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DECEMBER 2021
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Prioritizing Refrigeration Compliance, p. 30



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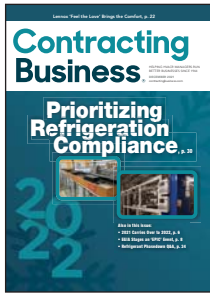
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December, 2021

The refrigeration industry has the systems that are most compatible with the new generation of low-GWP refrigerants.

Photo at left shows Hillphoenix SoloChill micro-distributed installation. At right, Hillphoenix Advansor CO2 booster rack.

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RIGHT: AHR Expo 2022 Innovation Awards
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ISSN 0279-4071

CONTRACTING BUSINESS

Published monthly by Endeavor Business Media, 1233 Janesville Ave, Fort Atkinson, WI, 53538 U.S. All Rights Reserved.

POSTMASTER: Send address changes to *Contracting Business*, P.O. Box 3257, Northbrook, IL 60065-3257 U.S. Periodicals postage paid at Fort Atkinson, WI, and additional mailing offices. Phone 817-559-7598 U.S.; toll free 877-382-9187 (Outside U.S.); Fax: 847-564-9453

SUBSCRIPTIONS: U.S. & possessions: 1 year/ \$84, 2 years/\$126, single copy/\$7; Canada: 1 year/\$110, 2 years/\$131, single copy/ \$9, Add 7% GST or 15% HST if applicable; International: 1 year/\$126, 2 years/\$210, single copy/ \$11. Payable in advance, in U.S. funds. Prepaid subscriptions (US funds only) may be sent to *Contracting Business*, P.O. Box 3257, Northbrook, IL 60065-3257. Phone: 847-559-7598; toll free 877-382-9187 (Outside U.S.). contractingbusiness@omeda.com

FOR CUSTOMIZED ARTICLE REPRINTS PLEASE CONTACT: reprints@endeavorb2b.com

OUT-OF-PRINT ISSUES: Microfilm of issues & reproductions of issues can be ordered from University of Microfilm Proquest Company, 300 N. Zeeb Rd., P.O. Box 78, Ann Arbor, MI 48106, Phone 800-521-0600

Printed in the U.S.A.

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BY TERRY MCIVER, EDITOR-IN-CHIEF

2021: To be Continued

Soon, you'll be closing your books on 2021, however, many of 2021's challenges will carry into 2022. The US Senate hopes to pass the \$2 trillion+ Build Back Better social spending bill by Christmas. When paired with the Infrastructure Investment and Jobs Act, passed on November 5, we're looking at more than \$3 trillion in new spending of money we don't have.

The COVID challenge is entering its third year, and we await a decision in the Ohio Sixth Circuit court on the constitutionality of President Biden's and OSHA's "sledgehammer" vaccinate-or-test decree for companies of 100 or more employees. Supply chain issues continue, due to raw material availability and employment troubles up and down the shipping lanes, and refrigerant changes are prompting you to consider new alternatives.

Infrastructure Bill Issues

The best quick-read analysis of the infrastructure bill's problems that I found is by Stephen Moore, writing in The Hill: [bit.ly/moore-onspending](https://www.thehill.com/policy/infrastructure/2021/11/15/infrastructure-bill-analysis/). Among Mr. Moore's 10 points: roads, bridges and highways are taking a back seat to wind and solar transmission projects and electric vehicle charging stations. (Moore asks: why didn't the federal government ever build gas stations?). Fewer than 25 percent of the funding has been allocated for roads and bridges.

Industry Response

Associated Builders and Contractors (ABC) believes the infrastructure needs listed in the bill are valid, however ABC has also raised an alarm over what the entire bill (and potential Build Back Better funding) will do to equal opportunity and the American economy:

"Passage of the bipartisan infrastructure bill creates an opportunity to effectively modernize our nation's most critical infrastructure, and ABC and our members stand ready to do the important work to bring America's infrastructure into the 21st century," wrote Michael Bellaman, ABC president and CEO, in an ABC press release. "However, ABC remains wary of some of the bill's exclusionary provisions and statements from the Biden administration that could restrict the eligibility of America's workers to compete for and participate in these construction projects," Bellaman added.

Sheet Metal and Air Conditioning National Association CEO Vince Sandusky expressed support for the infrastructure bill.

"Everywhere one looks, our communities face growing lists of urgently overdue infrastructure projects - including retrofitting existing public buildings, constructing needed new facilities, upgrading transportation networks, water systems, and broadband capabilities - and our contractors and highly skilled and trained work forces stand ready to the challenge," wrote Sandusky, in a statement issued on November 15.



Your best preparation is to be grounded in the basics of business.

Product Shortages

To manage product shortfalls, Service Nation's Matt Michel advises contractors to adapt in five ways: more marketing; price hikes; raising wages; stocking up as much as the supply chain will allow, even to the point of renting out storage units; and being ready for anything the market throws at you. See Matt's entire article at [bit.ly/becertainin2022](https://www.bit.ly/becertainin2022).

Rob "Doc" Falke, president of National Comfort Institute, advocates up-front communication with customers should supply issues delay home HVAC installations.

"You have the opportunity to unite, so you can discover the best possible solutions together," Falke wrote in this article: [bit.ly/Falkeonsupplies](https://www.bit.ly/Falkeonsupplies). Imagine that: communication can bring compromise.

Matt Michel says 2022 may well see a major slump in demand for new HVAC systems, due to the record years of 2020 and 2021. To prepare for a downturn, shelter cash, build your reserves and be a more aggressive competitor. See [bit.ly/hvacshipmentcliff](https://www.bit.ly/hvacshipmentcliff).

See pages 30 and 34 for commentary on the refrigerant/refrigeration revolution, by Andre Patenaude, Stephen Spletzer and Dr. Chuck Allgood.

AT PRESS TIME: ACCA announced **The Solar Forum**, in partnership with Pearl Certification, and sponsored by Mosaic, will be held January 24-25, 2022 at the Crowne Plaza, Phoenix, AZ. Learn more at: [bit.ly/ACCSolarforum](https://www.bit.ly/ACCSolarforum).

Thank you for reading **Contracting Business**. We truly hope our articles were helpful to your business in 2021. Topic suggestions are always welcome. Best wishes for a prosperous 2022! **CB**

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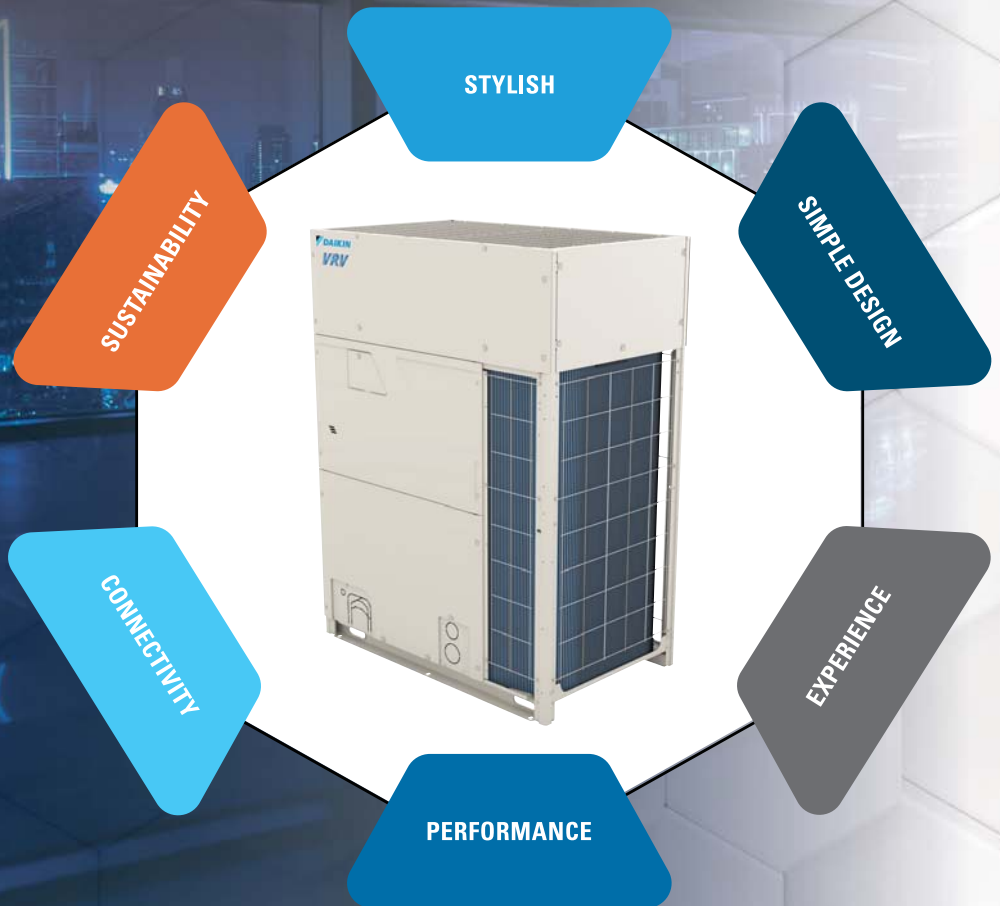
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BY TERRY MCIVER, EDITOR-IN-CHIEF

EGIA Stages a Rousing 'EPIC' Event

Electric & Gas Industries Association (EGIA) presented its long-awaited, in-person EPIC2021 conference and show, October 28-29 at the Paris Las Vegas Hotel and Convention Center. For a two-day event, this show was packed with enough electricity, activity and business information for HVAC and plumbing contractors to fill an entire week. EGIA estimated final attendance at about 1100.



EPIC2021 attendees enjoyed non-stop networking opportunities and instant access to well-produced multi-media presentations. Event photos by Terry McIver

The show featured celebrity keynote presenters, breakout sessions by leading industry consultants, exhibits by many of the HVAC, electric and plumbing industries best-in-class products and networking opportunities at every turn. An evening party on day one at the Chateau Nightclub provided food, drink and music to help attendees blow off some steam.

Keynote speakers included Jon Taffer of Bar Rescue; Daymond John of FUBU fashions and Shark Tank; heroic pilot Captain "Sully" Sullenberger; and consumer trends and marketing expert Kelly McDonald. Session presenters included Weldon Long; Gary Elekes; Drew Cameron; Russ Horrocks; Ellen Rohr; Jason Young; Jim Knight; Scott Deming; James Leichter and Steve Shallenberger. Weldon Long served as Master of Ceremonies, and he also hosted



EPIC2021 Master of Ceremonies Weldon Long helped electrify the crowd with contracting anecdotes, hard truths about business, and lively introductions of keynote presenters.

multiple contractor panel discussions addressing important business management topics.

EPIC2021 covered cornerstone topics crucial to building and managing a successful service business: sales, the service experience, recruiting and labor management, marketing, employee advancement, shifting demographics and teamwork.

"We've been to a lot of other industry events, and EPIC is by far one of the best events we've ever been to. It allows us to see our gaffes, and the gaffes in our business and what we need to be a stronger, better business," said Amanda Faith, Aire Texas Residential Services, Inc., speaking on the EGIA EPIC2021 website.

"There's nothing like it. EPIC is awesome. I've been to a lot of other [events], but I've never been as challenged more as a businessman and in my personal life as I have been at EPIC events," said Jeremy Lee of Schneller & Knochelmann.

"We couldn't be happier with the turnout, particularly at a unique time, when a lot of industry events have seen challenges with attendance. It's really a testament to the trust contractors and sponsors put in EGIA Contractor University to host an event that's truly impactful for their businesses," said Bruce Matulich, CEO and executive director, EGIA.

EPIC2021 main stage presentations were delivered in the usual hotel ballroom area, with half of the room devoted to space for 63 exhibitors as well as a daily breakfast and lunch serving area and roundtable seating.

The Keynotes

Each keynote presentation was prefaced by a sound and vision fiesta, as the clock counted down the minutes to each new presenter. EGIA University faculty member/author Weldon Long served as master of ceremonies, and he made



Drew Cameron: 'What is your focus? Are you building customer engagement? What are you doing to connect to customers?'

sure all were ready to go for the next presenter.

"How exciting is it that we are all here together again?" Long asked, as he came to the stage to introduce day one.

"What a year and a half it's been. I'm so excited to be here," Long shouted. He admitted it was somewhat odd to have to say, that while so much of the world was in turmoil over the COVID pandemic, many HVAC service businesses grew by leaps and bounds, alluding to the undeniable growth the service industry experienced, since it was considered an "essential" service, not subject to COVID lockdowns.

"Suddenly, our industry is essential," Long said. "I have a great deal of pride in my company and my team, because we're 'essential.' We matter. Sometimes you get lost in that, with all the moving parts in our businesses."

Long expressed his thanks to Bruce Matulich, Jeff Matulich and the entire EGIA EPIC2021 planning team. "They really went all out in putting together this speaker lineup," he said.



Jon Taffer said that never in 120 episodes of *Bar Rescue* has a struggling entrepreneur accepted the blame for failure.

In his presentation titled, "Raise the Bar", **Jon Taffer**, creator of the Paramount Network's *Bar Rescue* program, shared some serious truths about business success and sadly, the great amounts of failure he has seen during his career as a business rescue expert.

"I want to talk about things that will really change your industry. I've done speeches for 15 years. And, statistically, 70 percent of you who listen to speeches today will go home and not do a thing [with the information]," Taffer shared. "So I'm not going to tell you to do this or that, or to not do this or that. I want to change the way you think. If I can change the way you think, I can't help but change what you do. My objective is to pull your brain out of your head, twist it up a little bit, shove it back in, and make your eyes go to different places tomorrow, and make you look at your business in different ways, make you hear things differently."

The core of Taffer's message was the critical need for every business owner to never offer excuses for their failures.

"I've seen every type of failure, and it's incredibly powerful when you see people fail, and start to analyze why failure happens. After 120 episodes [of *Bar Rescue*], I've started to see commonalities in failure. The common denominator of failure is excuses, and an entrepreneur's refusal to accept blame. An excuse is nothing more than a reconciliation of a screw-up. When we do not accept excuses, and decide to own our failure, we find success," he said. Key to a successful consumer business is the level of positive reactions you can generate with customers.

"When you sell, market or present a proposal, he or she who creates the best reactions, wins! We live and die by the reactions we create," Taffer said, adding that the reaction most created by a successful restaurant or bar is 'connectivity.' He linked that to his Customer Reaction Opportunity Windows: those times where you do something to create a reaction.

"Don't miss out on opportunities to connect with people, and break down barriers to business. Work 'on' your business, not in it," Taffer urged.

Session Sampling

Here is a sampling of the breakout session presentations. All 12 EPIC2021 breakout sessions will be available online At EGIA's [MyContractorUniversity.com](https://www.egia.com/MyContractorUniversity.com) website.

Drew Cameron and **Russ Horrocks**, president and vice president, respectively of Flow Odyssey and Energy Design Systems, LLC, spoke on "How to Create an Unprecedented Client Journey." Doing so will help you stand out in the "sea of sameness" from companies that all comparison-sell, which drives customers to comparison-shop the perceived commodities to compare apples to apples and get what they think is the "best deal."

"What is your focus? Are you building customer engagement? What are you doing to connect to customers?" Cameron asked. "Are you offering cookie-cutter solutions to every customer? Today, everybody is a critic, and they can write about you and react to you based on the experience you create. We've got to be different, legendary



Kelly McDonald assured listeners that adapting to the diverse nature of their present and future customer base is essential to success.

and iconic in what we do. It's not about serving customers' needs, it's about anticipating them.

"What's the most extraordinary thing you can do for customers? This applies to sales team, call center, technicians," Cameron said. "To be 'EPIC' requires delivering an extraordinary customer experience. Challenge the paradigms and shatter customer expectations at every touch-point. Become a category of ONE."

Russ Horrocks spoke about the danger of "information mystification", caused by the consumer's ever-increasing access to information.

"You've to find a way to be different. How can you make your company so compelling that the customer says they must buy from you? That's when you know you've done it right," Horrocks said.

Jason Young, a former senior executive at Southwest Airlines, now a training and development expert, spoke about his concept of "Servicetopia," which is based in purpose, passion, professionalism, process and pizzazz.

Gary Elekes, president, EPC Equity and iMarket Solutions, **Weldon Long** and **Drew Cameron** were featured throughout the show, both live and in recorded presentations, doing their popular "Riffing about Contracting" talks. The three EGIA faculty members were also part of an open panel Q&A session, and were peppered with questions by attendees eager to improve their contracting businesses.

Weldon Long hosted a contractor panel discussion on trust.

"People buy from people they like and trust," Long said. "I think one of the things that's important to remember is, as Steven R. Covey wrote in *The Speed of Trust*, the importance

of trust in a business relationship. In a personal relationship, trust is about your character. But in business, trust is about competency. It's so important, but we overlook it in business. We say the right things when we enter a home, show up on time, are honest, put on the shoe covers, but you have to demonstrate your competency. Don't think that the homeowner thinks you know what you're doing.

"There's nothing more frustrating than when you get to the end of a sales call and the homeowner starts comparing you to the cheaper contractor," Long continued. "Well, whose responsibility is it to make sure they don't start making that comparison? When you walk into a sales call, it's showtime! Get a piece of new lineset and a lineset that has been damaged by not doing a nitrogen purge," or other examples of your technical knowledge. You've got to prove your competence," Long said.



'The Passing Zone' team comedy-juggling duo of Jon Wee and Owen Morse entertained with daring juggling feats to show the importance of trust, preparation, practice and teamwork.

James Leichter, president and CEO of Aptora Corporation and Mr. HVAC LLC, offered presentations on service call consistency, inventory control, the importance of having the correct HVAC tools and access to parts and supplies, and ways to legitimately generate higher technician sales through diagnostics.

Speaking about the technician's service call presentation, Leichter started with the basics, including company uniform, where and how to park the company vehicle at a home, approaching the home and addressing the customer properly.

"The visual picture the client should see when they open

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the door is a clean-cut service technician, wearing a clean uniform with a photo ID badge. The client should always be able to look over the technician's right shoulder and see a clearly marked service vehicle parked at the curb."

When beginning the service call, let the client know that you're going to get to work by testing their complete system, and once you have determined the problems, you will report back to them all the details. Assure them that absolutely no repairs will occur without their express prior approval.

"Diversity is a trend, not a fad," said **Kelly McDonald**, in a presentation on the nation's changing demographics.

One in three Americans is not white. Five states have "minority majority" populations, and young people are increasingly opting out to get married. Rural communities are losing populations quickly.

"Now more than ever, it's imperative for service professionals to understand the changing demographics of the communities and groups they serve," McDonald said.

McDonald said changes in demographic changes take many forms: racial, ethnic, gender, generational, sexual preference, linguistic and life stage and level of affluence, and others. Learning about differences in values among different groups is the key to maximizing relationships, marketing efforts and business opportunities.



Scott Deming spoke on the essential need for your marketing to empower your business, so that it will stand out from thousands of other HVAC businesses.

Advertising and marketing consultant **Scott Deming**, in a presentation on Brand Distinction, told attendees that their success is directly linked to their ability to create a powerful emotional reaction in the customer.

"Awareness is only part of the circle of success. You must create an emotional brand, to create brand distinction," Deming said. "This is accomplished when you stop selling commodities, create innovative customer solutions, understand and shatter your customer's expectation, disrupt the perception of 'what a contractor is.'"

"You're all selling the same stuff. There are 14,000 contractors in a 10-mile radius in Southern California around Los Angeles. With that much 'noise' it's really hard to stand out when customers think you all do the same stuff."

Ultra-cool Closing

Daymond John created the FUBU ("For Us, by Us") clothing line at a very young age, and it has become one of the most iconic urban fashion brands in the world. Today, John is also an investor member featured on ABC-TV's *Shark Tank*.

John came to the stage all cool and collected, and proceeded to provide a uniquely stylized, multi-media trek through his history of growing up in New York City, his determination to become a successful businessman, and the daring steps he took to go from the bottom to the top in the business world, fueled by the energy and music of the hip-hop culture.

Among John's "S.H.A.R.K. Points" for success in business and in life:

Responsibility must be taken, it can't be given. Set a goal. Remember: you are the brand. And, take care of yourself. **CB**

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ACCA Increases Member Support

Our November feature on HVAC associations by Kelly Faloon had to go to press without some commentary from Barton James, CEO of ACCA. We promised to include his offering in this issue. Read on about the ways James and Air Conditioning Contractors of America has been increasing support and outreach to members.

COVID-19:

"From day one, we pushed to make sure that HVAC contractors were essential," says James. "We were ultimately successful. More than 10,000 HVACR professionals made their voices heard directly through our efforts. Our members have been working tirelessly throughout the pandemic to help keep our country's infrastructure working, in addition to keeping Americans comfortable and safe in their homes."

James notes that ACCA's advocacy program participation has remained strong throughout the pandemic on issues ranging from energy-efficiency tax incentives to the Paycheck Protection Program to education. "Our members have stepped up and played a major role in advancing the contractor agenda," he adds.

"The need to stay connected during the pandemic increased demand for knowledge in every way," James notes. "While in-person meetings were unavailable, ACCA and contractors found ways to interact and deliver necessary information through online education and webinars. We saw a major increase in enrollment for online learning. Those methods have stuck and have changed the way we do business."

Value propositions in ACCA membership:

"As our industry evolves and consolidates, ACCA is moving beyond a one-size-fits-all approach to contractor membership," James explains. "If you like the membership you have, you can keep it, but in the coming months, we will offer contractors the option to upgrade for enhanced benefits such as unlimited on-demand training and discounted membership for additional locations."

"As top contractors buy up their neighbors, the need for ACCA's consistent training, quality standards and governmental advocacy have never been greater," James says.

"Additionally, we are looking at ways to connect ACCA members directly with their representatives in Washington," he notes. "This may include everything from site visits to shop tours to Zoom calls. We want to make sure policymakers understand the



Barton James and ACCA are seeking ways to improve member outreach to Washington legislators.

importance of the work that our members do and allow our members to tell their stories in the process."

James notes that networking is an ongoing driver for ACCA members — ACCA MIX Groups, Contractor Forum and in-person events. At the organization's 2022 annual conference in St. Louis, March 28-30, ACCA will introduce SpeedNetworking to facilitate engagement in ACCA MIX Groups.

Ways that ACCA is stronger due to the challenges of the past 18 months:

"The uniqueness of the COVID-19 pandemic brought ACCA and our members closer," James notes. "ACCA has offered a robust online learning library for more than a decade. As members turned to education and training for their staff during downtimes, ACCA was able to provide more learning opportunities faster, and in a way that has now become the standard."

The pandemic brought on the return of ACCA's ComfortU on-demand education, "Rise to the Top" live virtual courses, and "Codes & Coffee". They have proven to be popular membership features.

ACCA improvements:

ACCA has completely automated the membership renewal and joining process, James notes. "A member can more easily renew online and set up membership and Quality Assured Accreditation for auto-pay with monthly or annual renewal."

James adds that the HVACR contractor organization has an all-new member portal and the ACCA 365 app, making it easier to access member benefits that support every aspect of running a successful HVACR contracting company.

"Additionally, ACCA has been working to rebuild its alliances with state and local contracting organizations — combining ACCA's national resources with their unsurpassed local networking and training events," James explains. "In recent months, the Metropolitan Air Conditioning Contractors of New York and the Minnesota Heating and Cooling Association became ACCA Allied Contracting Organizations; we're exploring new and renewed relationships with many others."

"The shift to a more virtually oriented world has affected us quite a bit," James says. "I believe ACCA has navigated the new terrain very well, if not seamlessly. We're proud that we've been able to deliver for our members every step of the way without any interruption in our operations." — Kelly Faloon **CB**

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COMPRESSORS

Danfoss has expanded the capabilities for Turbocor® compressors TTS and TGS with higher saturated suction temperature (SST) operating range—helping OEMs to bring the benefits of oil-free technology to data centers operating at higher space temperatures.



Allowances for data center cooling temperatures have risen steadily in recent years, thanks to new server technology allowing them

to operate at higher space temperatures—giving operators greater flexibility to benefit from lower power, infrastructure, and operating costs. Danfoss is now helping chiller OEMs meet this evolving need without sacrificing reliability and efficiency by expanding the operating range of its Turbocor compressors.

Available on TTS and TGS compressors designed for both air-cooled and water-cooled chillers, the new high-SST option enable select Turbocor® models to generate leaving water temperatures as high as 28°C, substantially reducing compressor load and power consumption.

This change enables OEMs to offer next-generation operators all the benefits that have made Turbocor oil-free compressors a proven, successful choice for data center chillers—such as efficiency, accuracy, and long-lasting reliability with no performance degradation over time.

danfoss.com

The LG Component Solutions Business Unit specializes in compressors and motors optimized for both residential and commercial applications. Designed to fit a variety of needs, LG sources report its compressor products represent the world's best components and achieve world-class energy efficiency and eco-friendly performance. By continually working to optimize design with highly precise machining and assembly, LG Component Solutions Business Unit supplies its partners with the latest in advanced technology.

Visit www.lg.com/global/business/compressor-motor for additional information.

Visit www.lg.com/global/business/compressor-motor/inquiry-to-buy to request a quote, purchase, or consultation.

DUCTLESS SYSTEMS

Daikin's VRV LIFE system is an industry first, ducted style furnace and evaporator coil system combination – furnaces with evaporator coil combinations have been a common HVAC application throughout North America for many years and now also available with Daikin's world class VRV inverter technology. VRV LIFE systems are designed specifically for residential applications, whether its single-family homes, townhomes, or condominiums. The



* Dual-Fuel is achievable only when VRV indoor units and gas furnace and boiler are connected to one VRV LIFE™ system outdoor unit.

precision engineering of the new VRV LIFE systems provide flexibility, zoning, low sound and space savings, with the ability to mix and match several styles of both ducted and duct-free indoor models to accommodate the typical and the not so typical HVAC applications. Up to 9 indoor units can be connected to a single outdoor VRV heat pump to heat or cool, with high heating capacities well below 0°F (-18°C). Daikin VRV LIFE systems use inverter driven VRV technology to solve some of the age-old residential HVAC challenges. Compressors are the heart of your heating and cooling systems and, as the single most energy consuming part of a system, it is important to understand that not all compressors are created equal. Traditional HVAC systems use single speed or dual speed compressors, while VRV LIFE systems are equipped with revolutionary Daikin variable speed inverter technology. daikincomfort.com/go/vrvlife/.



Under a suite of new accessory offerings called Friedrich FreshAir™ IAQ, Friedrich Air Conditioning Co., a leading U.S.-based manufacturer of air conditioners and other home environment products, has embraced the latest scientific recommendations for how to best achieve exceptional indoor air quality by removing harmful pathogens and viruses, along with other micro-contaminants such as airborne bacteria and mold spores. Friedrich FreshAir IAQ utilizes an arsenal of sophisticated technology options that work in separate and multiple combinations—depending on product configurations and specific IAQ needs—to address the essential aspects of how to deliver safer and cleaner indoor air quality for both residential and commercial customers. For residential customers, Friedrich

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VENUE: MGM Grand® Hotel
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New IAQ System Eradicates COVID-19 Virus in HVAC

SAN DIEGO, CA -- With indoor air quality more essential than ever with the infectious COVID-19 still active worldwide, eradicating the virus while it's airborne is crucial to mitigating its transmission.

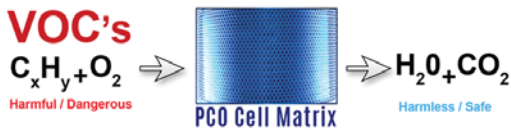
Energy Cloud, a clean-tech company specializing in healthy buildings and energy efficient environments has invented what it believes is a solution, with its hummingbird™ EQ, an air purification system that captures and deactivates airborne COVID-19 virus.



The hummingbird EQ with Air Vaccine technology was independently tested by a distinguished team of epidemiologists and professional engineers assembled by Black & Veatch – a global infrastructure leader vastly experienced in pathogen-tracking methods and construction of biological safety-related sites.

The technology's deactivation of the virus was independently tested and proven with all Biosafety Level 3 (BSL-3) work performed within The Hastings Foundation and Wright Foundation laboratories at the University of Southern California (USC).

"With respect to the air purification aspect, our product includes photocatalytic oxidation which incorporates UVC light as part of the solution, which creates a catalyst when hitting our Titanium Dioxide grid. Our system packages particulate filtration, VOC reduction and viral / bacteria reduction all in one compact and efficient box which is important for easy installation," said Energy Cloud, Inc. CEO, John Carrieri.



The hummingbird™ system packages particulate filtration, VOC reduction and viral/bacteria reduction in one compact and efficient box, which is important for easy installation.

The information can be seen through a QR Code displayed on the buildings outside doors and windows as well as web URL links that can be viewed on any computer or smart device.

Worldwide Distribution

CEO John Carrieri said Energy Cloud has established national and international distribution for hummingbird, with many new distributors joining in, "including those that recognize that hummingbird™ is more effective than the existing ionization products that they had been selling," he added.

Funding for the development of the product was provided in partnership with Black & Veatch's IgniteX COVID-19 Response Accelerator. SARS-CoV-2 BSL-3 resources were supported by a grant from the W.M. Keck Foundation's COVID-19 research fund.

Read more about hummingbird online, at bit.ly/hummingbirdinCB.

now offers its ductless systems with advanced air purification options, including FreshAire UV germicidal light and bi-polar ionization. Both methods are proven to help kill mold, bacteria and viruses to deliver healthier indoor air quality, while also safely reducing allergens, smoke, static electricity and controlling odors without creating ozone or harmful byproducts. friedrich.com

Fujitsu General America, Inc. in spring released a single-phase J-IV and J-IVs Airstage VRF heat pump systems to replace the J-II and J-IIs lines. These new systems serve heating and cooling applications between 3- and



5-ton capacities, making them ideal for the residential and light commercial markets.

The new air-to-air heat pumps feature expanded heating operation ranges, offering powerful heating capacity at an outdoor ambient temperature of -15°F.

The J-IVs offers efficiency levels up to 19.7 SEER and is available in 3- and 4-ton capacities, while the J-IV offers up to 19.8 SEER and is available in 3-, 4- and 5-ton capacities. J-IV models also allow up to 150 percent connection capacity of indoor units.

KINGHOME is a premier residential air conditioner brand that is fully owned and manufactured by GREE Commercial USA. Kinghome Ultratrix, a universal condensing unit, offers a quiet, compact side discharge design equipped with Gree's two-stage enhanced inverter compressor technology. The Ultra Heat unit features an applied 1500 hours of anti-corrosion protection and additional heat capacity: 100% stable at -5F, 80% capacity at -22F. This product is offered in a range of 2 to 5 tons, heating and cooling mode, and cooling only mode. The latest inverter innovation allows the Kinghome Ultratrix condensing unit to transform the traditional condensing unit from a low SEER to a 20 SEER.

Locate distributors at gree-america.com.

Mitsubishi Deluxe Wall-mounted Indoor units are available in an extensive range of sizes and include an improved, remote controller featuring backlit display with easy-to-read operation modes. The Deluxe Wall-mounted H2i plus™ System also includes MUZ-FS heat pump outdoor units equipped with new-to-market H2i plus™ technology. H2i plus provides up to 100



percent heating capacity at outdoor ambient temperatures as low as -5° F. H2i plus is designed for continued performance down to -13° F without the need for supplemental heat. MUZ-FS model outdoor heat pump units are available in 6, 9, 12, 15, and 18 KBTU/H capacities. mitsubishicomfort.com

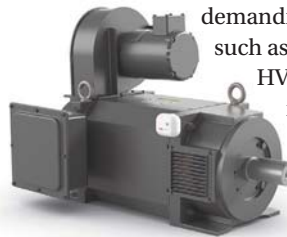
Samsung's exclusive WindFree™ cooling technology "provides end-users with a cool indoor climate and optimal energy efficiency without the discomfort of direct cold airflow. Samsung's WindFree™ 2.0 system can be configured for 2-step operation, cooling the space with the louver open until the room nears set temperature. WindFree™ operation will start automatically closing the louver and disperse cold air through micro holes on the unit's front panel to gently cool the space with still air without blowing air directly onto occupants. The WindFree™ feature is optional and can be enabled using Samsung's SmartThings application or system control options. WindFree 2.0 is equipped with built-in Wi-Fi. Users can remotely regulate temperature, adjust



settings, receive real time updates about performance and daily energy usage, as well as troubleshoot solutions when a repair is needed. The unit also features AI technology through its AI Auto Mode which allows the system to learn how the end user controls the system and adapts itself to optimize comfort and efficiency. samsunghvac.com

MOTORS & DRIVES

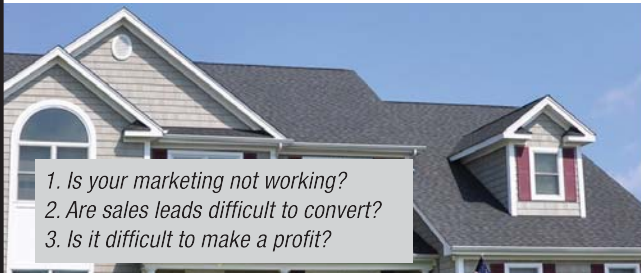
Baldor-Reliance Generation 3 RPM AC motors, from 1HP to 1750HP, with customizable speed ranges in nearly any enclosure type, are designed to handle the most demanding applications in industries such as chemical, oil and gas; plastics; HVAC; energy; metals and industrial automation. RPM AC motors are optimized for adjustable frequency service - not just a re-rate or over framing of a standard motor. All Baldor-Reliance RPM AC motors are designed to provide continuous constant torque from base speed down to and including zero speed, which means that the RPM AC motor will generate full rated torque, run continuously and not overheat at any speed below base speed. abb.com **CB**



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AMPLIFY™ Overhead Fans with Northern Light® Technology from Greenheck

Greenheck, the leader in air movement with the industry's most comprehensive selection of products for commercial HVAC systems, introduces AMPLIFY with Northern Light. Northern Light is a patented technology that combines AMPLIFY™ overhead HVLS fans with UV-C lighting to inactivate airborne viruses and bacteria. Upper room UV lighting systems (also known as UVGI – ultraviolet germicidal irradiation systems) have been used for decades to fight infection in medical facilities and are recommended by the CDC, ASHRAE, and other organizations as an effective solution to reduce the risk of airborne virus transmission, including the virus that causes COVID-19. These systems use the natural rise and fall of convection or mechanical air currents to circulate airborne infectious agents into the upper room, where they are exposed to UV-C radiation and inactivated.

Studies have shown that ceiling fans can increase the effectiveness of upper-room UVGI devices by more than 60% when used together due to the improvement in air mixing and distribution provided by the fans. AMPLIFY with Northern Light's unique, patented design combines the air cleaning benefit of upper-room UVGI with the air circulation capabilities of overhead fans to create an efficient solution for disinfecting and distributing clean air. AMPLIFY overhead fans with Northern Light technology also provide a climate-friendly solution, as less energy is required for effective air cleaning when compared to alternative HVAC solutions like increasing outdoor air changes or operating traditional UVGI systems.

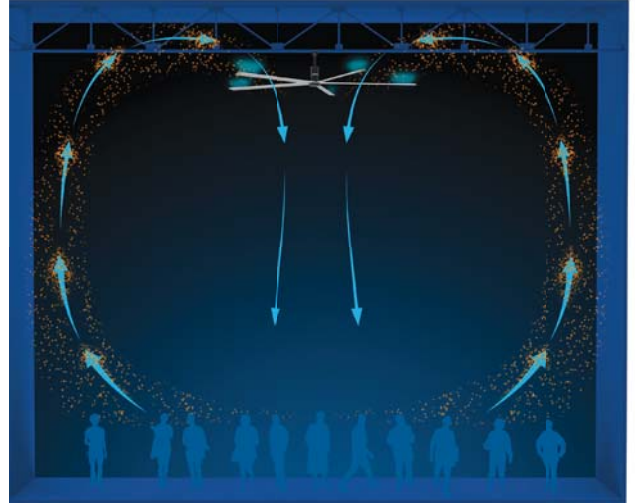
HOW NORTHERN LIGHT TECHNOLOGY WORKS

Non-ozone generating UV-C bulbs are installed inside the AMPLIFY fan blades and positioned toward the tips of the blades where the majority of air movement occurs for the most effective inactivation of pathogens.

As the fan operates, contaminated air from the lower portion of the room is circulated to the ceiling where it is exposed to powerful UV-C light as it moves across the fan's blades. This UV-C light damages the genetic material (DNA and RNA) of pathogens in the airstream, removing their ability to replicate and rendering them inactive. The resulting clean air is then circulated back into the lower portion of the room where occupants are present.

SAFETY IS BUILT IN

AMPLIFY with Northern Light's upright design directs UV-C light away from occupants, minimizing UV radiation exposure so that fans can be safely utilized in occupied spaces. Fans are also installed a minimum of 10 feet above the floor to further prevent direct line of sight to UV-C lights. In addition, the system features interchangeable UV-C irradiation dampers that physically reduce the size of the opening in the fan blade



UV-C lights positioned where majority of air movement occurs creates a larger inactivation zone.

for UV-C light to shine through. This reduces the UV-C radiation intensity by as much as 95%, allowing end users to customize UV output for effective yet safe pathogen inactivation in their space.



UV-C IRRADIATION DAMPERS

Selection tools are available in Greenheck's CAPS® and eCAPS® product selection programs that utilize engineering data to help users identify an appropriate fan size and quantity of fans for their space. These tools remove guesswork from the selection process and ensure you are getting the right amount of air cleaning for your space.

Learn more at greenheck.com/hvls

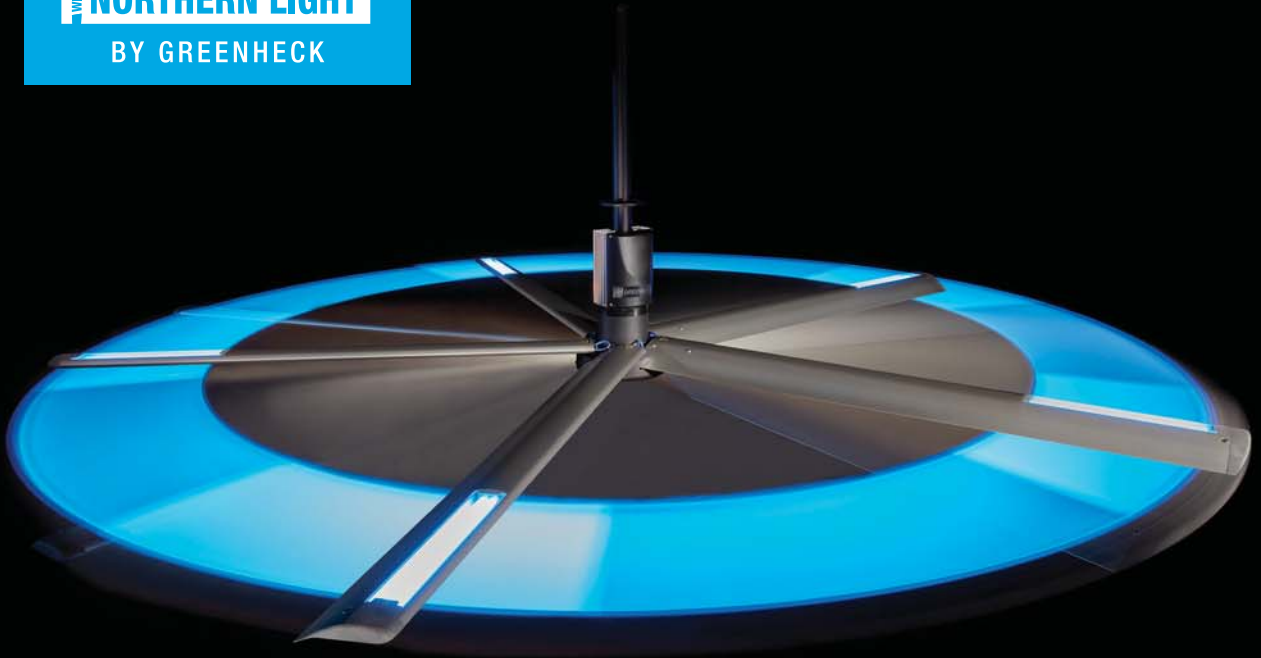


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AMPLIFY™

WITH NORTHERN LIGHT®

BY GREENHECK



Innovation Applied™

Overhead fans combined with strategically-placed UV-C lighting to inactivate airborne pathogens.

AMPLIFY™ overhead fans with patented Northern Light® technology combine engineered air movement with the air cleaning benefit of UV-C lighting making it the right selection for inactivating airborne pathogens.

- Northern Light UV-C technology installed toward the tip of each fan blade where the majority of air movement occurs to maximize pathogen inactivation.
- Uplight design directs UV-C light away from occupants and into the upper-room where air is being circulated by the fan. This minimizes occupant exposure to UV radiation making the system safe for use in any space.

AMPLIFY with Northern Light — That's Innovation Applied.



UV-C lights positioned where majority of air movement occurs for optimized effectiveness.

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Lennox 'Feel the Love' Continues to Bring Comfort

RICHARDSON, Texas – It was a fulfilling summer for Lennox Industries, as it partnered with HVAC dealers across the U.S. and Canada to install 130 HVAC units in 37 U.S. states and 5 Canadian provinces, as part of the Lennox “Feel the Love” program.

Selected homeowners received heating and cooling equipment free of charge throughout the second week of October in Lennox’ first, week-long installation event.



Each Feel The Love recipient is an unsung hero who may be going through hardship, facing adversity or in need of community support. Recipients were nominated by their neighbors, friends and family members as a way of bringing hope and support to homes across North America. In 2021, Lennox continued to expand the Feel The Love program to honor essential and frontline workers who went above and beyond to keep their communities safe during the COVID-19 pandemic.

The Feel The Love program is made possible through the ongoing partnership of the Lennox dealer network across North America. Since the inaugural Feel The Love program in 2009, Lennox and its dealers have completed over 1,600 free installations, with 130 installations occurring in 2021 alone. Every donated unit comes complete with 3-year Comfort Shield Labor Protection Plans, and Feel The Love dealers



Summers and Smith team, Ontario. Photos courtesy of Lennox Industries.

donate their time and labor to make the program a success.

“At Lennox, we believe everyone deserves clean, perfect air, and we’re dedicated to making sure everyone feels safe and comfortable in their own homes,” said Kim McGill, Vice President of Marketing at Lennox Industries. “Through our Feel The Love program, we honor local heroes in the communities where we work and live and are proud to give those in need the perfect air they deserve, thanks to the collaboration and generosity of our dealer partners.”

[FeelTheLove.com](https://www.LennoxTheLove.com).

Emerson Launches First HVACR Educator Resources Platform

November 4, 2021 – Emerson announced it has launched its first HVACR Educator Resource platform, designed to provide industry educators with access to tools, training and educational materials to enhance learning for the next generation of HVACR professionals.

The HVACR Educator Resource site includes additional training tools, student learning materials and educator trainings. For those who register, there are exclusive HVACR educational tools and curriculum for educators that offers training kits, causes and prevention of compressor failure curriculum, a compressor multiples technology E-learning module and HVACR career recruitment materials.

Within the HVACR Educator Resource site, there is a wide range of educational features including a Copeland™ scroll compressor training kit. This kit offers a detailed look inside a scroll compressor, through a torn-down model from Emerson’s state-of-the-art lab, offering a hands-on approach to learning the fundamentals of compression technology. The kit also includes custom safety equipment, supplemental learning materials and interactive digital content to provide a comprehensive educational experience.

“The industry continues to face challenges that come with

the skilled trades gap, and it is more important now than ever to support the educators helping to overcome that gap, said Brent Schroeder, group president, HVACR Technologies for Emerson. "This new website provides easy, centralized access to a wealth of educational resources to help educators teach the next generation of HVACR professionals."

Emerson has recently donated a number of resources, including compressor training kits, RIDGID® tool kits and

more, to support skilled trades education and recruiting the next generation of technicians for careers in the HVACR industry. The HVACR Educator Resource site serves as the next phase of industry education support.

Exclusive access to all materials is available once registration is complete. For more information on how to sign up, visit the Educator Resources website, at bit.ly/Emersonresources. **CB**



AHR Expo Names Innovation Winners

WESTPORT, Conn., October 20, 2021 – The AHR Expo (International Air-Conditioning, Heating, Refrigerating Exposition) has announced the winners of the 2022 AHR Expo Innovation Awards. Each year, winners are chosen in 10 industry categories to represent the most innovative products and technologies hitting the market in the coming year.

AHR Exposition exhibitors submit new products and technologies for recognition via review and selection by a panel of third-party judges made up of distinguished ASHRAE

members. Entrants are evaluated based on overall innovative design, the creativity of the product or service offered, application, as well as potential market impact.

The categories are: building automation, cooling, heating, indoor air quality, plumbing, refrigeration, software, sustainable solutions (formerly green building), tools and instruments, and ventilation. The 2022 AHR Expo will be held Jan. 31-Feb. 2. in the Las Vegas Convention Center.

Building Automation

iSMA CONTROLLI S.p.A., for the Hybrid IoT Controller powered by Niagara Framework



Cooling

Danfoss, for the Danfoss Turbocor® VTCA400 Compressor

Sustainable Solutions (formerly Green Building)

Enginuity Power Systems Inc, E/ONE Home Power System



Heating

Carrier, for the Infinity® 24 Heat Pump with Greenspeed® Intelligence

IAQ

Antrum, for the AntrumX™ IAQ Facilities Monitoring System



Plumbing

Franklin Electric/Little Giant, for the Inline SpecPAK, Multi-Pump Pressure Boosting System

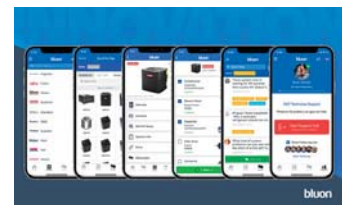


Refrigeration

ebm-papst Inc., for the AxiEco 630-910 Axial Fan

Software

Bluon, Inc., for the Bluon Support Platform



Tools & Instruments

Fluke Corporation, for the Fluke 378 FC Non-Contact Voltage True-rms AC/DC Clamp Meter with iFlex

Ventilation

Aldes, for the InspirAIR® Fresh



CB

JOBSITE TECHNOLOGY

BuildOps - <https://bit.ly/buildopsvideo>

BuildOps is an HVAC software package built by and for commercial contractors. Designed to keep your entire team on the same page, BuildOps features assist contractors in scaling their project operations with improved communication and coordination. BuildOps software manages HVAC scheduling and dispatching, invoicing, and customer management.

With BuildOps, a mechanical team's office staff has a live view of every technician's status and who is available for the next job. So planning days, weeks, and months in advance becomes as easy as "drag and drop." This applies to work-force capacity planning, live updates of technician status and scheduling by a single technician or grouped into teams. When invoicing, users can build and track proposals to ensure sales opportunities never slip through the cracks. Customers can accept proposals with the click of a button. Managers can review and approve invoices in real-time.

BuildOps HVAC customer management software helps users know customer history: past jobs, equipment, contacts and more are all in one place. Jobs and equipment can be managed across multiple customer sites. Photo recognition captures equipment and parts numbers and provides automatic maintenance reminders.

Justin Wetherby, senior implementation manager for BuildOps, said the first step in a consultation is to understand the HVAC contractor's business.

"We take a consultative approach on the sales side and especially on the implementation side. At BuildOps I'm part of our product team and implementation team. The feedback loop between our customers and our product is really tight. I literally play both roles. Understanding the HVAC contractor's business is key."

Wetherby said the top two considerations are size of company and type of HVAC work performed.

"Once we understand their type of work, we go down a couple different software paths," Wetherby explained. "They could be commercial or residential, or service, or larger, project- focused. They might be half-service/half large project focused. Based on the size of the contractor, we're going to have an idea of what their accounting package will be, some of their processes and key players, because a shop of five techs is going to have a different makeup in the office than a shop of 50 technicians."

Next, Wetherby said they will consider the existing technology being used by the contracting business, or its "tech stack," which includes existing accounting package and other technology, if any a contracting business is using.

"When I'm advising an HVAC contractor on what sort of software they should be looking at, I first want to understand their business, and ask the generic question of 'where are your pain points? What problems are you trying to solve? Those

could include timekeeping, labor management, document control, field-to-office communication. That's where I start when advising contractors on what sort of software they should be looking for," Wetherby said.

SAGE - [sagecre.com](https://www.sagecre.com)

Formerly Timberline® Software, SAGE 300 CRE offers contractors, developers, and property managers comprehensive functionality for managing risks related to subcontractors and vendors, customizable reports and powerful add-ons that improve visibility, and tools that enable real-time collaboration throughout all phases of a project anytime, anywhere.

Each construction project is built upon an intricate web of data, countless decisions scattered across multiple teams, and numerous workflows. Project success depends on the managers' ability to untangle that data, to provide their teams with accurate, real-time information.

SAGE offers SAGE 300 Construction and Real Estate (CRE) as a solution to project disorder. Described by SAGE as the industry-leading construction and financial management solution, SAGE 300 CRE is designed to manage entire project and property lifecycles. SAGE 300 CRE integrates accounting and project management data, to create a comprehensive overview of business performance. Each user experience is tailored to fit a unique role, to seamlessly facilitate collaboration and improve productivity across your entire organization. Real-time updates inform data-driven decisions, and SAGE 300 CRE integrations give project managers the power of choice, in best-of-breed operational solutions.

Verizon Connect - [verizonconnect.com](https://www.verizonconnect.com)

For businesses that manage and maintain equipment in the field, Verizon Connect has introduced its compact, discreet asset tracking solution that is easy to conceal, self-install and self-manage, to help Reveal customers reduce theft, improve equipment utilization and billing, and reduce equipment downtime with a replaceable battery.

Designed exclusively by Verizon Connect for customers who are running their mobile business on the Verizon Connect Reveal fleet management platform, the new asset tracker device was built for easy self-installation, customizable check-in rates, and the replaceable battery significantly extends the life of the device and its value. Now, generators, trailers, storage containers, yellow iron and other equipment can be located and managed remotely — as well as their vehicles, drivers and jobs — online through the Verizon Connect Reveal fleet management platform or the Verizon Connect Spotlight app.

Using Verizon Connect Reveal, fleet managers are able to track and provide real-time evidence of accidents or incidents on the



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INFINITE COMFORT

road, and then use these resources to dispute or verify insurance claims. For example, Verizon Connect customer, CMC Logistics, deploys another Verizon Connect solution, Integrated Video. When one of their vehicles was caught in an accident, they were able to use video footage from the dash cam and as a result received \$1,500 in damages.

Verizon Connect Reveal helps fleet managers manage their fleet vehicles, people, and jobs in a variety of ways beyond just locating equipment. Reveal tracks odometer readings, fuel usage, idle time, driver behavior and more, delivering rich analytics key information, and numerical scores about individual driver performance and vehicle health that fleet managers can personalize, so that drivers are reaching custom safety KPIs and vehicle maintenance is scheduled appropriately for the business.

A recent Verizon Connect release showed that customers have seen significant improvements through cost reductions, a focus on driver safety and reduction of vehicle idling. Customers experienced significant reductions including up to 87% in harsh driving events, up to 86% in speeding

and up to 81% in engine/vehicle idling.

Verizon Connect also offers road and driver facing dash cameras. To help fleet managers better understand specific driving events, Verizon Connect driver facing and road facing dashcam begin recording when a vehicle is started, and using AI, it reviews footage based on driver behavior triggers including hard braking, hard cornering or rapid acceleration.

Machine learning classifies the video footage as a collision, dangerous, harsh driving or low risk. The dash cams can also be programmed to provide alerts to the fleet managers and owners when harsh driving events are recorded

Fleet managers can also use Verizon Connect for compliance services. Verizon Connect offers integrated all-in-one ELD solution where fleet managers and dispatchers can access daily and weekly hours logged, time remaining, hours of service (HOS) status, violation alerts and Driver Vehicle Inspection Reports (DVIR). Verizon Connect helps make compliance less of a burden for commercial drivers with fleet management system integration and 24/7 mobile app support. **CB**

Pure Mechanical Group Levels Up Its Estimating Process

Pure Mechanical Group, Inc. is a leader in commercial and industrial HVAC construction and services contractor in the Durham Region/Greater Toronto Area, and is the only unionized mechanical company in Oshawa, ON. The company has grown significantly and it recently started growing the construction side of its business by adding more staff with construction industry experience.

Inaccurate Information Impacted Profitability and Efficiency

When Fertile started bidding on additional jobs, the company was successful just holding a ruler up to the computer screen to measure plans for its estimates. However, he knew the company's bids would need to be much more accurate if he wanted the company to grow. In addition, as the company began to do more fully installed HVAC projects, Fertile noticed that they were losing money because they were not being true to their hours. The profit margin was always good for the materials, but it was the labor hours that were hurting the bottom line. Another problem with the old way the company was doing estimates was in the limited number of quotes it could produce and the amount of time it took to get them done.

Beating the Competition with Innovative Technology

Fertile reached out to his local union to determine what other companies were using to do their estimates. Several of them mentioned Trimble AutoBid. Although Pure Mechanical is much smaller than its competitors, the company decided that using the software would help level the playing field and be a good first step in the company's growth.

The mechanical estimating software leverages a prebuilt database of over 100,000 items. Trimble's AutoBid Sheet-Metal estimating software includes spec-driven takeoffs that speed up the estimating process by applying specs

that automatically determine the properties of items.

Accelerating the Estimating Process and Winning More Bids Fuels Company Growth

Adoption of this software has been a key component of Pure Mechanical Group's growth. It makes the company more competitive by leveling the playing field against bigger companies, speeds up the estimating process so it can bid more jobs to bring in more work, and increases the accuracy and confidence of its bids. Pure Mechanical is now able to compare pricing and see where it stands against its competitors when bids are awarded.

"We've been consistently competitive with everyone else. One of the first jobs estimated using Trimble AutoBid, we were off by only \$600 compared to our closest competitors," said Fertile. "We are now focused on making sure we are quoting the right jobs with the right contractors to grow the business. If we can increase our quoting volume, we can increase the number of wins."

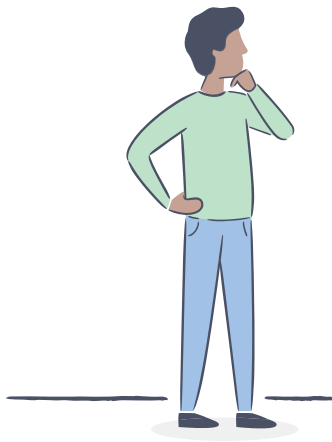
The company has won up to \$285,000 worth of new work that it would not have had time to quote previously, which also helped it stay afloat during the pandemic and avoid layoffs. In addition, Pure Mechanical has rapidly increased the number of quotes it can bid on for new business and reduced the amount of time it takes to do each one. In fact, within three weeks it was able to quote over \$1 million dollars in work, due in large part to the new software. In the past, this would have taken between three to six months to accomplish.




"If you had asked me six months ago if we could bid that much business in less than a month, I would have said that was impossible," said Fertile.

Read more about this success story online, at bit.ly/puremechanicalcb. **CB**

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- Standard built-in CANbus interface as field-bus to exchange information between controllers and accessories
- Gateways to other protocols communication like Bacnet, LonWorks, Web, etc. danfoss.com/en-us

Supervisory Control Platform Streamlines Facility Management

Emerson's Lumity supervisory control platform is designed to streamline facility management

and simplify operational complexities by enabling top-down visibility and robust control of all systems within a network. Smart software serves as the platform's foundation, delivering an intuitive, user-friendly and web-accessible experience. The Lumity supervisory



control platform gives users two powerful facility management control device options: the all-new Lumity supervisory control E3 with an integrated touch-screen display, and the Lumity supervisory control SS (also known as Site Supervisor) with optional mounted display.

The new platform provides visual store management and robust control of refrigeration systems and buildings. With the same form and fit as the previous version E2 controller, the Lumity E3 controller is a quick drop-in replacement to the E2. Emerson.com/E3

AHR Award-winning Fan Features New Impeller, Rotating Diffuser

The winner of a 2022 AHR Expo Innovation Award for Refrigeration, the ebm-papst Inc., AxiEco 630-910 Axial Fan incorporates new impeller geometry with a rotating diffuser

and optimized blade design in order to reach a low noise level and high-efficiency.

The steep air performance curve provides a pressure increase of more than 700 Pa, which is extraordinary for axial fans. With a maximum air flow of up to 30,000 m³/h, the AxiEco 630-910 covers a wide range of different applications, especially those where high-efficiency and high back pressure are key. ebmpapst.us



Two Refrigeration Finalists in AHR Innovation Awards:

Emerson

To help end-users comply with refrigerant regulations and/or meet sustainability objectives, the Copeland horizontal variable speed scroll compressor is approved for use with the next generation of lower-GWP refrigerants, including A1 (R-448/49A) and A3 (R-290) which have already been approved, as well as A2Ls in the near future. The recent R-290 charge limit increases approved by Underwriters Laboratories' UL 60335-2-89 standard should also set the stage for the use of larger-capacity, R-290 based, self-contained display cases.



emerson.com

Johnson Controls-Hitachi

The partnership between Johnson Controls and Hitachi Air Conditioning makes innovative Hitachi horizontal scroll compressors available to North American based refrigeration

equipment manufacturers. ZS and DS series horizontal scroll compressors save space, reduce energy costs, enhance sustainability, and minimize noise and vibration. Hitachi horizontal scroll compressors are a perfect complement to Johnson Controls PENN® brand of commercial refrigeration controls and smart connected solutions.

Johnson controls sources explain that together, they support Open Blue Healthy Buildings, a dynamic connected platform from Johnson Controls for healthy people, healthy places, and a healthy planet. jci-hitachi.com **CB**





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Prioritizing Refrigerant Compliance

New refrigerant regulations reshape selection criteria.

by Andre Patenaude, CET

Over the past several years, the dynamic regulatory landscape has influenced the selection of commercial refrigeration equipment. Uncertainty about which refrigerants would be available for use — and which would be phased out — has dominated the conversation. In the meantime, operational safety, reliable system performance, total cost of ownership (TCO) and sustainability have become the primary selection criteria.



Andre Patenaude, CET

But with the passing of the American Innovation and Manufacturing (AIM) Act in late 2020, regulatory compliance is again becoming a top priority. The AIM Act brings hydrofluorocarbon (HFC) regulations back into focus at a national level — not just for operators within California and U.S. Climate Alliance states — and promises to end the federal stalemate on the phasedown of HFC refrigerants. And for the

commercial refrigeration sector, re-establishing the authority of the Environmental Protection Agency (EPA) to regulate refrigerants will provide much needed regulatory uniformity.

After dealing with years of uncertainty, many organizations have developed refrigerant transition fatigue. Some are seeking a strategy that would remove iterative steps and get them to the end game of compliance. Others prefer to take a more incremental approach, i.e., focusing on a strategy that meets near-term compliance targets but is also capable of adapting to future standards.

Regardless of which approach aligns with your operational objectives, it's important to be aware of the regulatory implications, available refrigerant options and the refrigeration technologies that enable them.

Understanding the Lay of the Landscape

With the passing of the AIM Act, many industry stakeholders are actively engaged in shaping the regulation with the goals of:

- Supporting the EPA's renewed HFC phasedown efforts
- Aligning national phasedown schedules with those already defined by certain U.S. states
- Creating a standardized national phasedown approach



Hillphoenix, CO2 Booster Transcritical with Emerson Compression and Controls. Emerson

CARB Proposals

In the U.S., California has led the way on the HFC phasedown and has established an ambitious timeline via its California Air Resources Board (CARB) proposals. CARB's current proposal, which is scheduled to go into effect in Jan. 2022, will include the following rules:

- **New facilities** — Installation of new refrigeration systems containing more than 50 pounds of refrigerant will be required to use refrigerants with less than 150 global warming potential (GWP).
- **Existing facilities** — Installation of new systems would be subject to company-wide, fleet GWP reduction targets by 2030 compared to their 2019 baselines.

CARB offers two paths to compliance for new systems in existing facilities:

1. Weighted-average GWP (WAGWP) reduction < 1,400 GWP by 2030, where WAGWP is the sum of the total refrigerant charge of every system greater than 50 pounds in every store in California.
2. Greenhouse gas emissions potential (GHGp) reduction by 55%, where GHGp is the sum of the total refrigerant charge of every system greater than 50 pounds in every store in California multiplied by the GWP values of the refrigerant types in use.

Not only have CARB's proposals served as a framework for member states of the U.S. Climate Alliance, they are also influencing the path forged by the AIM Act. For food retailers throughout the U.S., it's no longer possible to assume that



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regulations will only impact those operating in California and U.S. Climate Alliance states.

AIM Act Stewardship

While the AIM Act compliance dates and GWP limits per application are still in the proposal stages, industry stakeholders — such as the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) — are asking that the HFC step-down occurs in two steps over the next five years. Per AHRI's request:

- **Step 1** would begin on Jan. 1, 2022: reducing refrigerant GWP to 1,500 in new remote commercial refrigeration systems > 50 pounds; 2,200 GWP for ≤ 50 pounds.
- It would restore SNAP Rules 20 and 21 standalone, self-contained refrigeration systems, delisting the use of high-GWP HFCs in favor of lower-GWP alternatives.
- **Step 2** would take effect in 2026 and require maximum 300 GWP level in new standalone, self-contained refrigeration systems; remote refrigeration systems; and industrial and processing refrigeration (without chillers).
- This would apply to new equipment with a date of manufacture in 2026.
- The selection of a 300 GWP limit — versus CARB's 150 GWP maximum — would allow a broader portfolio of products to transition to below 300 GWP with available and future alternatives, while preserving energy efficiencies in needed equipment categories.

Following this proposed schedule, new system installations will have to meet reduced GWP levels in the 1,500 range by 2022. And in four to five years, approved refrigerants will likely be limited to those with much lower GWP levels. With these dates on the horizon, operators should develop a refrigerant transition strategy that accounts for a quickly accelerating HFC phasedown.

Following Kigali Amendment Timelines

The AIM Act directs the EPA to establish HFC production and consumption phasedown limits within the next nine months that are consistent with the Kigali Amendment. These reductions, which are relative to a 2011–2013 baseline, would include:

- 10% reduction in available supply in 2022
- 40% reduction in available supply in 2024

These phasedowns are expected to not only drive up the price of HFCs but signal the end of a high-GWP HFC era in commercial refrigeration. **CB**

Andre Patenaude is responsible for supporting system-related innovation and leveraging Emerson's global cold chain to drive adoption of integrated solutions in North America. He most recently led marketing efforts pertaining to Emerson's food retail and chiller markets. Prior to that, he had managed Emerson's global CO₂ development.

Alternative Refrigerant Options

R-448/449A (low-GWP option)

- GWP: 1,387; classification: A1; Relative GWP reduction: Offers a 65% GWP reduction compared to R-404A (3,922 GWP). Recommended uses: suitable for centralized direct expansion (DX) retrofits and new distributed systems; not to be used as a drop-in replacement.

R-407H (low-GWP option)

- GWP: 1,380; classification: A1; relative GWP reduction: offers a 65% GWP reduction compared to R-404A (3,922 GWP). Recommended uses: refrigeration applications such as supermarkets, standalone refrigerators, walk-in coolers and remote condensers.

R-513A (lower-GWP option)

- GWP: 631; classification: A1; relative GWP reduction: zero-glide refrigerant delivers a 56% GWP reduction compared to R-134a (1,430 GWP). Recommended uses: frequently used in new distributed systems such as distributed scroll booster; not to be used as a drop-in replacement.

A2L and A3 (lower- to lowest-GWP)

- GWP: 1; classification: natural. Recommended uses: used only in systems designed to handle its high-pressure, low critical point (87.8 °F) and high triple point (-69.8 °F). Special considerations: requires operators to have access to trained CO₂ technicians; relatively higher TCO than other alternatives.

Strategies for Compliance

- Retrofit to R-448/R-449A in existing centralized DX systems
- Distributed remote/outdoor condensing units (OCUs)
- Distributed scroll racks
- Micro-distributed (self-contained) units.
- Distributed scroll booster
- CO₂ transcritical booster (centralized)

READ ABOUT EACH SYSTEM ONLINE AT:

<https://bit.ly/prioritizecompliance>.

Helping Industry in Transition

Today in the U.S., HFC phasedown regulations are still being finalized. But since the AIM Act is aligned with the Kigali Amendment's phasedown steps and plans to eliminate HFC refrigerant supplies in the coming years, we can expect the EPA's sector-based rules to closely resemble current proposals, while balancing the demand side of the equation.

Emerson is actively participating in stakeholder groups, such as AHRI, to create a path forward for the entire industry. — AP

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Refrigerant Transitions: Q&A for Contractors

Significant regulatory action related to the use of heating, air conditioning and refrigeration refrigerants is upon us. Here are some answers.

The U.S. Environmental Protection Agency wants there to be an 85 percent reduction in HFC refrigerant consumption over the next 15 years. And beyond being a simple switch from one refrigerant to another (as with the R-22 to R-410 transition), this EPA-mandated action involves a significant reduction of a wide range of HFC and HCFC refrigerants. Additionally, the expanding use of A2L (mildly flammable) refrigerants — prized for their very low global warming potential — has added a layer of complexity and caution to previously run-of-the-mill refrigerant transition and training processes.

HVACR industry thought leaders have been at work disseminating the information HVACR contractors will need to know, and where their compliance will be most required as the months and years go by. We asked two of those thought leaders — Dr. Charles ‘Chuck’ Allgood, Technical Fellow, Refrigerants, for Chemours; and Stephen Spletzer, R&D Principal Engineer, Technology, for Chemours — to answer some of the critical questions surrounding this transition. Both men are frequent presenters at industry events. We thank them for their contribution. — Terry McIver, editor-in-chief

Q: *Is it possible to estimate the cost increases that could be associated with phased out refrigerants initially, and as the phase down progresses?*

A: Stephen Spletzer: The short answer is no. Predicting future refrigerant costs is difficult, especially when considering the many different variables at play here. First, unlike previous refrigerant transitions, this is a phasedown, not a phaseout. While HFC consumption, overall, needs to be reduced by 85% by the year 2036, there is nothing yet to say that a particular HFC needs to or will be phased out of production. Some manufacturers may choose to quickly reduce or eliminate their production of higher GWP refrigerants, like R 404A for example, in favor of producing lower GWP products. Others may not.

Additionally, the EPA has not yet provided their sector controls on HFC refrigerants. We anticipate that the EPA may establish GWP limits for new systems for several different market segments. High GWP HFC refrigerants may also not be permitted in new systems for end-uses where they are currently used today. This would naturally shift these market segments to lower GWP refrigerant solutions.

Historically, the EPA has not banned the use of refrigerants for servicing of the installed base of equipment.

Ultimately, as the phasedown progresses, we anticipate that market dynamics will drive prices. As allocations are reduced in later years, the costs of higher GWP HFC refrigerants may increase relative to lower GWP refrigerant solutions.

Q: *What amounts of R-410A will be available for service needs beyond 2023?*

A: Stephen Spletzer: Again, this is a hard one to predict. As this is a refrigerant phasedown and not a phaseout, allocation holders can choose which refrigerant products they “spend their GWP” on. In the earlier years of the phasedown, we expect there will be adequate R-410A available for servicing of equipment. However, as R-410A has a relatively higher GWP of 2,088, its availability in the later years of the phasedown will depend on a number of different market dynamics. There are two things however that technicians can do to help ensure an adequate supply of R-410A going forward:

First, don’t simply top off the charge on a leaking R-410A system. Make good faith efforts to find and repair any and all leaks. Second, if you’re not currently returning recovered refrigerant to your local wholesaler or distributor, we recommend you ask about their refrigerant recovery program.

As time goes on, reclaiming of recovered refrigerants like R-410A will play a greater role in supplying the service market. These two items could have a big impact on preserving the supply of R-410A going forward.

Q: *Refrigeration Service Engineers Society (RSES) is one of the groups helping to train technicians relative to A2L*

refrigerant best practices. Is Chemours disseminating information related to A2L refrigerant best practices?

A: Stephen Spletzer: Chemours has been actively engaged with training organizations to promote education to the HVACR industry on the safe and responsible use of A2L refrigerants. This includes groups like RSES, North American Technician Excellence (NATE), Air Conditioning Contractors of America (ACCA), and ESCO Group. We are also working with the AHRI Safe Refrigerant

Transition Task Force (SRTTF) to raise awareness of low GWP refrigerant solutions.

Additionally, we provide both remote and in-person training options for our customers. This is both for the air condition-



Stephen Spletzer
Courtesy of Chemours

ing market, with products like Opteon™ XL41 (R-454B – a leading replacement for R 410A in new systems), and commercial refrigeration, with products like Opteon™ XL20 (R-454C – a leading replacement for R-22 and R-404A in new systems). More information on an entire range of next generation refrigerant solutions can be found at www.opteon.com.

Be Apart, Be Proactive

A: Stephen Spletzer: Being proactive with your business and your customers today can help set you apart from the competition. Getting educated on the HFC phasedown and the move to A2Ls is vital – it's the future of our industry. If you have customers with older equipment running on high GWP refrigerants, like R-404A, educating them on their refrigerant options going forward can also be a win. Retrofitting systems to lower GWP options like Opteon™ XP40 (R-449A) or repairing and replacing leaky systems with next generation solutions can also be good options for your customers. Also, consider compatibility with A2Ls when making future tool purchases for products like leak detectors, recovery machines, gage sets, and vacuum pumps.

Consider compatibility with A2Ls when making future tool purchases for products like leak detectors, recovery machines, gage sets, and vacuum pumps.

Q: Please explain some details related to the eventual ban on disposable refrigerant cylinders.

A: Dr. Charles Allgood: As part of the AIM Act, the EPA is eliminating the use of disposable refrigerant cylinders. This transition for the US HVACR market from disposable to reusable/refillable cylinders will be starting in 2025. This will be a major change requiring significant investment and may impact the entire supply chain.

While large size cylinders (~ 100lb or "talls") have always been "returnable" with associated "core charges" (deposits), this will be a change for much of the technician population used to working primarily with small, ~ 30lb containers.

Returnable refrigerant cylinders will be similar in appearance to those currently used as "recovery" cylinders.

While the transactional and logistical details are yet to be determined, it is expected that the procuring, tracking, returning, and associated record keeping will be accomplished by the traditional supply chain players such as wholesale distribution. The returnable refrigerant cylinders will be similar in appearance to those currently used as "recovery" cylinders. To address concerns already expressed from some contractors such as increased cylinder weight, working in remote areas such as rooftops, etc., it is Chemours's expectation that typical product package sizes used today, will still be available into the future but may weigh more than the traditional cylinders we use today.

Q: How will the tracking of refrigerant purchases be accomplished?



Dr. Charles Allgood
Courtesy of Chemours

A: Dr. Charles Allgood: Similar to current EPA regulations regarding CFC and HCFC refrigerants, we expect the rules for HFCs to limit refrigerant purchases to only certified individuals. Information on the certification process can be found at <https://www.epa.gov/section608/section-608-technician-certification-0>.

Also, as part of the AIM Act, the EPA is transitioning to refillable cylinders that will include labeling with international QR codes for the stated purpose of tracking legitimate product and avoiding the problem of illegally produced or imported refrigerants from making their way into the US market.

Q: How can end-users best guard against counterfeit refrigerants?

A: Dr. Charles Allgood: At times of transition in the HVACR industry, particularly when certain products are experiencing price volatility, the problem of fake, counterfeit, or illegally imported product needs to be guarded against. During these times, contractors and service technicians should be extra vigilant when it comes to sourcing refrigerants, always buying from a reliable industry supplier they know and trust. Poor quality, counterfeit, or other illegal refrigerants can present a safety hazard, lead to equipment failures, business disruption, and potentially damage a company's reputation.

Based on experience gained through illegal trade of HFCs in the EU, EPA is taking significant steps to address the potential for illegal HFC imports into the U.S. market. Elimination of disposable/recyclable cylinders and QR tracking requirements are two measures intended to deal with illegal refrigerants. EPA is also forming an intergovernmental effort with Customs & Border Patrol, Department of Homeland Security, Department of Justice, and other agencies to coordinate efforts to address illegal imports.

Education is key, so make sure you and your employees know what to look for, what legitimate product looks like, understand current market pricing, as well as knowing what system impacts may occur from using counterfeit material. Usually, a key indicator is price, and if a deal seems too good to be true and is much below market norms, exercise extreme caution. Be very wary of internet "deals". For years, Chemours has maintained a thorough brand protection program to assist customers in assuring the legitimacy of products. Useful information on how to protect your employees, your customers, and your business can be found [HERE](#).

If you suspect you may have acquired, or are concerned someone is dealing in illegal or counterfeit materials, the following forms can be used to report the activity to the EPA:

<https://www.epa.gov/enforcement/forms/enforcement-contact-us>

<https://echo.epa.gov/report-environmental-violations>

It is ultimately up to all of us to help "police the market" for illegal HFC imports/trade. **CB**

BY CHARLIE GREER

Should You Join a Professional Association?

There are a number of associations available to HVAC contractors. Being part of a professional association can provide members with a competitive advantage.

Networking is one of the main and more obvious benefits of joining a professional association, but that's a pretty broad term. Let's break it down and see if joining one of the professional associations is right for you.

Best practices. Most of the contractors I know who've joined a professional organization have, at one point or another, said to me, "Why re-invent the wheel?"

Exclusive online resources. Websites of most professional associations have a "members only" section that provides access to a variety of chat rooms and resources. This is often where a lot of the benefits lie.

An organized way of visiting other shops. One of the most enlightening things you can do is visit other shops. You get to see their software and various apps in action and see how they work in the real world, how they handle inventory, the number of support staff, what their phone system is like, and all kinds of other things.

Association membership provides access to myriad types of networking opportunities.

Most of the contractors I know, that aren't members of any association, know very few other contractors and almost never see the inner workings of another shop.

A visit to another shop can be informal, but one group in particular does this in a very organized fashion. When they go to a shop, there's full transparency. They show their complete financial statements and everything.

Peer groups. This is one of the best reasons to join an organization. Some organizations split their members up into smaller groups of companies in non-competing areas that are similar in size.

Some of them do a weekly video conference among the members of individual peer groups. I know of one organization in which the agenda of the weekly video conference is simply for each contractor to decide what one or two things they're going to accomplish during the week, then report on their progress at the next meeting. You can imagine that you wouldn't want to keep attending the video conference and have to report that you didn't do what you said you were going to do. Personally, I need that. I need to be held accountable, or I slack off.

Conferences and conventions. Most of the regular attendees I've talked to at conferences and conventions say



that the seminars are great, but they learn a lot more just talking to other contractors than they do at the formal sessions.

I do believe that attending conferences and conventions is almost mandatory, especially when it includes a large trade show. This is a rapidly changing industry, so whether you've got the money to buy any of the new products you see at a trade show or not, you've got to stay up-to-date on what's available.

You'll also get to meet leaders and specialists in the field.

Friendship. I've made lifelong friends with people I've met through professional associations. To be clear, I don't mean colleagues; I mean actual friends that I hang out with and talk on the phone about all kinds of things that are non-business related.

Cost savings. Experimenting with marketing and company procedures is expensive. When you network with other contractors you learn what works and what doesn't, saving you all kinds of time, effort, and money.

There are organizations that provide you with so much marketing, that contractors, who were employing a full-time marketing person, found they no longer needed to do so. That alone more than pays for a membership.

Many organizations provide a discount on training, and some even provide it for free.

Most organizations have arranged for group discounts and/or rebates on things you use every day. I know a number of contractors who get so much money in rebates that it not only pays for their membership dues, it also funds their family vacations.

Social media. You can and should at least join some of the industry-oriented groups on social media for free. You'll meet quite a few contractors there, and they're always talking about the groups they've joined and whether or not they think they're worth it.

I'm a member of several industry-related groups on social media. Yes, there's a lot of joking around that you have to weed through, but I've found a lot of gems in there as well. Some of the groups are more disciplined than others. Join a few of them. If they're not right for you, quit them and join another.

Membership in an association only works if you do. Don't be a "seminar junkie" who attends numerous seminars, but never implements anything.

CHARLIE GREER was recently voted the 'Favorite Industry Trainer,' and is the creator of, "Slacker's Guide to HVAC Sales" and "Tec Daddy's Service Technician Survival School on DVD." For information on Charlie's products call 1-800-963-HVAC (4822) or go to www.hvacprofitboosters.com. Email your sales related questions to charlie@charliegreer.com.

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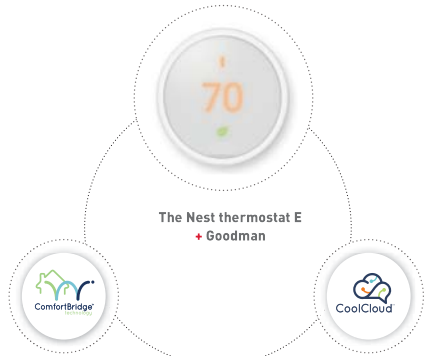


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A Tale of Two Salespeople

Like many during the pandemic, I have been checking important house projects off my to-do list. As a result, I've had a chance to spend time with salespeople from several different home services companies who came out to give me estimates on work ranging from roofing to gutter guards to generators.

It was an eye-opening experience. While I met with these contractors, in my mind, I tried to compare each experience to how the typical HVAC salesperson comes across to homeowners.

It was interesting to meet with salespeople who ranged from the used car "sales guy" to some very knowledgeable people who knew their stuff. It was apparent many of the better ones had once worked in the field.

For example, one of the roofing salespeople who worked for a large company showed up in a truck equipped with ladders and tools. He was very knowledgeable, and he even noticed a leaky boot on an exhaust vent, went to his truck, grabbed his caulk gun, and went back up the roof to seal it. That simple gesture immensely raised his credibility with me.



Rather than trying to 'sell', the teaching sales professional educates the homeowner on how to be a smarter buyer.

This series of different experiences led me to think about the different types of salespeople in our industry. It boiled down to two categories:

1. The Swap-out Salesperson

This HVAC salesperson has varying degrees of knowledge and sales abilities. His or her main focus is to replace equipment. Those at the high end of the spectrum are typically clean and well-spoken. They have their pitch down to a science, know all the latest closing techniques, and do a decent job convincing the customer to swap out their furnace or air conditioning equipment.

At the other end of the spectrum are the salespeople who mostly just show up – maybe. Some mutter a few words to the customer before they try to figure out the equipment size to quote like for like. The worst is even insulting women, treating them like they are just the "pretty little lady" who couldn't possibly understand this stuff.

In fairness, many salespeople in our industry are somewhere in the middle. They may have a decent approach but often leave a lot on the table regarding what the

HVAC company can do to provide good solutions to often long-standing issues.

2. The Knowledgeable, Teaching Salesperson

In contrast to the swap-out salesperson, these knowledgeable, teaching sales professionals understand how to deliver highly performing HVAC systems. They know how to test systems using high-quality instruments to learn enough to educate their customers about their HVAC system and why it's acting the way it is.

These salespeople check the system's blood pressure and estimate airflow. They convince the homeowner to go with them as they walk through the house, asking key questions about their comfort, air quality, and so forth. As the salesperson tests airflow in problem areas, they teach the customer what they are doing and why in simple laymen's terms.

Rather than just quoting "like for like" replacements, they size equipment properly and include solutions to issues uncovered during the walk-through with the homeowner. In other words, rather than trying to "sell" customers or hard close them, they educate them on being smarter buyers.

When done right, the customer asks you how soon you can do the work. They usually aren't quibbling about the price because they plainly see the value in what is being offered.

Which Would You Choose?

As a customer, who would you rather buy from? The second salesperson can effectively dismiss their competition. When done correctly, this approach makes the average consumer more knowledgeable than most or all of your competitors who come in before or after you.

The fact that the competition now appears clueless puts you head and shoulders above the others who were just focused on swapping out the boxes.

If you see yourself somewhere in the spectrum of the first salesperson, this is a great time to take your game to the next level. There's lots of excellent education available on becoming a high-performance salesperson who comes across to customers as a true HVAC professional. **CB**

Dominick Guarino is CEO of National Comfort Institute (NCI), (www.nationalcomfortinstitute.com), one of the nation's premier Performance-Based™ training, certification, and membership organization focused on helping contractors grow and become more profitable. His e-mail is domg@ncihvac.com. For more info on Performance-Based Contracting™ go to WhyPBC.com or call NCI at 800/633-7058.



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