

2024 TREND REPORT





2024 Trend Report

HVACR remains one of the most unique industries as it is comprised of professionals from many different sectors and career disciplines. Collectively we all address the goals, however, day-to-day work practices often look very different. It is with this in mind that we created the Industry Trend Report – to provide a thoughtful connection point for our audiences with the goal of identifying the state of the industry ahead of the show.

Our endorsing associations contribute a thorough representation of the varying roles that make up the full industry. This allows us to formulate discussion points that can be shared with peers when we gather face to face. We are appreciative of those who have taken time to participate in this report as we believe it lends tremendous value in understanding the challenges and opportunities within the industry from every point of view. As we've come to realize, our goals, even when executed differently, must be in sync to further the growth and success of this industry, a message that resonates wider with each passing year.

For more information, please visit ahrexpo.com.

chicago



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Summary Takeaways & Common Industry Themes

Regulations remain a driving force towards a cleaner future

- Decarbonization
- Green Transition
- New standards with quicker onboarding
- Global Refrigerant Transition

The built environment is evolving

- IoT, AI and controls
- Automation
- Data analytics
- Cybersecurity and BA systems

Supply Chain

- Supply Chain has rebounded to stable health
- A2Ls & the effect on distribution
- Consolidation across the industry

Workforce and training

- The need for a strong and skilled workforce
- Streamline the flow of communication across the chain
- Training evolution

Product Adoption

- Heat Pumps
- Building Automation Systems

Expansion, growth and meeting demand

- Managing multiple areas of growth within the industry
- Educating first the workforce, and secondly the end user
- Cutting edge technology and environmental responsibility

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Air-Conditioning, Heating, and Refrigeration Institute (AHRI)

Our industry comprises residential and commercial air conditioning and space heating, water heating, and commercial refrigeration equipment. It doesn't include so-called "white goods" – room air conditioners or residential refrigerators – those are in the purview of the Association of Home Appliance Manufacturers.

ahrinet.org

Booth #S6910

335 member companies



STEPHEN YUREK
President & CEO

Manufacturing Trends

“ The global refrigerant transition, led by the United States, is well underway, and will prove to be a seamless transition when all is said and done. **Decarbonization has highlighted our industry as a solution** to emission and energy use reductions.

Trending Topics

HEAT PUMPS



AHRI members **pioneered the entire realm of heat pump technologies** and remains committed to providing heat pumps to all who wish to have them installed in homes and businesses.

SUPPLY CHAIN: PROJECTIONS



Supply chain issues have **eased compared to the past few years**, although trouble spots remain.

IAQ



The pandemic placed a spotlight on the importance of indoor air quality, and the fact that **AHRI members have the solutions to keep homes, schools, health care facilities, and commercial buildings safe** for human occupancy.

Mainstream Media



In all our interactions with the media, **we highlight the essential nature of our industry and its vital role** in ensuring human health, safety, comfort, and productivity.

Our combined industry (manufacturers, distributors, installers, and technicians) account for some



1.3M U.S. jobs

and contribute some

\$265B to the U.S. economy



ASHRAE

ASHRAE is a diverse organization dedicated to advancing the arts and sciences of heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world. They have over 53,000 members globally including 5,500 student members in over 400 branches.

ashrae.org

Booth #6810

53,000+ members globally



GINGER SCOGGINS
President

The Current State of HVACR

“As the urgency of building decarbonization and the impact of climate change continue to drive change, **the HVACR industry stands at the forefront of efforts to develop efficient, sustainable built environment solutions.**”

A CHANGING INDUSTRY



The HVACR industry is undergoing a **remarkable transformation driven by technological advancements and a heightened focus on sustainability**. As the world grapples with the effects of climate change, the industry has shifted its gaze towards developing innovative solutions that not only provide optimal comfort, but also significantly reduce greenhouse gas emissions.

- Building decarbonization has emerged as a pivotal trend, **pushing HVACR professionals to integrate renewable energy sources**, such as solar and geothermal systems, into their designs.
- Smart and connected HVACR systems have **gained traction, enabling remote monitoring, predictive maintenance, and energy optimization**.
- The integration of **artificial intelligence and machine learning is revolutionizing system efficiency** by analyzing data patterns to make real-time adjustments.

Trending Topics

DECARBONIZATION



ASHRAE had taken a proactive approach to advancing building decarbonization efforts through the development of comprehensive standards and guidance. The ASHRAE Task Force on Building Decarbonization published the **Building Performance Standards: A Technical Resource Guide, which was developed to provide a technical basis for policymakers, building owners, practitioners and other stakeholders** interested in developing and implementing a BPS policy.

ELECTRIFICATION & HEAT PUMPS



ASHRAE has actively **championed the adoption of electric technologies** such as the integration of electric heat pumps, electric boilers and other solutions that not only enhance energy efficiency but align with sustainable practices.

REFRIGERATION AND REGULATION UPDATES



ASHRAE is **addressing the greenhouse-gas emissions of refrigerants** in Standards 15 (Safety Standard for Refrigeration Systems) and 34 (Designation and Safety Classification of Refrigerants). Refrigerant leakage is a huge contributor to greenhouse gas emissions each year and our Task Force for Building Decarbonization is discussing how to address this issue.

ASHRAE continued...

LIVING HEALTHY & IAQ



Evidence linking poorly ventilated buildings to heightened risks of airborne infection transmission and subsequent respiratory and cardiovascular health issues, prompted a thorough reevaluation of existing IAQ standards. **ASHRAE released its groundbreaking, highly anticipated publication, Standard 241, Control of Infectious Aerosols.** The standard **establishes minimum requirements for control of infectious aerosols to reduce risk of disease transmission** in the occupiable space of new, existing, or majorly renovated buildings and includes requirements for outdoor air system and air cleaning systems design, installation, commissioning, operation and maintenance, areas not similarly covered in existing IAQ standards or codes for buildings.

GREEN TRANSITION



ASHRAE has released a new standard to measure zero net carbon and energy goals in buildings. **ANSI/ASHRAE Standard 228-2023, Standard Method of Evaluating Zero Net Energy and Zero Net Carbon Building Performance,** sets requirements for evaluating whether a building or group of buildings meets a definition of “zero net energy” or a definition of “zero net carbon” during building operation. The standard draws from ASHRAE Standard 105, among others, to address energy and carbon flows across a site boundary, their measurement and their balance.

Major Industry Shifts



The HVACR industry has undergone transformative shifts, marked by a **departure from conventional practices towards a future defined by innovation and sustainability.** One of the most significant shifts is the industry’s pivot towards **energy-efficient solutions** in response to the escalating climate crisis. Another notable change is the growing **emphasis on IAQ and occupant well-being,** highlighting a broader recognition of the critical link between HVACR systems and human health.

Opportunities Ahead



The HVACR industry is on the brink of a compelling era with abundant opportunities for innovation and growth. As buildings become technologically advanced, **the demand for skilled HVACR and built environment professionals who can navigate this evolving landscape will increase.** This creates a prime **opportunity for expanded training and education, as well as collaboration** to meet the needs of our growing industry.

Association for Smarter Homes & Buildings (ASHB)

ashb.com

The Association for Smarter Homes & Buildings (ASHB) is a leading international, not-for-profit industry organization promoting advanced technologies in homes and buildings since 1988. With nearly 350 member companies with activities in the connected homes and intelligent buildings industry, their members are OEMs, software developers, master integrators, building developers, owners and facility managers.

Booth #S6417



GREG WALKER
President & CEO

The Current State of HVACR

“ As technologies evolve and environmental consciousness deepens, we find ourselves at a **pivotal juncture where creativity and engineering merge to define the future of heating, cooling, and refrigeration.**”

A CHANGING INDUSTRY



The industry is undergoing a profound transformation, **combining cutting-edge technology and environmental responsibility.** In the short term, smart systems are revolutionizing efficiency and comfort, utilizing data-driven insights for optimal performance. Long term, a shift towards eco-friendly refrigerants and sustainable practices is reshaping the industry's landscape, prioritizing a greener footprint. As global awareness of climate change intensifies, **the HVACR sector is adapting, spearheading innovation to create a more energy-efficient, interconnected, and environmentally conscious future.**

INDUSTRY TRENDS

In the realm of smart buildings, the HVACR industry is abuzz with transformative trends. **IoT integration and data analytics optimize energy use, while AI-driven insights enhance system performance.** Building automation streamlines operations and a heightened focus on energy efficiency aligns with sustainability goals. Indoor air quality solutions prioritize occupant health, and the shift towards electrification and decarbonization gains momentum.

• Demand response programs aid grid stability, and remote monitoring ensures prompt issue resolution. Edge computing boosts real-time control, while sustainability certifications underscore the industry's commitment to greener practices. **These trends collectively define the dynamic landscape of smart HVACR systems, shaping efficient, intelligent, and eco-conscious buildings.**

Industry Impacts



Innovations in **smart HVACR systems that integrate IoT, AI, and data analytics hold immense potential.** These systems optimize energy usage, predict maintenance needs, and enhance user comfort. Another impactful innovation is the **adoption of eco-friendly refrigerants and heat pump technology, contributing to decarbonization efforts.** Additionally, **advancements in indoor air quality solutions,** such as advanced filtration and purification technologies, address growing concerns about health and well-being.

ASHB continued...

Major Industry Shifts



The HVACR industry has witnessed pivotal shifts.

- IoT integration and data analytics have become mainstream, transforming system management and efficiency.
- Energy efficiency has intensified as regulations and eco-awareness drive innovation in sustainable HVACR solutions.
- Electrification gains traction as heat pumps redefine heating and cooling paradigms. Indoor air quality emerges as a paramount concern, fostering advancements in filtration and purification technologies.
- Remote monitoring and AI-driven diagnostics elevate maintenance practices.

These collective changes underscore a drive towards smarter, greener, and healthier HVACR systems, reshaping the industry's landscape since the last AHR Expo.

Members Focus



Currently, ASHB members are notably **focused on discussions regarding the seamless integration of smart technologies, data security, and user-centric experiences in homes and buildings.**

These topics align with the AHR Expo's show floor, where members seek specific solutions for interoperability, partnerships for comprehensive systems, and awareness of cutting-edge advancements.

Most Pressing Issues



- Sustainability drives **eco-friendly practices and compliance** with evolving regulations.
- A **shortage of skilled professionals** hampers maintenance and innovation.
- Integrating **rapid technological advancements**, like IoT and AI, demands compatibility and data security.
- Indoor air quality gains prominence, requiring **solutions for healthy environments.**
- In the smart buildings sector, concerns encompass **data security, integration complexity, and balancing initial costs with long-term gains.** User acceptance and training are vital, while technology's rapid evolution prompts considerations of obsolescence.

Building Automation and Control Network (BACnet)

bacnet.org

BACnet is the global data communications standard for building automation and control networks. It provides a vendor-independent networking solution to enable interoperability among equipment and control devices for a wide range of building automation applications. With over 150 corporate members including the world's leading building controls companies, BACnet also has more than 10,000 individual members.

Booth #S6100



ANDY MCMILLAN
President & Managing Director

The Current State of HVACR

“ Building Automation Control Systems are **driving increased functionality, efficiency and cybersecurity in the industry**. They are no longer something that can be deferred because to ‘Future Proof’ a building it must first be ‘Now Proof’.”

A CHANGING INDUSTRY



Previously independent building systems had little need to communicate with other systems or the outside world. Each system used their own communications protocol and did not worry about cybersecurity, as they relied on obscurity for security. That approach is no longer sustainable, so the industry is adapting. **Cybersecurity is being designed into building automation systems to support the overall cybersecurity goals of building owners and operators.** Every piece of equipment going into a building will soon have to be reviewed for its cybersecurity threat surface and defenses.

Industry Updates

Advanced connectivity and cybersecurity capability is reaching deeper into buildings and systems. With regulations and energy costs increasing, **advanced capabilities are finding their ways into even end of line devices** as we see manufacturers answer this demand.

MAJOR SHIFTS



Demand for simple connectivity is waning in favor for **more complex connectivity with inherent cybersecurity**. Building Automation is more strongly focused on value.

PREDICTIONS



Cybersecurity attacks will become more common and building owners and operators will look to their suppliers to provide solutions.

CHALLENGES



Building Automation struggles with not thinking big enough. **A traditional focus on in-building equipment slows the adoption of sophisticated integration and cloud solutions.**

- The past few years have presented the industry many things to worry about. Regardless of whatever the industry focuses on, **the need to embrace an expanding, open, scalable, and secure base is paramount.** Being able to communicate with multiple manufactures and systems with a common protocol is key.

BACnet continued...

Membership Discussions



BACnet Secure Connect (BACnet/SC) Certificate management. BACnet/SC was added to the standard a few years ago. BACnet/SC is an extension to the BACnet standard that provides for **encryption of all BACnet messages on a BACnet/SC network and verification that all the devices communicating on the network are allowed to be there**. The standard defines the certificates and how they are used in operation but does not define the process for requesting and distributing them, which is a necessary system integration activity.

“ The industry continues to evolve at a rapid pace with a focus on cybersecurity, energy efficiency and CO2 reduction. BACnet is the standard, open integration platform with inherent cybersecurity that can make it happen”

Looking Ahead to Chicago

The AHR Expo is like going home, we look forward to expanding current, and forming new relationships with the entire building automation community. Manufacturers, specifiers, installers, operators, and the educational community. Everyone can benefit from being part of BACnet International.



41% of the 2023 AHR Expo exhibitors

in the Building Automation and Control showcase were Corporate Members of BACnet International

There was a total of

83 exhibiting members showcasing

929 BTL tested products at the show

Heating Air-conditioning & Refrigeration Distributors International (HARDI)

hardinet.org

Our distributor members collectively employ 60,000 Americans and account for nearly 70% of the US Wholesale distribution market of residential and commercial HVACR equipment supplies and controls. HARDI currently has over 900 members. 440 wholesalers and over 460 total vendor, supplier, manufacturer reps and other associate members.



TALBOT GEE
CEO

The Current State of HVACR

“ Our industry will **continue to face macroeconomic headwinds and regulatory-caused uncertainty** but will also benefit from easier comps in 2024. The industry has reverted to the norm however at a significantly higher base since 2019 so **overall industry health is quite good.**”

A CHANGING INDUSTRY



After two years of historic residential replacement rates, **2023 and 2024 are the return of a repair market which means the companies with the highest system replacement rates are winning.** Heat pumps continue their gradual growth in overall unitary share and the impacts of the A2L transition will begin being felt by midyear 2024. **More HVACR companies are expanding into adjacent verticals** and we are seeing more new hires from outside our industry putting a premium on members' on-boarding and training capabilities.

Trending Topics

ELECTRIFICATION



Definitely a trend, but not an even one as **nearly half the country has passed state-wide prohibitions** on local gas bans.

WORKFORCE DEVELOPMENT



Winning at recruiting, on-boarding, training, and developing new talent without HVACR or wholesale distribution backgrounds.

SUPPLY CHAIN: PROJECTIONS



The A2L transition will continue to make the **equipment market and availability hard to forecast and decipher.** The companies with cash and capacity win in such times of uncertainty.

MAJOR SHIFTS

We've seen and will continue to see **consolidation throughout the industry**, but more so now we will see how well those related integrations are executed.

REFRIGERATION & REGULATION UPDATES



The A2L transition is especially complicated for HVACR distributors so our **focus is on boiling the mountains of information hitting our members into digestible, clear, actionable steps** required to do this effectively and efficiently.

HARDI continued...

Highlight the Positive



We're already seeing **new, more talent attracted to our industry** and we want to see that continue and our members and their customers benefit the most from it.



What are the most pressing issues in HVACR?

Selling and installing complete systems

What are the most important discussions your members have on their minds currently?

When they will actually receive new A2L systems

Facts & Figures

Distributor sales growth will end 2023 flat or slightly down.



Residential unit sales

↓ 10%



Shipments to distributors

↓ 20%



Booth #N1327

HVAC Excellence

escogroup.org/hvac

HVAC Excellence is a standards organization focused on improving the quality of HVACR education. With a network of around 4,000 instructors, it validates educational programs meet established industry standards, ensures instructors have the retained knowledge necessary to teach the competencies of their programs, monitors technicians knowledge at various stages in their careers, and supports educators with resources.



CLIFTON BECK
CSME, Manager DMS

The Current State of HVACR

“ The phasedown of HFC refrigerants, effective from January 1, 2024, with a 30% reduction in production, is poised to create **profound economic impacts affecting consumers and industry stakeholders alike.**”

A CHANGING INDUSTRY



The United States Department of Energy in collaboration with industry organizations including HVAC Excellence have **embarked on a mission to forge new standards, comprehensive training, and certifications**, all intricately tied to the transition into the realm of **new-generation heat pump technologies**, often denoted as cold climate heat pumps. These next generation heat pumps, using inverter technology, require a different skill set than those who are presenting installing legacy heat pump technologies.

Trending Topics

The significant technological shift in HVACR impacts the entire industry, particularly educators. Adapting curriculum, acquiring new skills, funding for updated equipment, and obtaining approvals from various agencies are **challenges educators must navigate as they lead the transition to new technologies.** Their role in facilitating this transformation is crucial.

WORKFORCE DEVELOPMENT



HVAC Excellence is working closely with the US Department of Energy and industry stakeholders to **establish comprehensive workforce training standards for cold climate heat pumps.** This involves updating competencies, certifications, and educational tools to address the impact of decarbonization and electrification. **By addressing educational gaps, we are ensuring the resources are in place for a successful technological transition.**

REFRIGERATION & REGULATION UPDATES



To provide firsthand information regarding refrigerant regulations within the HVACR industry, **the Environmental Protection Agency (EPA) is set to deliver a vital refrigerant update during the HVAC Excellence National HVACR Education Conference.** This session will offer direct access to essential insights, specifically focusing on the Significant New Alternatives Policy (SNAP) program and the American Innovation and Manufacturing (AIM) Act. Additionally, members of Chemours, Honeywell, and Hudson Technologies will address refrigerant issues during the event.

HVAC Excellence continued...

Major Industry Shifts



The past few years have seen a significant change in how people learn and access industry news, with more than 80% of Americans using digital devices for news consumption. In the HVACR field, **professionals are embracing methods like live webcasts, podcasts, and e-learning platforms to learn while working.** These platforms, such as “Did You Know the ESCO HVACR Show,” “HVACR School” podcast, and the “HVACR Learning Network,” **offer valuable insights into new technologies and best practices, enabling HVACR professionals to enhance their skills and effectiveness on the job.**

HVACR's Pressing Issues



Our greatest struggle at the moment is in encouraging our workforce to embrace change and become educated on the transitions at hand. With change comes opportunities for those who get trained and certified to meet new industry standards. **The challenge lies in the development of a modern workforce capable of installing and servicing these new technologies as well as new refrigerants.**



As an educational oversight organization, we have witnessed a **significant increase in workforce development initiatives from industry partners as well as training support programs** from the US Department of Energy, The US Department of Education and the Environmental Protection Agency.

Big Impact Innovations



There is a consensus that the initial introduction of heat pumps to consumers during the 1970s and 1980s faced limited acceptance due to their inadequate performance and a lack of awareness. However, **our succeeding line of inverter-driven heat pumps has the capacity to provide efficient heating in Cold Climates while keeping homes comfortable.** The latest generation of environmentally conscious homeowners holds the promise of reintroducing heat pumps to society in a constructive and influential manner.

Highlight the Positive



For the HVACR sector, it's **essential to adopt social media and information technology as tools to depict the global transformation driven by our industry's endeavors.** Educational tools have evolved and so must we as an industry if we are to attract a new generation of skilled professionals, ready to combat climate change and embrace innovation.

The Year Ahead

OPPORTUNITIES



The shift from conventional heating and cooling setups to **cutting-edge technologies opens significant avenues for HVACR contractors to expand their enterprises.** Yet, to fully harness these opportunities, they must prioritize self-improvement and invest in their workforce. **Success in an evolving HVACR landscape hinges on proper training,** as the industry's technologies become progressively intricate.

CHALLENGES



The most formidable challenge in our present stage of industrial progress involves embracing and adjusting to emerging technologies. **Numerous individuals exhibit resistance to change, and this phenomenon is particularly pronounced in the HVACR industry.** While we have previously navigated challenges related to transitioning refrigerants and adopting new technologies, our current situation presents the unique confluence of both these factors simultaneously.

HVAC Excellence continued...

Meet Our Members

What are they discussing?

In light of emerging technologies and innovations, **it's imperative that our industry experts are equipped to engage with these developments through visual, auditory, and hands-on education.** Recognizing that individuals have diverse learning preferences, it's essential for technicians and educators alike to have access to interactive learning experiences that encompass a variety of facets.



What are they looking forward to at AHR Expo?

We are witnessing an international exploration of new equipment and system designs that are not the current standard for residential and light commercial applications. **As new LowGWP refrigerants enter the market we hope to see new system designs that solve home comfort as well as home efficiency concerns.**

Facts & Figures

The United States Department of Energy, along with their global counterparts, are **actively phasing out the utilization of fossil fuels. Ready or not, this transition has already begun!** A recent report highlights that the United Kingdom must train 29,000 heat pump installers by 2028 to fulfill their decarbonization goals. In contrast, the United States, with a population exceeding the UK's by 260 million, will inevitably require a larger workforce prepared to manage the complexities of advanced heating and cooling technologies.

In a significant shift, the sales of heat pumps in the United States exceeded those of traditional gas furnaces in 2022. This trend is projected to intensify in the upcoming years, driven by the growing movements towards decarbonization and electrification.



To fulfill their decarbonization goals, the United Kingdom must train

29,000
heat pump installers by 2028



Booth #N1313

International Association of Plumbing & Mechanical Officials (IAPMO)/ Radiant Professionals Alliance (RPA)

iapmo.org | radiantprofessionalsalliance.org

The International Association of Plumbing & Mechanical Officials is a community of more than 100 plumbing experts who play a vital public health role in assuring access to clean water and sanitation. We like to say we live by the code. A code that says that water is safe, that plumbing systems are strong and that our association is even stronger.



JOHN MULLEN
Director of Technical Services and Research

The Current State of HVACR

“ The future is bright and the **innovation and collaboration amongst industries, has never been stronger.**”

A CHANGING INDUSTRY



With sustainability and decarbonization tactics being deployed throughout the world, we in the mechanical and plumbing industry can really make an impact in a massive way. **Working together on modern methodologies, innovative technologies and safe system solutions will force growth to every limb of the built environment.**

Trending Topics

The Radiant Professionals Alliance (RPA) follows trends closely, and **Thermal energy networks are “IN” right now due to the inclusion of geothermal in the Inflation reduction act (IRA) and helping subsidize change.** These changes have ripple effects and create opportunities for engineers, constructors, and operators alike all while getting us onto the same sheet of music.

DECARBONIZATION



Building owners around the U.S are fighting to show their C-suite or Board the expected ROI of decarbonization & this is a pain point we recognize. **Using tools like BEST software help building owners make informed decisions about their buildings systems by modeling lifecycle costs and predicted usage.** You cannot fix what you don’t measure and with decarbonization, the progress will be incremental at first but will provide exponential change to our buildings.

AI + CONTROLS



With artificial intelligence deployed, predictive modeling and simulation can become so advanced that we can see problems before they happen. **AI is and will continue to change every industry in some way, shape or form.**

WORKFORCE DEVELOPMENT



Workforce development techniques are changing with Edu Tech and online learning. **There are more opportunities to work in the HVACR-P industry than there has ever been,** thanks to modern technologies and change in American culture.

AUTOMATION



Automation is a good thing; it will free us up to create the **next big advancements** in our industry.

IAPMO continued...

Major Industry Shifts



Conferences and Trade Shows are growing around **the globe** as a place where like-minded people can meet, make connections, build networks and form meaningful relationships.

Big Impact Innovations



Utilization of renewable energy is certainly something this planet is racing towards and **with the help of AI we could dream things never imagined.**

“ Sustainability has two definitions, one focuses on the importance of keeping our world natural – but the other is to last a long time... and to me, that’s what sustainability is all about. ”

Facts & Figures



Surveys show **the industry is aging** and RPA is doing all it can to attract the next generation of our industry.

Highlight the Positive



Take advantage of the media exposure, join discussions, appear on podcasts, write books and tell your story – **this work forges change in culture.**

Meet Our Members

What are they discussing?

Our members are **education driven and look for opportunities to learn** from stories of success and failures amongst our industry partners, helping disseminate best practices into the culture.

What are they looking forward to at AHR Expo?

Technology and AI based products and solutions, new learning objectives and building a network of professionals.

What will they be looking for on the show floor?

New Products



HVACR's Pressing Issues



Collaboration and organization is still silo'd throughout the industry, our goal is to change that.



Plumbing-Heating-Cooling Contractors Association (PHCC)

phccweb.org

For more than 140 years, PHCC has provided legislative advocacy, education, and training to approximately 3,300 plumbing and HVACR open shop and union businesses and 65,000 technicians in 2023. Our members work in the residential, commercial, new construction, industrial and service and repair segments of the construction industry.



CINDY SHERIDAN
CEO

The Current State of HVACR

“ Overall, the current state of the plumbing and HVACR industry seems very stable. Overall, **PHCC contractors continue to be optimistic, although some uncertainty exists with the economy and regulatory issues.**”

A CHANGING INDUSTRY



I believe the industry as we know it now will be quite different in five years. **Change is happening fast for p-h-c businesses, as well as the industry overall.** There will likely be consolidations; more diversification of plumbing, HVAC and electrical companies; and more new regulations and equipment. As this occurs, trade associations will need to transform to meet members' needs. **A big challenge will be figuring out how to make sure their members pay attention to vital information they share,** such as the timing and impact of new regulations affecting p-h-c contractors. No association wants to be asked: “Why didn't you tell us this was coming?”

Trending Topics

Finding, training and retaining employees is an ongoing challenge. **It is difficult for contractors to keep up with and comply with the increasing number of regulations affecting the industry.** Rising interest rates and costs seem to be becoming the norm. There still are some supply chain issues, but not as many as before. New technology, including Artificial Intelligence, continues to impact the industry.

At a recent PHCC Insurance, Safety & Risk Management Committee meeting, we discussed **several contractor issues identified by Corporate Partner Federated Insurance.** They included cybersecurity, driver security, changes in hiring practice, and general training needs.

DECARBONIZATION



Earlier this year, New York became the first state to **officially ban natural gas connections in new construction** and is following California's lead in phasing out the use of gas and liquid fuel appliances in the next decade. These are policies designed to leverage these states' market power to **force a shift from products using carbon-based fuels to those using heat pump technology.**

PHCC believes consumers know best how to power their homes and appliances. **We support a diverse national energy portfolio that includes the use of gas and liquid fuel sources for appliances** to ensure the quality of life on which Americans rely for their health and comfort.

PHCC continued...

ELECTRIFICATION



The Inflation Reduction Act (IRA) includes a number of incentives for consumers and building owners to disconnect from fossil fuel sources of energy and fully electrify building infrastructure. The building sector is the second-highest emitter of carbon behind the transportation sector; IRA incentives are designed to shift market demand away from fossil fuel appliances in order to reduce those emissions.

Tax incentives for homeowners include credits up to \$2,000 to install qualified equipment and upgrade building envelope such as siding, windows and insulation, and deductions for building owners ranging from \$0.50 to \$5.00 per square foot for qualified HVAC and building envelope upgrades.

Rebates up to \$4,000 (based on median household income) are available to homeowners for electric panel upgrades required to fully electrify a residence.

The Department of Energy and the U.S. Treasury have either published or are in the process of publishing guidelines to qualify for the incentives. Rebate programs will be administered by state energy offices.

Contractors are the interface with consumers and will be performing the work demanded of the IRA as it is implemented. **PHCC's priority is to ensure contractors are prepared for this by ensuring they understand the nuances and complexities of how IRA programs work** so that they can be properly communicated to consumers.

HEAT PUMPS



PHCC contractors will be the **key connection between consumers and much of the IRA rebate programs**. More clarity is needed in the process that will be used to determine income eligibility of consumers to ensure that offered rebates will be honored. Another concern is the carrying time for these rebates; small businesses will be hard pressed to float multiple \$8,000 rebates for weeks or months on end. **PHCC is engaged in this process** and is working with state energy office representatives to understand the planned distribution of funds.

GREEN TRANSITION



PHCC is active with several green initiatives including the **U.S. Green Building Council and green code initiatives**. This association has been working to inform our members and in turn their clients of the emerging trends including the transition to lower emission refrigerants.

REFRIGERANT & REGULATION UPDATES



Beginning Jan. 1, 2024, **allocation of HFC refrigerants (think R410A) will be reduced an additional 30% for a total 40% reduction** compared to the baseline. In order to assure sufficient HFC refrigerant in the market stream, **recovery and reclamation must increase, and new products will start to migrate to the new A2L refrigerants**. During conversations at recent industry meetings, it has been implied that new A2L products could start to show up in the distribution network sometime in the 4th quarter of this year. **Moving the new product market to A2L's will take some of the pressure off HFC demand and facilitate a smooth transition to new technologies**. PHCC is actively keeping its members informed of how these changes will impact their businesses. We also have offered webinars on the refrigerant reclamation market and how it fits into the move towards a low GWP refrigerant environment.

IAQ



On the legislative front, **several bills have been introduced in Congress addressing indoor air quality in schools, and efficiency standards for ductless air purification devices**. Other bills address air quality in a variety of infrastructure such as hospitals and public housing. Companion bills in the House and Senate, the Rebuild America's Schools Act of 2023, includes a section on indoor air quality for schools. However, \$130 billion was already authorized under the Infrastructure Investment and Jobs Act (IIJA) for IAQ improvements to school infrastructure, though final sums are ultimately decided through the appropriations process and is expected to be less than the authorized amounts.

PHCC is monitoring progress on this legislation as any language inclusive of indoor air quality provides opportunities for contractors.

PHCC continued...

AI + CONTROLS



Like many, PHCC members are **exploring AI and how it can help them in their businesses**. As an example, at a May 2023 PHCC Super Foremen Workshop offered by the PHCC Educational Foundation, Purdue University Professor Emeritus Kirk Alter stated, “Artificial intelligence, A.I., is one of those software tools that foremen should be using” However, **there are indications in PHCC survey result that some contractors are hesitant to implement AI in their operations** because of uncertainty about the new tool.

SUPPLY CHAIN: PROJECTIONS



The recent supply chain issues appear to have stabilized a bit. However, respondents in the 2nd Quarter 2023 PHCC Contractor Confidence Index **anticipated disruptions, longer lead times and missing delivery dates from manufacturers, along with higher costs**.

WORKFORCE DEVELOPMENT



According to the 2nd Quarter 2023 PHCC Contractor Confidence Index, **one of the biggest challenges for PHCC contractors is not operating with enough qualified technicians**.

NEW TECHNOLOGIES ON THE HORIZON



The movement toward electrification and emissions reductions will drive more products to heat pumps. Heat pumps themselves are not new but for many contractors they have not been a commonly installed product. **Cold climate products, inverter drive products, and very high efficiency products will drive contractors to invest in training and updating of procedures**.

PREDICTIONS

- Contractors will continue to face challenges in the near future from **higher interest rates**.
- Residential construction starts will trend lower despite the current housing shortage. **Multifamily starts will trend higher, and hence, provide better opportunity for p-h-c contractors**.
- **Healthcare and education construction spending will provide opportunities** primarily due to upgrades and maintenance, and anticipated Infrastructure Act investments.
- There will likely be **continued opportunities for HVAC contractors from consumers wanting HVAC equipment that can reduce the spread of viruses, be environmentally friendly, and be economically efficient**.

The PHCC Contractor Confidence Index

Survey respondents indicate that industry conditions feel better than in the previous six months and are trending modestly higher, albeit frustrations remain.

Top PHCC Contractor challenges cited for the next six months include:

- Finding qualified applicants.
- Continued disruptions of oil boiler heating related products.
- SEER2 and the new Commercial HVAC HERS testing requirements, and no one qualified locally to provide “Acceptance Testing.”
- The continued decline in work ethics.
- Supply chain issues- Disruptions, delays, longer lead times, and missing delivery dates from manufacturers along with higher costs.

*Any rating over 50 indicates a higher share of PHCC contractors reporting industry conditions are better than they were in the previous quarter. Any rating under 50 indicates a higher number of respondents reporting conditions are worse than they were in the previous quarter.

↑ 56.2
in the 2nd quarter of 2023
(from 52.2 in the 1st quarter of 2023)

Other Confidence Index reports include:



...indicating that a larger number of HVAC contractors than plumbing contractors believe industry conditions were better than the previous quarter.

PHCC continued...

Upcoming Opportunities



With post-COVID public concerns about enhanced ventilation and filtration systems to keep homeowners, employees and patrons safe, **contractors can increase business opportunities by providing their clients Indoor Air Quality (IAQ) assessments**, and offering upgraded equipment, best practices, and maintenance plans that address consumer concerns, especially those highlighted by COVID-19.

Challenges Ahead



The increasing number of **regulations affecting the HVACR industry are a concern**. There is much to keep up with and to understand in order to be in compliance. In addition, it is important to keep customers informed about how these new regulations affect them, which often can be quite difficult to explain, given the complexity of the issues.

Big Impact Innovations



Technology innovations, both in the field and in the office, continue to make a **big impact on the construction industry by helping businesses streamline processes and operations and become more profitable**. Artificial intelligence, when used properly and safely, opens up new opportunities, as well.

Highlight the Positive



Our PHCC members spread the word of the importance of plumbing and HVACR every day in their communities, whether they are talking with their employees, customers or families. They are **proud of the fact that they protect the safety and health and environment of the public, and we think that shows in the commitment they show to their profession**. We hope that pride comes through to customers and helps convey how important it is to turn to a professional to install and maintain a safe and reliable plumbing or HVAC system.

At the same time, **PHCC's Government Relations team is providing a contractor voice in Washington, D.C.**, on Capitol Hill and speaking with the regulatory agencies. We remind law and policy makers of the important role we play in protecting the health and safety of the nation through the products and services our members offer. It is important that they know that Americans breathe better indoor air ... have access to clean water ... and enjoy an overall better quality of life because of the work we do. These **positive messages can lead to laws and regulations that consider contractors' interests and are favorable to the industry**.



Meet Our Members

What are they looking forward to at AHR Expo?

Timely education topics, learning about new products and technologies.

What will they be looking for on the show floor?

They are always looking for new products and technologies that will help them better meet the needs of their customers. Total system solutions, including smart technologies, will be of interest.

Refrigeration Service Engineers Society (RSES)

[rses.org](https://www.rses.org)

Since 1933, Refrigeration Service Engineers Society (RSES) has been a leader in training and education for professional HVACR technicians and contractors. RSES, a 501(c)(6) membership organization with over 7,000 members in chapters in the U.S. and Canada, with additional technicians routinely using its training material in 50 countries across six continents.

Booth #S9029



JIM BARRON
Executive Director

The Current State of HVACR

“ The current state of HVACR is bittersweet. On the one hand, the **technology and innovation in the field is astounding and can only help professionals and end users achieve a shared goal of sustainability and energy efficiency.** On the other hand, standard and regulation updates as well as mandated equipment options combined with supply chain issues and a very green group of professionals in the field is a **daunting reality many business owners are facing.** How can one industry possibly tackle all of these issues at the same time? Sadly, I believe it is going to **take some major event failure in any one of these areas in order for everyone to pause and get on the same page again.**

I have faith in this industry though, as it is incredibly resilient and is increasingly becoming an absolute necessity in the preservation of our food through the supply chain to our supermarkets and then homes, as well as maintaining comfort cooling and heating for individuals in their homes. **RSES is looking forward to being a part of any dialogue that gets the industry working together and doing the right things for the right reasons,** whether that is at AHR or beyond. Collaboration and flexibility will be important components to getting this industry back on track again. It is possible with the continued dedication support of all generations. **The 2024 AHR Expo will give the industry an incredible opportunity to promote this dialogue** while we are in the same space together, while also giving HVACR professionals the ability to see the latest innovations in products and services available in our field.

A CHANGING INDUSTRY



Several RSES Members commented that the new refrigerant options, including **A2Ls, HCs and naturals, are the largest shifts and changes that have occurred since last year.** In addition, a focus on SEER 2, IAQ, and VRF, VRV and Heat Pump technologies are all top of mind.

RSES continued...

Most Pressing Issues



Skilled labor/qualified technicians in the field are some of the most pressing issues. In addition, **supply chain issues, costs for products, need for products and the lead times** to fulfill customer needs/demands will continue to plague the industry.

Upcoming Opportunities



RSES Members stated that there are **plenty of growth opportunities** within specialized fields in the industry. Another popular response was the **continued encouragement of getting new HVACR technicians into the field**. There is so much demand that everyone stands to make good money if we are able to close the skills gap a bit. This also generates the need for additional training/certification opportunities.

Challenges Ahead



Some did express a more negative side to what is taking place, which may be **overregulation of an industry that cannot keep up with demand**, as it is, both with staff and equipment needs. Some additional individuals also suggested that **many end users will not be able to afford new equipment even with government support in tax rebates/credits**. Some additionally foresee issues coming up related to the new refrigerants and their compatibility with legacy systems. Additional concerns included the fact that HVACR professionals continue to be faced with an increased sophistication of new systems, coupled with decreased educational programs and some factory indifference about all of it.

Big Impact Innovations



Keeping things simple for newer techs in the field, which includes IoT and more automation (smart and intelligent control systems); heat pump adoption and solutions for colder climates to utilize them more efficiently; multi-speed equipment; hybrid systems utilizing a variety of technologies to maximize efficiency and comfort at lower operating costs; training on the fly.

Meet Our Members

What are they looking forward to at AHR Expo?

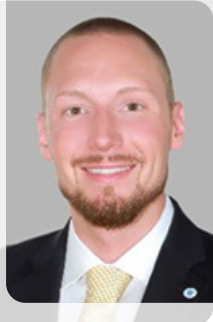
They are seeking products and services related to automation, heat pumps; equipment that will utilize the newer refrigerants; anti-theft options (for tools/systems, refrigerants, etc.); workforce/job management software; continuing education.



Highlight the Positive

We have to **continue to promote that this trade is not going anywhere and an individual who likes to problem solve can make a lifetime careers in HVACR**. If we continue to focus on the negatives of the industry, and there are many right now, then we only repel the new blood looking into starting work in this field. **We need to provide a path for these individuals and work to create a cohesive, inclusive and healthy industry**. Find a way to blend the wisdom of those individuals retiring with the innovative thinkers/technology users of today.

FROM THE FLOOR



Johnson Controls

Booth #S6236, S7529

DAVID BUDZINSKI

President, Residential and Light Commercial, Johnson Controls

The Current State of HVACR

“ The HVAC industry has faced notable regulatory changes over the past year, but it has also been a year of significant growth and innovation. **Advancements in technology and a growing focus on sustainability have enabled the production of more efficient, digitally connected solutions for both residential and commercial spaces.**

The push toward decarbonization and electrification continues to accelerate, driven largely by unstable energy costs, legislation and climate change. As a result, we've seen an **emphasis on renewable energy sources and a demand for high-efficiency HVAC systems**, including the adoption of heat pumps across all sectors.

Additionally, the **integration of smart technology has become an undeniable expectation** for both homeowners and building managers. Controls and thermostats enhanced by Internet of Things (IoT), connectivity and Artificial Intelligence (AI) have become a mainstay providing increased insight into system performance, energy efficiency and customized comfort.

A Changing Industry



Both residential and commercial customers now expect more than comfort from their HVAC systems – **they want healthy, energy-efficient homes and buildings that are aligned with environmentally responsible practices.**

This shift is **driving an investment in systems and technologies that can enhance indoor air quality (IAQ) and optimize energy use.** Options like zoning and smart controls are must-haves for homeowners and building managers who want to easily manage energy use and air quality improvements. Additionally, within the commercial sector, **building managers are now being tasked with accessing the carbon footprint of the building and providing proof of progress toward net-zero goals.** Advanced digital platforms can connect and digitally automate diverse data sets from multiple systems to optimize building performance, manage emissions and analyze results.

Trending Topics

The American Innovation and Manufacturing (AIM) Act, which mandates an 85% reduction in hydrofluorocarbon (HFC) gases by 2036, has remained top-of-mind for contractors, dealers and manufacturers alike. The initial phase of the policy had a negligible impact on refrigerant availability, but the next phase – scheduled to take effect in January 2024 – dictates the most significant step-down to date and will reduce HFC production by 30%. This next phase is poised to create a significant impact on the availability of common HVAC refrigerants, including R-410A, but contractors and dealers who prepare now can minimize disruptions and the risk of stranded equipment. It is important that all involved parties understand the safe handling, storage and transportation of mildly flammable (A2L) refrigerants and have a plan in place for R-410A recovery and reclamation.

From a commercial perspective, **IAQ and building health transparency continues to be a hot topic**, as many employees return to in-person or hybrid work. For many building professionals, simply enhancing or replacing the HVAC system may not be enough to bolster occupant confidence and satisfaction. Smart building technologies that utilize occupant-facing apps make building data transparently available and enables communication with facility personnel about building and room conditions such as temperature, lighting and occupancy.

continued... →



DAVID BUDZINSKI

Vice President and General Manager, Residential and Light Commercial, Johnson Controls

REFRIGERANT REGULATION UPDATES + CHANGEOVER

Our commitment to sustainability is reflected in every choice we make, including refrigerants. After evaluating several low-GWP refrigerant alternatives on a variety of performance and market metrics, including safety, efficiency, reliability, availability and longevity, we chose R-454B to replace R-410A in all ducted residential and commercial unitary products, as well as air-cooled scroll chillers. R-454B is the best solution to minimize environmental impact and energy use, reinforcing our commitment to addressing climate change and lowering our customers' emissions. This refrigerant transition means that we will exceed key regulatory requirements and also take a significant step toward reaching one of our ambitious sustainability benchmarks: helping our customers achieve a 16% reduction in emissions by 2030.

As regulations continue to unfold, we remain committed to educating and preparing consulting engineers, contractors and distributors. It is critical to learn and understand safe use, handling and storage guidelines of A2L refrigerants such as R-454B, and also good reclamation and recovery practices of these refrigerants.

Trending Topics continued...

Additionally, heat pump adoption has continued to grow, thanks in part to evolving efficiency and decarbonization regulations and incentives such as the Inflation Reduction Act (IRA). As a Department of Energy (DOE) Cold Climate Heat Pump Technology Challenge partner, Johnson Controls is committed to developing residential air source heat pumps that can reliably provide space heating while reducing the use of backup sources. From a commercial perspective, we are engineering energy-efficient heat pumps that can reach greater capacities to enable a broader range of applications than ever before.

DECARBONIZATION



With nearly 140 years of making homes and buildings more sustainable, **we are leading efforts to decarbonize the places we live, work and play.** Digital platforms such as OpenBlue, our suite of connected solutions, are helping to drive building system efficiencies. **Net zero leadership is easier than ever with our OpenBlue Net Zero Buildings offering, which is a proven path for organizations to reliably reach decarbonization and renewable energy goals, while optimizing building performance.** Digitalization is critical to opening new opportunities for decarbonization, in addition to other important areas of building performance like IAQ, cost management and business continuity.

ELECTRIFICATION



Heat pump technology is advancing at a remarkable rate. According to our annual Energy Efficiency Indicator Survey, **more than a third of respondents plan to replace fossil fuel heating equipment with heat pump technology.**

A growing interest in thermal energy storage and regional incentives for heat pumps, combined with the Inflation Reduction Act, are making the **value proposition easier for contractors to get buy-in from customers.**

Our latest heat pump units can address an increasing share of heating loads. **There are new developments in heat pump technology that enable efficient operation even in lower temperature conditions.** For example, the YORK® YZV 19 SEER2 Variable Capacity Heat Pump is an ENERGY STAR® Most Efficient-qualified heat pump that can dynamically adjust capacity and airflow to precisely match a home's changing comfort needs. When paired with a YORK® furnace, such as our YORK® YP9C 98% Modulating Gas Furnace, it can operate as a complete, high-efficiency dual fuel system. In this format, the furnace functions as a backup heat source when outdoor temperatures are too cold for the heat pump to efficiently meet the indoor heating load. The combined system effortlessly optimizes between the two heating sources to achieve the lowest carbon footprint possible based on the ambient temperature.

Within commercial buildings, compound centrifugal heat pumps can replace traditional boiler and chiller systems. For example, the YORK® CYK Water-to-Water Compound Centrifugal Heat Pump can reduce water and operational costs by as much as 50% when compared to traditional systems and deliver high-temperature hot water up to 170F.



DAVID BUDZINSKI

Vice President and General Manager, Residential and Light Commercial, Johnson Controls

Major Industry Shifts

Healthy air, climate and sustainability continue to drive the market as never before.

The push for improved indoor air quality continues to be a priority and HVACR professionals are integrating advanced air filtration, ventilation and air purification technologies to ensure healthier indoor environments.

The DOE 2023 energy efficiency regulations, low-GWP refrigerant transition and the Inflation Reduction Act (IRA) all have had major environmentally focused directives and provided new opportunities for HVACR professionals. **IRA credits and rebates offer a long-term opportunity for clean energy investment and new incentives for homeowners and commercial building owners to consider higher-efficiency comfort systems.**

The increased demand for smart and connected HVAC solutions has also grown significantly. End-users are increasingly seeking systems that can be controlled remotely, provide real-time data and analytics and can be integrated with other smart home or building technologies.

Trending Topics continued...

INDOOR AIR QUALITY



Homeowners and building managers alike remain aware of the importance of indoor air quality. **The pandemic made it clear how absolutely critical it is to have clean, healthy air** and this has been further exemplified as natural disasters such as wildfires emerge as the most recent IAQ threat.

Whether at home or in commercial spaces, ventilation, filtration, humidity, disinfection and monitoring are critical to achieving a healthy indoor environment. **HVAC systems from our brands offer a range of options to improve IAQ, including advanced, high-MERV air filters, ultraviolet air purifiers, humidifiers and dehumidifiers.** These products can help reduce airborne contaminants inside homes and reduce environmental triggers for those with allergies and asthma.

For commercial buildings, we've developed **OpenBlue Indoor Air Quality as a Service to help drive building health and occupant confidence.** OpenBlue Indoor Air Quality as a Service combines the technology and science-backed expertise of Johnson Controls to help customers meet health and safety compliance while improving employee retention, productivity, performance and safety. Additionally, by deploying OpenBlue Enterprise Manager, we can help our customers balance the trade-off between infection control and energy spending, helping them meet their IAQ objectives, as well as their sustainability goals.

WORKFORCE DEVELOPMENT



Industry efforts to recruit and train the next generation of HVACR professionals continue, but there is always more we can do to strengthen our workforce. **The ongoing investments we've made in the Johnson Controls Ducted Systems Academy in Oklahoma has made the premiere facility an industry standout where HVAC professionals build technical, sales, leadership and professional skills.** Our contractors and distributor partners attend hands-on training in our world-class laboratory as well as remote live training sessions.

NEW TECHNOLOGIES ON THE HORIZON



Many contractors continue to face an increased workload with fewer contractors on the job. Smart Apps are one way to help save time and improve efficiency. **Our DS Solution App provides instant access to commercial and residential equipment information to help streamline installation, troubleshooting and maintenance while on the jobsite.** Equipment can be scanned or searched by product number to quickly access product-specific information. Additionally, contractors can upload videos or photos directly through their smartphone if technical support is needed. This app will continue to grow in the future to quickly and efficiently communicate to those who service Johnson Controls equipment.



DAVID BUDZINSKI

Vice President and General Manager, Residential and Light Commercial, Johnson Controls

Challenges Ahead

The industry is facing back-to-back regulatory changes.

DOE 2023 is closely followed by the EPA transition to low-GWP refrigerants in 2025. Distributors and contractors that have developed solid phase-in/phase-out plans have an advantage and, **at Johnson Controls, we are pleased to say our line card is ready to go and we are ready to be a resource to our partners in navigating these changes.** The phase-out of high-global warming potential (GWP) refrigerants poses a significant challenge for the HVAC industry. Adapting to new refrigerants and ensuring compliance with evolving regulations can require investment in research, development and technician training.

As a company, we are invested in training technicians and employees to educate how to install the new systems and how to educate consumers on system operations, as well as the cost-savings that can be realized.

Upcoming Opportunities



The HVAC industry operates within a complex regulatory landscape, with evolving codes and standards.

Being able to understand and stay ahead of these changes while balancing consumer demands presents a huge opportunity to drive growth and industry-wide sustainability.

As an industry, **we can expect to see a continued emphasis on decarbonization, electrification and renewable energy sources** which will also open up many opportunities for the HVAC industry in both product development and digitalization.

Most Pressing Issues



The HFC phase down has been top-of-mind for many contractors since it was enacted in 2020. **The industry will face the most significant stepdown in 2024 – now a 30% reduction in HFC production – creating a much stronger impact than we felt in years past.** Ensuring all levels of the industry are educated, informed and empowered will help make the transition as successful and seamless as possible but it remains a pressing issue for the industry at large.

Indoor air quality receives significant attention due to its impact on occupant health and well-being. Ensuring optimal IAQ requires advanced air filtration, ventilation and air purification technologies, as well as regular maintenance and adherence to industry standards.

Big Impact Innovations

With the industry's focus on electrification and decarbonization and its extensive investment in technology, heat pumps are solidly positioned to make a huge impact. **Innovation in heat pump technology is unfolding rapidly and the space is incredibly dynamic. As a result, heat pumps are being leveraged to address an increasing share of heating loads.**

However, it's important to note that **most air-source heat pump systems need to include some form of backup or supplemental heat that is utilized when heating demands exceed capacity**, such as when the outdoor temperatures are too cold for the heat pump to run efficiently. Dual fuel systems provide a solution to maintain efficiency in very cold climates. In the dual fuel model, a heat pump is connected to a high-efficiency gas furnace and can seamlessly adjust between heating sources dependent on the heating demands. This will often result in lower operating costs and source emissions compared to electric resistance for space heating, but results will vary on a building-by-building basis.

It's also important to understand the revolutionary impact of data and digital technologies. **There is a growing demand for smart building solutions from which the HVACR industry can benefit.** Integration with other building systems such as lighting and security offer opportunities for improved energy management, occupant comfort and overall building performance.

Digital technologies like OpenBlue Enterprise Manager give building operators a comprehensive suite of apps to monitor and improve energy efficiency, tenant satisfaction, asset performance, maintenance operations, space performance and, ultimately, the comfort of all occupants. Additionally, as climate disclosures become mandatory for many building managers, services, such as OpenBlue Net Zero Essentials, leverage data collection to assess the carbon footprint of the building, track progress toward decarbonization goals and provide clear reporting on emissions and building performance.



DAVID BUDZINSKI

Vice President and General
Manager, Residential and Light
Commercial, Johnson Controls

Facts & Figures

As sustainability becomes a global corporate mandate, organizations are making bold commitments to decarbonize building operations and conserve resources. In a recent study conducted in conjunction with Forrester Research, 2,348 business leaders were surveyed to better understand how organizations are prioritizing and investing in sustainability. The survey revealed that **80% of respondents cited implementing or maturing sustainability efforts as their top priority** and, for most, 2024 was the target date for achieving these goals.

Despite widespread buy-in, **74% of respondents shared that their company does not use emissions reporting software**. That makes solutions such as our OpenBlue platform and Net Zero as a Service partnership offering a vital component in achieving, understanding and communicating these goals.

“ The HVAC industry is in a state of rapid change. **As innovations continue to evolve, they move us closer to a world that is built on smart, healthy and sustainable buildings.** At Johnson Controls, our products, services and technologies are designed to help empower our partners and communities to reach their goals and transform the environments where people live, work, learn and play.”



Booth #S8345

DOUG BOUGHER
Executive, LG

The Current State of HVACR

“ HVAC customers are still pushing for **more efficient and environmentally friendly ways to stay comfortable**, and they need more guidance than ever given the multitude of simultaneously changing incentives and regulations.”

A Changing Industry



SHORT-TERM: We see the independent applied rep channel consolidating and offering customers a wider range of equipment and services.

LONG-TERM: AI and data as a service will be more prominent and incorporated into offerings to ensure customers are getting high quality and efficient systems through the system's life cycle.

HVACR's Pressing Issues



For the industry as a whole, a pressing issue is the **continuous need to find the right people willing to be trained** to install and/or service HVAC equipment.

For VRF, it is **informing our customer base regarding the changing regulations** and fighting misconceptions about refrigerant change.

Trending Topics

We continue to see a desire for hybrid systems in which there is a mix of traditional systems to create something new. New development with VRF is applying VRF's compressor and control technologies into more types of systems (e.g. chiller heat pumps and roof top air handlers).

ELECTRIFICATION



This is a very big push in key states like California, New York, Maine, and Massachusetts where **incentives and regulation drive system choice**. The Inflation Reduction Act will be helping in the future, but that funding has not yet made it to the local level.

REFRIGERANT AND REGULATION UPDATES



LG is moving to R32 refrigerant and is **on track to meet all the EPA product specific deadlines**. The EPA is still finalizing rules for sell through and service of R410A systems and we are working closely with customers to help them understand the changes.

AI + CONTROLS



Those companies that can take advantage of AI and apply it to their controls will have a long term advantage. LG's future R32 product in the US, **the Multi Vi, will begin to use AI as a tool to optimize control and function** of VRF systems.

SUPPLY CHAIN



Supply Chain problems in the industry have somewhat died down, but **uncertainty of R410A split systems with the refrigerant change in 2025 may lower inventory levels throughout the channel**. This will create pressure on supply chains to react quickly given the channels' potential inability to absorb spikes in unforeseen demand.

THINGS TO WATCH FOR



Watch for Heat Pumps like **LG's Inverter Scroll Heat Pump Chiller to become more popular** in replacing boilers and/or how water furnaces in commercial and multi-family residential applications.

PREDICTIONS



HVAC and Domestic Hot Water systems will become one overtime as heat pump systems are needed for electrification and become more accepted in the industry.



DOUG BOUGHER
Executive, LG

LG Fast Facts



What major shifts/changes have you noticed in the industry since the last AHR Expo in Atlanta?

- More consolidation of the independent rep channel
- Need for refrigerant change guidance as clear requirements are hard to find.



What challenges are in the near future for HVACR? Is there anything on the radar that your team is following closely?

- Refrigerant change and changing incentives



What innovations, in your opinion, have the potential to make the biggest impact?

- Applying heat pumps to hybrid multi-family HVAC and domestic hot water systems



Booth #S10371, S9554

DAVID RAMES

Senior Product Manager,
Midea America

The Current State of HVACR

“To say there is a lot going on in our industry currently would be an understatement. **2023 efficiency changes, upcoming 2025 Low GWP/A2L refrigerant updates, and an overall shortfall on labor has us all in a bit of a tizzy.** The key to navigating these uncharted waters is communication and a lack of panic.”

A Changing Industry



For me, **heat pump compressor technology, and its ability to produce heat is the single most impressive innovation of our time.** “Grandpa’s” heat pumps are a thing of the past, and now gas furnaces are being replaced with all-electric “clean” heat options. This has made a positive impact across all geographical areas, especially northern climates.

Upcoming Opportunities

INCREASED DEMAND FOR HEAT PUMPS



There is rising demand for advanced heat pump technology, particularly among younger homeowners. This presents an **opportunity for HVAC manufacturers to meet this demand with innovative and environmentally friendly solutions.**

TAX INCENTIVES



Leveraging federal and regional tax incentive programs can **encourage more homeowners to invest in energy-efficient HVAC systems.** There is also an opportunity to better communicate and implement these incentives, as there are many concerns from both contractors and homeowners about details such as qualifications and reimbursements on upfront investments.

Trending Topics

We are seeing heat pumps enter the mainstream, and while people know about heat pumps, they have no idea how far we’ve come in terms of cold climate performance. **As this new technology becomes more widely adopted, we’re excited to see heat pumps become available for everyone equitably, no matter the climate you may live in.**

DECARBONIZATION, ELECTRIFICATION, HEAT PUMPS AND GREEN TRANSITION

All of these factors are intertwined to create a more sustainable future for the HVAC industry. The latest advancements in heat pump technology illustrate how the industry has changed in recent years to move towards new technologies and point towards a future of HVAC with sustainability as a cornerstone of design. **The energy-efficient nature of heat pump technology is revolutionary, and recent innovations, combined with public interest and incentives for widespread adoption by government agencies, are driving the industry forward and expanding the implementation of more electrified solutions.** This will not only change the HVAC industry but will also make contributions to decarbonizing our communities and reducing emissions overall for the built environment.

WORKFORCE DEVELOPMENT



As new technology is implemented, it is pivotal that the HVAC professionals are equipped with the knowledge and skills to repair, replace and maintain new systems. **The industry recognizes that investment in young talent, especially with regard to the latest technology, is essential for the success and longevity of electrification and heat pump adoption in the United States.** Midea is committed to workforce development and continues its contributions through our partnerships with ACCA and other industry trade organizations.

INDUSTRY GROWTH



As more homeowners express interest in heat pump technology, **contractors and manufacturers can expect an expanding market for these systems.** This also reinforces the need for additional workforce development and more training and resources for technicians.



DAVID RAMES

Senior Product Manager,
Midea America

Challenges Ahead

EDUCATION & TRAINING

Addressing the knowledge gap and ensuring that contractors are well-trained to install advanced HVAC systems are ongoing challenges for the industry. There is an immediate need to recruit and train the next generation of HVAC technicians to meet the demand as the workforce ages.

ENVIRONMENTAL REGULATIONS

As the focus on sustainability grows, HVACR manufacturers may face more regulations and standards, which can impact product development and production. The primary task at hand is the rapid transition to A2L refrigerants, which will require immediate preparation and collaboration from all parties across the industry as approach 2025.



Big Impact Innovations

COLD CLIMATE HEAT PUMPS

Innovations in cold climate heat pumps have the potential to make a **significant impact on the industry by providing efficient heating and cooling solutions** in colder regions and reducing emissions and costs in nearly every climate.

COMPACT UNITS

Newer units may be larger than older models, meaning **newer, more efficient models can do the same job by using less space and less energy**. This will aid in the more widespread implementation of heat pumps in a variety of different building scenarios.



Highlight the Positive

Professionals in the industry can highlight the positives by **focusing on the environmental and financial benefits of energy-efficient heat pump HVAC systems**. They can emphasize how these systems help reduce carbon emissions and lower energy bills, ultimately contributing to a more sustainable and cost-effective future.

- Generating interest in environmentally friendly technology is essential to the growing market for energy-efficient HVAC solutions and will **help the public and key decision-makers more aware of the benefits of implementing the latest technology into their homes and businesses**.

Major Industry Shifts

Since the last AHR Expo in Atlanta, there have been significant shifts and changes in the HVACR industry, primarily driven by advancements in technology and evolving consumer preferences. Notable changes include:

- 1 Heat Pump Technology Advancements:** The industry has witnessed substantial advancements in heat pump technology, especially in cold climate performance. For example, Midea exceeded performance benchmarks set by the U.S. Department of Energy's Cold Climate Heat Pump Challenge, with outstanding results, achieving 118% of rated capacity heating output at -15 degrees Fahrenheit. These results display a major shift towards more efficient and versatile heating and cooling solutions, even in challenging climate conditions.
- 2 Increased Awareness and Demand for Energy Efficiency:** There is a growing emphasis on energy efficiency and sustainability for homeowners. Additionally, homeowners and contractors are becoming more aware of the benefits of energy-efficient HVAC systems, which can lower both costs and emissions, and this is driving demand for advanced solutions.
- 3 Depleted Workforce:** At present, the demand for technicians is high, but the workforce is low. Therefore, contractors tend to pay more per person and have fewer employees available to service customers, cutting overall profits.
- 4 Rapid Refrigerant Transition:** As of January 1, 2025, any new systems installed must be compatible with A2L refrigerants. This will pose a significant challenge for contractors to upgrade equipment and ensure proper training for technicians at an expedited pace, especially as the availability of HFC refrigerants will inevitably dwindle in the coming months.
- 5 Tax Incentive Programs:** Federal and regional tax incentive programs, such as the Inflation Reduction Act, are becoming an important factor influencing the industry due to the significant cost savings opportunities they present to homeowners. According to a survey conducted by Midea America, Coyne Public Relations and Atomik Research group, two-thirds of homeowners (68%) are more likely to consider heat pump installations when they learn about these incentives.



DAVID RAMES

Senior Product Manager,
Midea America

Important Discussions

ENERGY EFFICIENCY

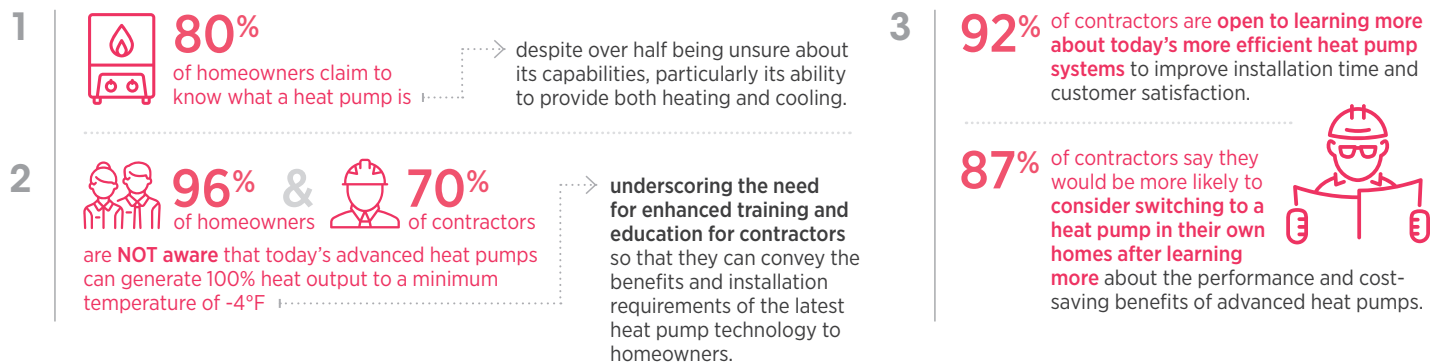
Conversations surrounding energy efficiency, carbon footprint reduction, and decarbonization are central in the industry. **Midea's booth at the AHR Expo will showcase a variety of heat pump HVAC systems that provide eco-friendly solutions for a wide range of heating and cooling needs.**

TRAINING & EDUCATION

The need for better training and education in the industry is a crucial discussion, and the **AHR Expo provides educational opportunities for those in attendance looking to learn more information about the latest technology**, including heat pumps, and resources from brands and trade organizations.

Facts & Figures

According to a recent study:



Most Pressing Issues

ENERGY EFFICIENCY & SUSTAINABILITY



The industry is under pressure to meet increasing energy efficiency and sustainability demands, driven by environmental concerns from the public and regulatory changes. According to the survey referenced above, **76% of homeowners agree that they are more focused on energy efficiency now than they were 5 years ago, and 62% are looking into environmentally responsible/energy-saving solutions around the house**, demonstrating a heightened focus on the environment.

KNOWLEDGE GAP ON HEAT PUMPS

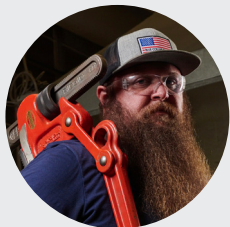


According to the survey referenced above a significant knowledge gap exists among both homeowners and contractors regarding the capabilities of modern heat pumps. In fact, **more than half of homeowners surveyed (54%) believe that today's advanced heat pumps can only generate 100% heat output at temperatures down to 32°F or 40°F, while only 4% are aware that these heat pumps can generate 100% heat output even at -4°F.** This illustrates that heat pump technology has advanced beyond the public's knowledge, and bridging this gap is essential to drive adoption.

TRAINING & EDUCATION



Contractors are expressing the need for better training to install next-generation heat pumps. According to the survey, **81% of contractors express the need for better training to install next-generation heat pumps.** This identifies the challenge of ensuring a skilled workforce capable of handling advanced HVAC technology. Training the next generation in the latest technology is also key in sustaining the HVAC industry, especially as more heat pump offerings come to market and gain popularity.



 **@alan_carlson**

Alan Carlson, Licensed plumber
22 years in the industry

“ The current state of the plumbing industry, is one of progress. It continue to see **advancements in technology for tools and materials that are moving us into the future**. Like most change, there are still those that cling to the past and its methods.”



Are there any new trends in regard to customer requests or purchases?

Heat Pump water heaters have entered the conversation here. With new regulations on the horizon, they could become not only more popular, but possibly mandatory. If that happens, it will drastically change the entire area of water heater installation. **From buildings and homes being designed with these new tanks installed, to converting existing standard tanks to this new style, we will have to shift and adapt in a major way.** Our customers will have to also adapt and adjust, considering that the heat pump tanks cost significantly more than the standard version.

Tankless water heaters are still asked about frequently, when someone needs to have their water heater replaced. However, in my area, it can be an involved and expensive conversion to make the installation correct. The sheer cost of this investment turns many potential customers away.

In a Nutshell

- My region, Chicagoland, embracing the newest technology is the biggest discussion. Long standing traditions and codes are the norm here, and it's difficult for many to break from that. Press vs Sweat, PVC vs cast iron are the two biggest ones talked about.
- This past year had a slow start to it, but has been slowly returning to regular call volume.
- Pressing issues for plumbing would be if regulations drastically change, forcing us to use entirely new types of products or equipment. Change doesn't happen quickly, and there will be growing pains for sure.
- The biggest impact to the plumbing industry is Press technology. It offers safe, fast, and reliable connections in almost any condition. We in the field like to see manufacturers not only stand behind their product, but also listen to those that install it or use it everyday. Real world experience is far too valuable to ignore.



What major shifts/changes if any have you noticed in the field?

The biggest shift in the field is the amount of new products and technologies we have available to us. **We have many more options to choose from, which allows us to give our customers options.**

Opportunities for plumbers would be to **embrace the new technology we have available to us**, so we can perform better and provide better services for our customers.



An important discussion is safety and code correct work. Whether we are working in unsafe conditions as those in the field, or if we are installing something wrong that could potentially cause harm, we need to keep each other safe and accountable so that we can continue to safely and effectively protect the health of the nation.



 @acservicetech

Craig Migliaccio, President,
AC Service Tech LLC

“ As new technologies come to the forefront, we as technicians, are in a **constant state of learning.**”



Speaking more specifically to your region, what are the hot or trending topics being discussed?

HVACR Companies are grappling with the capability to service higher end HVACR systems accurately and quickly while still having an issue with the availability of some OEM parts. Companies are also having a hard time with hiring, staying fully staffed, and providing supplementary training for this staff.



AC Service Tech recently published their new book “Inverter Mini Split Operation and Service Procedures” and has published other popular books such as “Refrigerant Charging and Service Procedures for Air Conditioning. AC Service Tech is an HVACR educational company based in Southern New Jersey, of the USA, which creates training videos, books, articles, and other field references. Their website is [acservicetech.com](https://www.acservicetech.com)

Trending Topic: Heat Pumps

Inverter Heat Pumps have grown in popularity and are installed more often. This is mainly due to the increase in electrical efficiency, the decrease in operational noise, along with available rebates. **Inverter mini split systems are becoming a more common choice for new construction and continue to be used in most additions.** Ducted inverter heat pumps are also more readily available, and as a result, there has been a rise in the amount that are being installed during changeouts of existing ducted single stage systems.

With that said, **education in troubleshooting inverter heat pump systems is paramount.** If education is not readily available or, in some cases, does not exist, contracting companies are often hesitant or unwilling to install these systems, since they don't have information on how to properly service or repair this equipment. Likewise, parts availability, system down-time, and electrical grid problems are also concerns. Because building owners and technicians are accustomed to systems being fixed in a quick time frame, a **lack of part availability can become a significant problem.** The problem is, if an OEM part needs to be shipped in, down-time increases. This is made significantly worse if a system has not been or cannot be properly diagnosed in the first place, reiterating the importance of proper education and training.

Additionally, due to the sensitivity of the electrical components in these inverter heat pump systems, **extra protections, such as surge protection or voltage monitoring with surge protection, are required to handle electrical grid problems.** Installing these protection devices can help protect the system's circuit boards from electrical problems, which otherwise could result in failure. This simply was not a concern with single stage systems of the past.





 **@hvacrara**

Rachel Sylvain, CEO and
Co-Owner of AGS HVAC Services

“Advancements in HVACR technology continue to shape our world, and as we approach the 2024 AHR Expo, we **anticipate a showcase of innovation and sustainability** that will redefine the industry’s future.”



Speaking more specifically to your region, what are the hot or trending topics being discussed?

New Englanders are increasingly looking for efficient heating and cooling solutions that work well in our region’s climate.

- **Regulatory updates:** Changes in regulation related to energy efficiency refrigerants, and environmental standards are frequently discussed, and they impact HVACR practices on our region.
- **Training and Workforce development:** The HVACR industry is emphasizing workforce development and training programs to ensure a skilled workforce for emerging technologies and practices.



What opportunities lie ahead for HVACR/HVAC professionals in the coming year?

It’s worth noting that **ongoing training and certification will be essential to stay competitive and take advantage of these opportunities.** Additionally, staying informed about industry trends and regulations will be key to a successful career in HVAC.

In a Nutshell

- Health and wellness is a broader trend towards wellness-focused designs, including IAQ requirements, in residential and commercial.
- Business in the HVACR industry varied depending on several factors, including location, market conditions, and economic factors. Each region can vary.
- Major shifts in the field include the loss of skills, aging workforce, lack of training programs, and limited awareness.
- Sustainability and energy efficiency are the most pressing issues facing HVACR right now.
- Building technologies and smart controls have the most potential to make the biggest impact.
- Community members are seeking advise on upgrading to energy efficient HVAC systems or optimizing their existing systems.



What challenges do you forecast in the near future for HVACR?

Efforts to address the skills gap are crucial, as HVAC tech plays a vital role in maintaining the comfort and safety of buildings and reducing energy consumption in an increasingly energy- conscious world.



PREDICTIONS

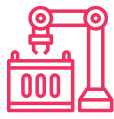
- **Increased focus on sustainability**
- **Advancements in smart technology**
- **Electrification**
- **Improved indoor air quality**
- **Heat pumps adoption**
- **Hybrid systems**



Next Stop: Chicago!

This report is compiled as a preview of what's heading to the AHR Expo. In Chicago you'll find more on the topics discussed, in education programming, exhibitor booths, New Product Theaters, Podcast Pavilion and more.

A Preview of what's to come...



1,800+
manufacturers
waiting to show you
the latest the industry
has to offer



50,000+
attendees
ready to build a network
and grow opportunities
within the industry



250+
free industry seminars
covering trending topics,
application best practices
and niche learning

Don't miss these deep dive discussions...

(click to learn more)

TUESDAY, JAN. 23 // 10:00 AM

HVACR STATE OF THE INDUSTRY LEADERSHIP PANEL DISCUSSION

Today's Market, Challenges, Opportunities & What's Ahead

Talbot Gee
CEO,
HARDI

Dominick Guarino
CEO,
National Comfort
Institute, Inc.

Ginger Scoggins
President,
ASHRAE

Greg Walker
CEO,
ASHB

Steve Yurek
President,
AHR

MODERATOR
Bryan Orr
Founder/President,
HVAC School &
Kalos Services

TUESDAY, JAN 23 // 11:30 AM

Addressing the Workforce Talent Gap through Educational Partnerships

Jose De La Portilla
Rheem
Manufacturing

Susan English
Lincoln Tech

Brian Fellen
Lincoln Tech

Alison Neuman
Johnson Controls

Scott Shaw
Lincoln Tech

continued... →



Don't miss these deep dive discussions...
(click to learn more)

Tuesday, January 23 // 1:00 PM
**Heat Pumps,
Electrification,
and the Grid**

Rand Conger
Johnson Barrow Inc.

Mark Frankel
Ecotope, Inc.

Jon Heller
Ecotope, Inc.

Sean Jarvie
Flow Environmental
Systems

Tuesday, January 23 // 3:00 PM
**AI, Controls and the
Future of Technology
in HVAC**

Anlo Budiardjo
Padi.io

Darryl DeAngelis
Eaton

Stephen Holicky
Tridium/Honeywell

Chad Langston
ABB

Charles Pelletier
Distech Controls

Greg Walker
ASHB

**Regional Updates:
Refrigerants,
Regulation & More**

Monday, January 22

South/Southeast
1:00 – 2:00PM

North/Northeast
2:15 – 3:15PM

Southwest
3:30 – 4:30PM

Chris Forth
Johnson Controls

James "Jimmy" Abraham
Bosch

Jennifer Butsch
Copeland