analysis so they can see the dollars saved and their ROI.

By starting this process early, we can help customers manage their capital dollars. If they have a good year business wise, they may decide to knock off a couple or a few units.

We have one customer who is just now replacing the last three of their seven rooftops. The first ones replaced a few years ago. This same customer had a central pneumatic air system which was giving them more and more problems. We helped them plan and budget for its replacement three years ago. Now we are dealing with the last of their systems, a make-up which needs replacing and upgrading. They have had budget numbers for a few years and may finally get this done later this year.

—John Owens, president & CEO, Owens Companies, Bloomington, Minn.



Cameron  
Drew Cameron

### System age, operating hours

I find it helpful for comfort advisors to have some tools available to help owners understand when to repair or replace, what might make sense. This allows criteria that are tied into the equipment to help guide the judgement of this but give the customer some input on making the final determination (see table).

- Looking at air conditioner and heat pump criteria, we first look at equipment age. If it's greater than or equal to being 12-years-old for an air conditioner or greater than or equal to 10-years-old for a heat pump, that



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leans towards replacement. If it's less than 12 years old, that is not the factor that says to definitively go ahead and replace it, because there's a host of other criteria.

- Are there greater than or equal to 500 cooling hours on the replacement side, or under 500 hours on the repair side?
- Consider 'continued residence,' meaning how long do you plan on staying in your home? Is it greater than or equal to two years or less than two years? If the customer plans on staying in the home longer than two years, they may want to consider replacing sooner rather than later.
- Does the equipment have any warranty? And if it still has warranty, then they might want to consider repairing it.
- Repair severity, meaning is it a major item? Is it a costly item? If it's major, then go ahead and consider replacement. If it's minor, consider repair cost versus age. This is the 4K rule, where we take the age of the equipment, multiplied by the cost of the repair. If it's greater than

| Air Conditioners & Heat Pumps   |                                       |  |
|---------------------------------|---------------------------------------|--|
| Criteria to Consider            | Replace                               | Repair                                 |
| Equipment Age                   | ≥12 years old AC<br>≥ 10 years old HP | < 12 years old AC<br>< 10 years old HP |
| Operating Hours                 | ≥ 500 hours                           | < 500 hours                            |
| Continued Residence             | ≥ 2 years                             | < 2 years                              |
| Warranty                        | none                                  | Under Warranty                         |
| Repair Severity                 | Major item(s)                         | Minor item(s)                          |
| Repair Cost v. Age              | Age x Repair Cost ≥ \$4K              | Age x Repair Cost ≥ \$4K               |
| Repair Cost %                   | ≥ 33-50%                              | < 50% cost to replace                  |
| Repair History (last 2 years)   | ≥ \$1000                              | < \$1000                               |
| Repair Frequency (last 2 years) | ≥ 3 Repairs                           | < 3 repairs                            |
| Existing Efficiency             | ≤ 13 SEER & 10 EER                    | >13 SEER & 10 EER                      |

Source: Drew Cameron.

or equal to \$4,000, consider replacement. If it's less than \$4000, consider repair.

- Repair history in the last two years: if those repairs are greater than or equal to a \$1000, consider the fact that this is going to continue to nickel and dime them, and to consider replacement.
- Additional considerations are the need for improved indoor air quality, noise concerns, environmental concerns, inflation concerns and humidity issues and more.

—Drew Cameron, president of Flow Odyssey and Energy System Design LLC, and a faculty member at EGIA's Contractor University. He can be reached at [dcameron@egia.org](mailto:dcameron@egia.org). **CB**

# The Complete Package

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# Water Source Heat Pump Maintenance

Here are some annual “checkup” maintenance tips for water source heat pumps.

by Phil Rains

**C**onsumers and commercial building owners alike are seeking environmentally friendly HVAC technologies that have the potential to reduce energy usage. Water source heat pumps are becoming more popular because they are at least three to four times more energy efficient than conventional systems. Right now, the market is seeing a surge in demand due in part to federal rebates, such as those in the Inflation Reduction Act.

Water source heat pumps work by using energy from the ground or surface water to heat and cool buildings. Following are annual “checkup” maintenance tips for water source heat pumps:

**1.** Filter changes or cleaning are required at regular intervals. Some commercial applications will need to have the filters changed twice per month, but in single-family homes, replacing or cleaning the filter every 60 days is sufficient.

**2.** An annual checkup is recommended by a licensed service professional. Recording the performance measurements of volts, amps, air temperatures and water temperatures are recommended to compare against the info on the unit’s data plate, which was recorded at the original startup of the equipment.

**3.** If electrical problems are indicated, check volts, amps, and resistance of components to determine if connection or component issues exist. Faulty electrical components should be replaced as necessary, and proper electrical flow should be verified.

**4.** During annual checkup, if air flow problems are indicated, adjust air flow volume as necessary by blower speed or interface board adjustments to match manufacturer’s rated air flow for the unit during the cooling and/or heating mode.

**5.** Check and clean coils with commercially available coil cleaner if necessary. It is important to use a chemical cleaner that is specifically designed for coils to avoid damage.

**6.** If waterside problems are indicated, check the temperature difference and pressure drop across the coaxial coil to determine gallons per minute of water flowing and capacity. Applying the data to industry-related formulas and calculations will indicate whether further water/fluid issues exist, such as heat exchanger problems, fluid volume problems or fluid flow problems.



Bosch QV series

**7.** If refrigerant problems are indicated, check superheat and subcooling to determine the level and location of existing liquid refrigerant in the refrigerant circuit. Pressure and temperature charts help determine refrigerant circuit component or charge level issues. If necessary, replace refrigerant circuit components or adjust refrigerant charge level, based on industry-accepted procedures.

**Recording the performance measurements of volts, amps, air temperatures and water temperatures are recommended to compare against the info on the unit’s data plate, which was recorded at the original startup of the equipment.**

**8.** Check the condensate drain annually by cleaning and flushing to insure proper drainage.

**9.** Periodic lockouts (shutdowns as a protective measure) almost always are caused by air flow problems. If continual lockouts occur, check for air flow problems or air temperature problems.

When properly cared for, heat pumps are highly adaptable to changing weather conditions, meaning they can provide consistent performance throughout the year—and for many years to come. **CB**

**Phil Rains** is an application engineer and trainer for Bosch Thermotechnology with a focus on commercial water source/geothermal heat pumps. He has over 50 years of experience in the HVACR industry. [www.boschheatingandcooling.com](http://www.boschheatingandcooling.com)

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## Refrigeration Controls at 2023 AHR

### Regulate Compressor Capacity

Small-format food retail stores now have the ability to implement CO<sub>2</sub> refrigeration systems without excess first cost investments. Danfoss's CO<sub>2</sub> MiniPack controller provides a complete pack solution that makes CO<sub>2</sub> approachable for small-format food retailers who would like to harness its benefits, even those with little CO<sub>2</sub> experience. With the functionality of a dedicated CO<sub>2</sub> controller, minimal complexity and unique ease-of-use at competitive pricing, the MiniPack Controller is a flexible and accessible tool for even the most budget-conscious food retail operation.



Danfoss says carbon dioxide provides a low-GWP refrigeration option to systems that use HFC refrigerants, but currently, CO<sub>2</sub> systems are traditionally more costly and complex to design and operate than traditional HFC systems, slowing widespread adoption of this innovative technology. To date, sources report, only very large supermarkets have had the scale and budget to successfully implement CO<sub>2</sub> refrigeration systems.

The MiniPack Controller addresses this barrier to entry for small-format food retail stores by leveraging large-store pack controller technologies for small-format supermarkets and discount stores. The Danfoss CO<sub>2</sub> MiniPack Controller uses easy-to-use parameter settings and a wizard-based set-up system to provide full CO<sub>2</sub> booster refrigeration system control that utilizes up to five compressors.

Benefits include:

- Reduced operational cost through energy efficiency, pack security and food safety.
- Fast and simple setup, with no extensive CO<sub>2</sub> knowledge needed.
- Dedicated hardware with limited electrical panel space required.
- Integrated design with variable-speed capacity and Bitzer Ecoline with cylinder decoupling (Danfoss control of CRI)
- Flexibility, with easy integration into separate heating system, gas cooler and receiver control, and optional features such as heat recovery, hot gas dump, and liquid injection

Within CO<sub>2</sub> systems, the CO<sub>2</sub> MiniPack controller regulates the capacity of compressors and gas coolers to produce energy savings; enables optimal fan control for maximized gas cooler performance; and communicates between smart compressors, VFDs, and supervisory store controllers via Modbus

and CANBUS—all within compact hardware featuring a simple interface for seamless functionality. The CO<sub>2</sub> MiniPack Controller was designed to work with compatible Danfoss and competitor components for complete application control of CO<sub>2</sub> systems at reduced operational costs. **Booth B3231**

### Reduced Temperature Fluctuation

The IntelliGen™ refrigeration controller by Heatcraft Refrigeration Products delivers unmatched temperature control, sources report. It reduces temperature fluctuation, brings the system to optimal temperature faster and optimizes cooling time through the fan cycling. Additionally, it detects when the system needs defrosting, which automates the defrosting cycles and saves energy costs. With a reduction in energy costs of up to 30 percent, the IntelliGen Controller can pay for itself in as little as one year.



A key benefit of IntelliGen is its remote monitoring capabilities. Users can monitor their refrigeration system remotely or locally on any smart device, such as a tablet, smartphone or computer with a webserver card installed. They can receive alerts via the web, BMS, text or email to notify them of any potential refrigeration system issues. For operators with multiple cooling units in a system, up to eight unit coolers can be chained together and controlled as a single system with just one IntelliGen webserver card or BMS integration card.

Heatcraft sources say IntelliGen provides faster system setup and smarter servicing compared to conventional controls. It offers:

- Quick, simple two-minute system setup
- Reduced installation, diagnosis, servicing and downtime
- Instant notifications of system status locally and remotely
- Remote access anywhere, anytime with smartphone, tablet or laptop.

The IntelliGen user interface has an intuitive design to alert operators to any problems. A colored light bar shows the system status at a glance, and a full-text display makes setup and servicing easy. The system can be configured or changed in

just seconds by using the front-mounted menu buttons and turn-and-press knob. **Booth B3231**

<https://intelligen.heatcrafrpd.com>

<https://www.heatcrafrpd.com/>

## Additional refrigeration control products on display during the 2023 AHR Expo in Atlanta, Feb. 6-9:

### Electronic Expansion Valve

From Valex: A compact and integrated instrument that offers a complete and fully configurable solution for controlling various models of electronic expansion valves, in addition to superheating, room temperature, defrost, pressure, ventilation, lighting, and alarms control. In other words, VX-1025E plus replaces the controller or thermostat in the installation, as it controls the refrigeration processes, in addition to the flow of liquid. **Booth B1049**

### Electronic Upgrade

SureSwitch from Emerson is a multi-volt universal electronic upgrade for definite purpose contactors for air conditioning

and refrigeration, with 5-times contactor life and sealed to keep out ants and debris.

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- Multi-volt coil works with all common coil voltages
- 5x traditional contactor life
- Totally sealed switch keeps out ants, pests and debris
- Microprocessor control inhibits arcing that cause welding and pitting
- Line voltage brownout protection and short cycle timer provide compressor protection. **Booths B1839 / B1849**

### Refrigeration & Defrost

PENN TC series refrigeration and defrost controllers contain a full line of microprocessor-based, programmable operating controls for commercial refrigeration equipment. PENN TC Series controllers are designed to easily and efficiently maintain optimal temperature in commercial refrigerators, prep tables and freezers. TC series are available with optional inputs and corresponding output relays to control and optimize refrigeration system performance.

TC controllers are available with optional inputs and corresponding output relays to control and optimize refrigeration system performance. **Booths B1617 / C5442**

## > DR. CHUCK'S CORNER by Dr. Charles "Chuck" Allgood, Chemours



### The Three Rs of Refrigerant Management

Because many recently proposed regulatory changes to the HVACR industry are beginning to take effect, it's a good idea to revisit the Three R's of refrigerant management: Recovery. Reclaim. Recycle. While the world works toward circularity and resource efficiency—that is, getting the most out of every kilowatt of electricity used to run, or pound of material used to construct an HVACR system—an increased focus on strong refrigerant management is obviously needed as well.

When considering the various HFC phasedown rules, it becomes apparent that an increase in reclaimed refrigerants will be needed to meet some of the resulting supply-demand gap. And while service technicians have been at this game for years, now even the equipment manufacturers will need access to reclaimed gas in order to meet regulations in some areas.

Although they all may sound similar, the Three R's mentioned above have important distinctions. According to ASHRAE, the definitions are as follows:

- Recovery—to remove refrigerant in any condition from a system and store it in an external container
- Recycle—to reduce contaminants in used refrigerant by separating oil, removing non-condensables, and using devices such as filter driers to reduce moisture, acidity, and particulate matter

- Reclaim—to process used refrigerant to new product specifications.\*

Everyone in the industry will need to step up their recovery and reclaim efforts going forward. For service contractors, this starts with recovering every pound possible, both during maintenance as well as at end-of-life. In addition, while recycling gas or putting it back into a system owned by the same entity is allowed, finding a suitable reclaim program to maximize the value of recovered gas is advisable.

Lastly, now is a great time to consider refresher training on recovery best practices and safety—such as safe fill weights, properly rated recovery machines, etc. This training will be key due to the increase in recovery/reclaim activities coming our way, including those for mildly flammable (2L) refrigerants such as R-454B replacing R-410A.

Reducing the environmental impact of our industry is something we all can—and should—do. Renewing our focus on refrigerant recovery, recycling, and reclaim is a great way to start the new year.

\*Reclamation also involves analytical testing/certification of quality by officially certified reclaimers.

*Dr. Charles "Chuck" Allgood is Refrigerants Technology Leader for The Chemours Company.*

BY CHARLIE GREER

# Why Go Into HVAC Replacement Sales

If the original owner of the company I started out as a residential replacement salesman with still owned the company, I would still be there doing the same job, and loving every minute of it.

Becoming a residential replacement salesperson could possibly be the best career goal just about everyone in the HVAC business can attain. Here's why.

## Everyone buys

This is not to say that you'll have a 100% closing ratio. What it means is that very few people who invite you to their home for a replacement quote don't eventually buy ... from someone. Usually within hours or days of seeing you.

## Replacement sales is possibly the best HVAC career goal anyone could attain.

When you're selling things like automobiles, insurance, time shares, investments, solar, and even homes, you spend a lot of time spinning your wheels. A good closing ratio for those products is 10-15%. Of those 85-90% of people that sit through a sales presentation, but don't buy, the vast majority of them just don't buy that product at all. That's not the case in HVAC replacement sales.

In fact, when you run a sales call and they don't buy, make it as positive an experience as possible for the consumer, because they will buy some day, and when they do, they'll call you.

## Everyone is a prospect

Salespeople are always looking for "qualified" prospects. Every homeowner you see is a qualified prospect. Every single one of them is going to require a replacement home comfort system eventually.

Even people who don't currently own a home, more than likely will at some point in the future. So be nice to everyone you meet because there's a good chance you'll eventually show up at their home to sell them new equipment.

While we're on the subject, whenever you leave a tip somewhere, leave your business card with it. Even if you go there on a regular basis, do it every time. I've sold all kinds of equipment to food servers.

## HVAC is a legitimate product

Accepting a sales position with a company that you know nothing about, selling a product you know nothing about, can be kind of risky for a salesperson.

Many products and/or the companies that supply them, are rip-offs, and they're hiring unsuspecting salespeople to do the ripping off for them. When you're new to the field, it can take awhile for a new person to realize that they've been ripping people off without knowing that's what they were hired to do.

I spent about a decade doing mostly recruiting salespeople, and most of the people I recruited were from outside of the industry. I can't tell you how many of them were overjoyed when they realized they were applying for a job at a legitimate company selling a legitimate product. I know I was.

## You're actually helping people

Not only do we help people put their service problems behind them, we're helping them to be more comfortable, healthier, sleep better, and save money on utilities and repairs.

I once sold a system to a woman and cleaned up her air for her. When I went back for my follow-up visit, she told me I saved her marriage. I've had countless numbers of people thank me for what I've done for them. Of course, you don't get that if all you're doing is replacing boxes. You've got to address airflow and indoor air quality for that to happen.

## Less physically demanding

HVAC installer and service technician are very physically demanding jobs, and

anyone who's able to do that right up until retirement age is super human.

The most physically demanding thing you'll have to do as a residential replacement HVAC salesperson is carry an aluminum ladder.



## Less chance of injury

My residential replacement sales classes are loaded with aging installers and technicians who, either through age or injury, are no longer physically able to do the job.

Installers and technicians who have a desire to excel in sales are often very good at. What if they have the personality of a doorknob? Sometimes, that's a good thing. I don't see too many people who come across as a "typical salesman", or even what might be described as having a "salesman personality," actually make it in sales. Salesmanship is not "personality driven."

I can't help but mention that, after I'd already been selling for a few years and getting national recognition, they got the bright idea to make me take a personality profile. It determined that a person like me could never make it in sales.

When people ask someone to come to their home for a quote, they weren't hoping an entertainer or their new best friend would show up. What they're really hoping shows up is a HVAC professional who is serious about their job and gets right down to work.

Sincerity sells.

Make your own hours

When you first start selling, you pretty much have to go where the company tells you to and when they tell you to do it.

Start bringing in an average of two self-generated sales per day, and you

can pretty much come and go as you please. I know. I did it.

## You can have a life outside of work

When you know how to self-generate leads and how to close them, you don't have to work much at all.

I no longer tell people how few hours I worked during the years I was working as a full-time salesman and getting national recognition for my numbers, because when I do, they can't decide whether to admire me for making so many sales in what was essentially a part-time job for me, or think less of me for not working more hours.

I don't believe we were put on this Earth to work and pay bills. There is much more to life than work. During the years I was hitting my big numbers in sales, I was also in the Chess Club, the Scrabble Club, had a ballet scholarship, acted in 4-5 community theatre plays per year, worked out for hours almost

every day, and had a very active social life. You can do all that and hit your financial goals when just about everybody you see buys.

## You set your own income

Learn how to close and self-generate sales and you'll make all the money you need in a very short period of time with very little effort.

## You'll never be out of a job

When everyone your market area knows you are the best HVAC replacement salesperson in town, you can get fired, shoot your boss, get arrested on the evening news, and be at work at a new company the day they let you out on bail. I know, because this happened in the Washington, D.C. area once.

All this applies only if you know how to close and generate your own sales. **CB**

**CHARLIE GREER** was voted "Favorite Industry Sales Trainer", "HVAC Consultant

of the Year," is in the HVAC Hall of Fame, and is the creator of the audio book, "Slacker's Guide to HVAC Sales." To learn more about Charlie's products on HVAC sales, go to [www.hvacprofitboosters.com](http://www.hvacprofitboosters.com). Email your questions or feedback on this column to [charlie@charliegreer.com](mailto:charlie@charliegreer.com).

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BY DOMINICK GUARINO

# HVACR Symposium Knocks It Out of the Park

A few weeks ago, I had the opportunity to participate in an incredible industry event: The *Fourth Annual HVACR Training Symposium*, hosted by HVAC School in Orlando.

What made this event so impactful for me was to see so much of the training focused on concepts that National Comfort Institute and others have been driving for decades. It was awesome to see both old-timers and a new generation of HVAC and building industry professionals carrying the torch forward.

The conference, referred to as, “the Woodstock of our industry,” took place under tents in the parking lot of Kalos Services, with some sessions in their warehouse.

Bryan Orr, cofounder and president of Kalos Services, is the creator and host of this very cool meeting of the minds ([kalosflorida.com](http://kalosflorida.com)).



**Participants were serious and thirsty for HVAC knowledge and information that would make them better at what they do in their everyday work.**

Like NCI’s High-Performance Summit, Symposium is a very down-to-earth meeting. There were no rah-rah sessions from the main stage or promises of untold wealth and success—just good solid information being shared to help participants succeed and perform high-quality work.

There were many other positive aspects of the conference. It featured great instructors with top-notch content who freely donated their time and resources to share their knowledge. This is pretty rare in our industry. Attendees included technicians and contractors ranging from novices to experienced professionals who regularly test HVACR systems, homes, and commercial buildings.

## A True Spirit of Sharing

The meeting was also embraced by many product and tool/instrument manufacturers and vendors who showed their wares and supported the conference financially. Many of them also sent their best and brightest to share their knowledge and experience with participants.

I witnessed first-hand how serious and thirsty for knowledge the participants were, and how they shared their own experiences freely with everyone they talked to. This spirit of sharing was perhaps what struck me the most about this self-described HVACR *Nerdfest*.

What seemed to matter most was the pursuit of truth and information that would make everyone better at what they do

in their everyday work. Another great trait of the conference is there was no hint of posturing or negative conversations. For example, there was no talk of pitting HVAC versus home performance. It truly was a fusion of the two industries with a single goal: to improve safety, health, comfort, and energy efficiency in homes and buildings everywhere.

## Two Sides of the same Coin

As I took in the Symposium experience, I had another important revelation. This conference and NCI’s **High-Performance Summit** ([gotosummit.com](http://gotosummit.com)) are really two sides of the same coin.

Symposium is more focused on the nitty-gritty technical aspects of performance, many of which are covered in great depth in NCI’s regular training curriculum.

Summit, on the other hand, focuses more on the implementation aspects of testing and fixing HVAC systems—and educating home and building owners about what they should be getting.

At Summit we connect the technical knowledge to monetizing your work. This is to make sure you can recover your training and tools investment, while taking good care of your employees and making the profits you deserve. But make no mistake, Summit also focuses on the technical aspects of delivering high performance.

For example, this year’s “Low-Performance Town” consists of hands-on training stations aimed at diagnosing typical HVAC system issues. Other sessions also provide technical insights on advanced airside and combustion diagnostics as well.

If you see yourself as a true HVAC professional, consider making both conferences a regular must-attend combination every winter and spring. Summit is coming soon. I know Bryan and his team are already working on Symposium 2024. As I get to know Bryan more, it is great to see that we share the same goal of raising the bar for our industry and ultimately for our end customers. It’s heartwarming to work with people with so much integrity and caring for our industry.

We hope you will join us in Branson, Missouri this April. There is still time to take advantage of special early-bird rates. For all the details point your browser to **GoToSummit.com**. See you there! **CB**

**Dominick Guarino** is CEO of National Comfort Institute (NCI), ([www.nationalcomfortinstitute.com](http://www.nationalcomfortinstitute.com)), the nation’s premier High-Performance training, certification, and membership organization, focused on helping contractors grow and become more profitable. His e-mail is [domg@ncihvac.com](mailto:domg@ncihvac.com). For more info on NCI’s 2023 High-Performance Summit visit [www.GotoSummit.com](http://www.GotoSummit.com) or call NCI at 800/633-7058.



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## DAIKIN *ATMOSPHERA* – OPENING DOORS TO NEW OPPORTUNITIES



Discover our next generation of single zone ductless products with low Global Warming Potential (GWP) R-32 refrigerant. Daikin *ATMOSPHERA* is available in four sizes from 9,000 to 24,000 BTU and is the first product from Daikin to use R-32 refrigerant in North America. Daikin *ATMOSPHERA* reduces the Global Warming Potential impact on the environment by up to 80% compared to similar R-410A systems. And R-32 has been shown in Daikin's labs to increase efficiency by up to 12% over R-410A with comparable products, lowering electricity consumption and indirect emissions. A noteworthy new feature includes a new hybrid cooling technology that dehumidifies even in low cooling loads and continues to maintain dehumidification once a set-point temperature is reached. The indoor unit also includes built-in Wi-Fi for connectivity to the Daikin Comfort Control App. In addition to the included wireless I/R controller, Daikin *ATMOSPHERA* is compatible with several other Daikin controllers, including the Daikin *One+* smart thermostat.

### ADDITIONAL INFORMATION

Before purchasing this appliance, read important information about its estimated annual energy consumption, yearly operating cost, or energy efficiency rating that is available from your retailer.



**R32**

Up to 27.4 SEER  
Up to 13.8 HSPF  
Up to 16.3 EER

