

# TODAY'S A/C

## & REFRIGERATION NEWS

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RGF Wins Dealer Design Award for HALO-LED™ In-duct UV System (see page 4)



SFACA General Meeting & Virtual Happy Hour (see page 4)



Venstar Thermostats Help SoCal Cannabis Grower to Double Crop Production (see page B4)



Ritchie Introduces The Wireless Refrigerant Charging Scale (see page 6)

## The Industry's Most Exciting Event of the Year!



Jeff Schlichenmeyer  
Publisher

(Coppell, Texas) -- Service World Expo is making a major pivot, company officials announced today. The show is still on, but based on the responses of a survey of prior attendees the show will not be physical. It will be virtual, but a different kind of virtual, powered by incredibly

robust and creative software. Imagine Service World Expo as a video game.

"In 2020, people have become so accustomed to virtual meetings that they are now boring, passé," said Service Roundtable president, Matt Michel. "That will not be the case with Service World. This will not be a glorified webinar. It is not another Zoom call. It is a true virtual event. As such, it will be virtually unlimited. It will be science fiction virtual. It will be like something you would expect from a video game or from a movie. It will be unlike any virtual show seen in the service trades to date. Service World Expo is making a major investment to bring contractors and exhibitors the industry's most exciting event in 2020."

Each day will start with a general session and a keynote speaker. The keynotes are Phoenix contractor Lou Hobaica; motivational speaker, Kevin Brown; and Service Roundtable president, Matt Michel. Breakouts follow the general session. The trade show follows the breakouts. The same speakers who were lined up for breakouts in the physical show will give the breakouts for the virtual event. Each speaker will go to a virtual room after the presentation to answer questions.

The trade show will blow attendees away. A number of booths will be able to use virtual reality and augmented reality. Attendees will be able to immerse themselves in one of these booths and get a 360-degree panorama. They will be able to see products in three dimensions and walk around them, just like a real show.

Show attendees can talk with key personnel manning a booth in one-on-one situations to learn more about products and services that can help them make more money. Or, if the queue is too long, they can set an appointment for later. Time is reserved in the afternoons for appointments.

Since this is a virtual show, virtually anything is possible. An exhibitor can build a portal into a booth that takes people directly to the factory. Step through, and look around the factory in real time. The software powering Service World Expo 2020 is mind blowing!

Of course, what would a trade show be without after-hours events and networking? This is covered too! After hours events are being created that contractors will want to attend. They will have the opportunity to meet virtually with others in a similar way to a physical show. Of course, attendees will need to provide their own adult beverages.

Building the virtual show will literally take the next two months. It is a massive undertaking. Each booth must be uniquely designed. Even with the software powering the event, a lot of programming is necessary. The show will be held September 22-24, as planned, so mark your calendars.

Hear more from Liz Patrick as she would appear in augmented reality and also be sure to register for FREE at <https://bit.ly/2CDfmYE>

## Global, The Source Acquires American Radionic Co., Inc.

Global, The Source (a dba of Vladimir Ltd.), a master distributor of HVAC/R components headquartered in Universal City, Texas, is pleased to announce the acquisition of the leading manufacturer of American Made motor-run capacitors, American Radionic Co., Inc. (dba, AmRad Engineering) of Palm Coast, Florida, effective July 1, 2020.

Originally founded in 1982, Global was purchased by CEO Dickie Sirotiak in 2001 and has flourished as a family owned business under the management of Dickie, President, Shaun Sirotiak and Vice President, Alison LeBleu.

Global's success can be partially attributed to being a leader in the promotion and advancement of American made products throughout the HVAC/R industry and the acquisition of AmRad Engineering solidifies the distributor's position in the market. Both proud, American, family-owned companies have come together as one.

"AmRad Engineering, founded in 1939, is the oldest film capacitor manufacturing company in the world that is still operated by the founding family," Dickie stated. "Proud of their 'Made-in-America' heritage, the company has been an innovator in their field and has been awarded over 65 significant patents and trademarks across multiple industries, most recently more than nine patents for the Turbo® Series of universal capacitors."

"Global, The Source has played a huge part in our success," added AmRad President Robert Stockman. "Their dedicated and knowledgeable staff has effectively marketed our Turbo® products to almost every HVAC/R wholesaler in the country and this new relationship will allow us to more effectively market some of our lesser-known products. There's a huge market out there and at the same time, we are looking to continue developing new products since our success has been based on innovation."

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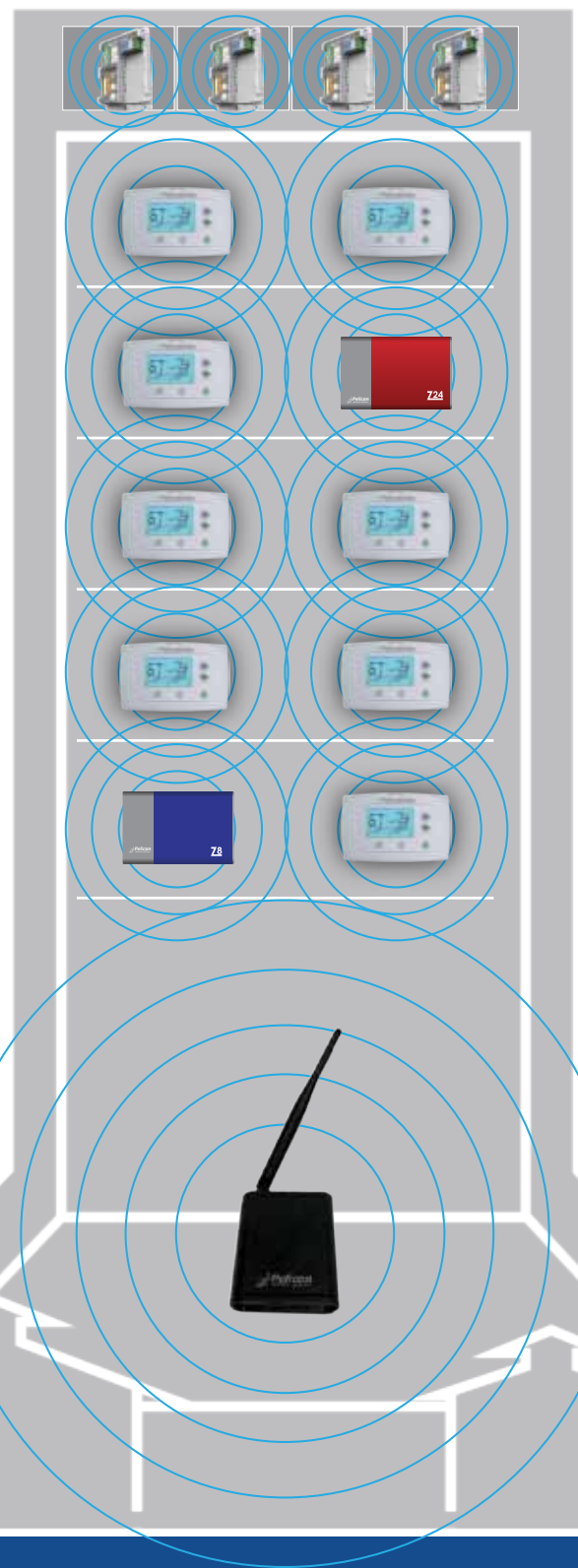
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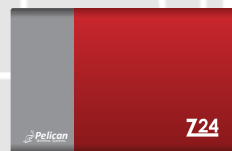
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## Do You Have a Steel Cage around Your Customers?

### Ruth King's Contractors Cents



**HVAC** Channel.tv

Industry expert Ruth King has helped contractors get and stay profitable for more than 25 years.

Reach her at [ruthking@hvacchannel.tv](mailto:ruthking@hvacchannel.tv).

However, the answer to this critical question is YES! What do I mean – what is a steel cage around your customers?

My definition of a steel cage:

- When a customer sees a competitor's truck in a neighbor's driveway she doesn't ask her neighbor how the service was
- When a customer doesn't pay attention to the lettering on the side of an HVAC truck she sees while she is driving. The company name doesn't even register with her because she has no need
- When a customer sees a postcard or a letter from a competitor's business, she immediately throws it in the trash...and doesn't spend a nano-second to open it or read it.
- When a customer sees an ad from a competitor's heating and air company on TV, she walks into the next room to get a drink...thinking she will return to watch her show after the "stupid commercials" are done.
- When a customer needs your telephone number and can't find it, she types your company's name in the search box rather than "air conditioning repair and the name of your town".

Your "caged customers":

- Are so loyal to you they don't even think about trying another company the next time they need service.
- Know, like, and trust you to take care of all their home/business comfort needs.
- Usually own a maintenance plan (although some caged customers don't have one – probably because they weren't asked and shown the benefits of owning one in terms they understand).
- Know exactly who to call and has your number in their cell phones. If they don't, they go to the magnet on the refrigerator, the chip clip, or other sticker you've placed in the home/office to get your phone number.
- Read your emails, postcards, and letters.
- Give you phenomenal testimonials and refer.

Your caged customers write your paychecks year after year. Your goal is to get as many caged customers as you can and never lose one!

How to Put a Steel Cage around Your Customers

First, there is a difference between customer service and customer experience.

Everyone expects great customer service. And, people are sorely disappointed when they don't receive it...from their perspective.

You need to turn customer service into customer experience...from your customers' perspectives.

No one can read the minds of your customers. You need to ask your customer questions. Remember to ask your employees the same questions.

Rick Housek, who writes a great inspirational column once a week ([rick@SoarWithEagles.com](mailto:rick@SoarWithEagles.com)), put it this way for one of his clients, a country club:

"You're all customers too. When you're a patron of a hospitality establishment — a restaurant, a hotel, a night club — what little things annoy, irritate, and drive YOU the most crazy?"

Putting it in first person changes their perspective and makes problems easier to identify.

When Rick asked this question to country club employees they quickly and effortlessly generated a long list of anger points they called 'Micro Insults'...

...like no separate checks... no menu substitutions... crumbs left on table... water glasses low and not refilled... not lighting table candles... wait staff not smiling upon initial greeting... up-charges for extra items on a hamburger... table linens with holes... and a host of others.

Unfortunately, the country club did some of these things – easy to fix at little cost. Then, a better customer experience.

So, change the question for our industry:

"You're all customers too. When you're a patron of a car repair establishment, a carpet cleaning company or some other service company – what little things annoy, irritate, and drive YOU most crazy?"

I'll bet you're doing some of the things on the list your employees and your customers come up with – fix them and the customer will have a better customer experience...and you're building that steel cage around your customers.

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My new Kindle Book: Ronan the Rubber Duck Dives into Financials... You can't! That's what my daughter said to me when I told her that I wanted to make financials fun. The gauntlet was laid down. The red blanket was waved in front of the bull. Ronan the Rubber Duck was born. This e-book is a whimsical look at financials from a duck's perspective. Call Ruth at (770)729-0258 or email her at [RuthKing@HVACChannel.tv](mailto:RuthKing@HVACChannel.tv)

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## RGF Environmental Group Wins Coveted Dealer Design Award for HALO-LED™ Whole Building In-duct UV LED Air Purification System



Port of Palm Beach, Florida, (July 28, 2020)- RGF Environmental Group, Inc. wins their 11th Dealer Design Award at the annual Dealer Design Awards competition hosted by the HVAC industry's leading publication, The Air Conditioning Heating & Refrigeration News ("The ACHR NEWS"). The HALO-LED™ air purification system brought home the Gold award

in the Indoor Air Quality category. These sought-after awards are selected by an independent panel of contractors who consider specific elements of design which contribute to ease of installation, use and maintenance, application/repair, reliability and competitive difference.

RGF's HALO-LED™ is the industry's first UV LED in-duct, whole building air purification system that is both mercury free and zero ozone compliant. The HALO-LED™ combines the world's best IAQ technologies into one superior device, including LED (UV), PCO, self-cleaning bi-polar ionization, cold plasma, hydrosonolysis, Wi-Fi, and RGF's proprietary Photohydroionization®. In addition, the HALO-LED™ is certified to meet the performance standards as required by the California Air Resources Board (CARB). This superior unit proactively treats every cubic inch of air-conditioned space, thereby reducing airborne and surface microbials, bacteria, viruses, mold, smoke and VOCs. Leveraging bi-polar ionization the HALO-LED™ provides the added benefit of reducing airborne allergens, dust and particulates. The new patent pending technology utilizes an exclusive hybrid hydrophilic zinc enhanced washable ceramic catalyst and is powered by a proprietary low energy, ultra-long-life, LED array.

"Combining REME-LED™ technology along with RGF's proven PHICELL® technology, this product provides revolutionary indoor air purification," said Walter Ellis, Executive Vice President at RGF Environmental Group. "RGF has been researching and developing UV LED-based treatment systems for many years. The technology has finally advanced to a point where usable UV LED output power and useable wavelengths have coincided to make this next generation of products possible."

NEWS Publisher Mike Murphy stated, "These awards give us a unique opportunity to recognize the outstanding research and development efforts that go into many of the products serving the HVACR industry and the awards issue gives our readers an opportunity to read about innovative installation and service solutions."

## SFACA General Meeting & Virtual Happy Hour



Guest Speaker: Jim Hinshaw

SFACA conducted their second zoom meeting with their members giving brief overviews on Covid related topics. The Zoom meeting was held at 6pm, on Wednesday, July 7th. There was no cost for this event and it was open to everyone. The zoom meeting included guest speaker Jim Hinshaw who gave a presentation on The Virtual Sales Call.

Jim spoke about validating three things: Company, Products, and You. They don't buy products, they buy

benefits, and they buy from people, not companies! He also spoke about three types of comfort: Your senses, your mental state, and your wallet.

As the owner of Sales Improvement Professionals, Inc, Jim has conducted training classes all around the world, literally. He founded Sales Improvement Professionals in 1999, did a large amount of training and speaking to HVAC manufacturers such as Carrier, Trane, Rheem, Nordyne and many others. He worked as a consultant to the solar industry from 2005-2011, traveling to Manilla, Australia, Hawaii as well as all of North America. Jim spent the last 8 years working with Goodman/Amana, helping their dealers to improve sales and profits.

One of SFACA's goals has been to provide social networking opportunities with topical speakers and to provide beneficial programs direct to their members during their meetings.

Due to the current social distancing guidelines, this has been challenging to do. SFACA is working to find an alternative to dinners and events. The silver lining to these alternatives is that SFACA is preparing for potential future meetings as well as provide virtual opportunities to their members.



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## Ritchie Introduces The Wireless Refrigerant Charging Scale



Bloomington, MN (July 1, 2020) – Ritchie Engineering Company, Inc., the leader in service tools for HVAC/R professionals and manufacturer of YELLOW JACKET® products, is proud to introduce their new Wireless Refrigerant Charging Scale. With a 220

lb. capacity, large platform, and wireless Bluetooth® communication, this accurate scale makes refrigerant charge measurements fast and easy. The Wireless Refrigerant Charging Scale is controlled and operated with any smart device via Bluetooth® and the new YJACK VIEW™ app. Users can save charging measurements to their smart device as a record for the installation or service call.

For more information, please visit <https://yellow-jacket.com/product/wireless-refrigerant-charging-scale/>.

## Nerva Energy Receives Inquiries on RGF Technology



Nerva Energy, a Canadian energy consulting firm, was receiving inquiries from clients who own properties such as condos, apart-

ments, and retirement homes concerned about how to keep their tenants safe. Nerva began an analysis and technical review to find a proven solution. Their engineering team discovered RGF's REME HALO and HALO-LED whole building in-duct air purification systems. RGF's proprietary technology continuously and actively destroys germs in the entire conditioned space.

## Global, The Source Acquires American Radionic Co., Inc. (continued from cover story)

Global is happy to announce that AmRad President, Robert Stockman, inventor and patent designer of the Turbo 200® and the Compressor Protector Terminal (CPT®), will be assuming a consulting role. Current Vice-President, Rich Stockman and all members of management along with AmRad's dedicated employees are happy to continue working with Global.

Some of the cutting-edge products manufactured by AmRad Engineering:

- Compressor Protector Terminal (CPT®) acts as a kill switch to take the hard-start out of the system in the event of a failed capacitor. When a motor-run capacitor fails in a hard-start system, the hard-start keeps kicking on the compressor without the capacitor regulating. This will cause overheating and a shorter compressor lifespan.

- USA run capacitors, with patented Compressor Protector Terminal (CPT®), in single and dual sizes available up to 80/10.

- Turbo 200®, with patented Compressor Protector Terminal (CPT®), motor-run capacitor replaces any one of the 200 different dual and single-value capacitors used by OEMs up to 67.5 MFD.

- Turbo 200®X, with patented Compressor Protector Terminal (CPT®), motor-run capacitor, targeted for use with scroll compressor-based air conditioning equipment and applicable for over 75 values up to 97.5 MFD

- Turbo Easy-Start® 5 (TES5) can be used in

place of any one of the four commonly used sizes of hard-start kits on the market today up to 5 tons and is suitable for over 90% of refrigeration and air conditioning applications.

- Turbo 200® Mini and Turbo 200® Mini-oval, engineered specifically to replace single value "Fan-Size" motor-run capacitors 2.5 MFD to 15 MFD.

- Turbolytic® Jr., universal motor-start capacitor. Replaces up to 64 different motor-start capacitance values up to 227 MFD.

- Turbolytic®50, universal motor-start capacitor. Replaces up to 64 different motor-start capacitance values up to 324 MFD.

Global is privileged to serve the needs of wholesalers across the United States and has represented some of the best manufacturers in the HVAC/R industry for over 30 years. With the acquisition of AmRad Engineering, Global anticipates an exciting new era and is thrilled to invest in the success of American manufacturing.

Here at Global, we believe in supporting America, American manufacturers, and the American worker. This union secures the future of American manufacturing and the American worker.

For more information about Global visit [www.globalthesource.com](http://www.globalthesource.com), call 800.531.5967 or email [customerservice@globalthesource.com](mailto:customerservice@globalthesource.com).

For information on AmRad Engineering products visit [www.americanradionic.com](http://www.americanradionic.com).

## New Product from Uniweld Locking Refrigerant Caps

Uniweld's Locking Refrigerant Caps seal and protect standard access fittings on central A/C and Mini-Split systems to prevent refrigerant theft, leakage and huffing. Huffing or inhaling refrigerant gas is extremely dangerous, causing brain damage or even death. The International Mechanical Code and Residential Code both state "Refrigerant circuit access ports located outdoors shall be fitted with



locking type tamper resistant caps." These codes are in place to help protect the general public and in some states are mandatory but it's ultimately up to the service technician to install locking refrigerant caps on all new installs and when servicing a/c systems. is in Pompano Beach and serves Broward county and parts of Palm Beach County. Use a standard 3/16" Hex Key to install and remove from the access fitting.



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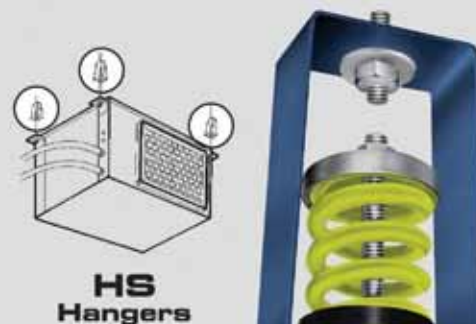


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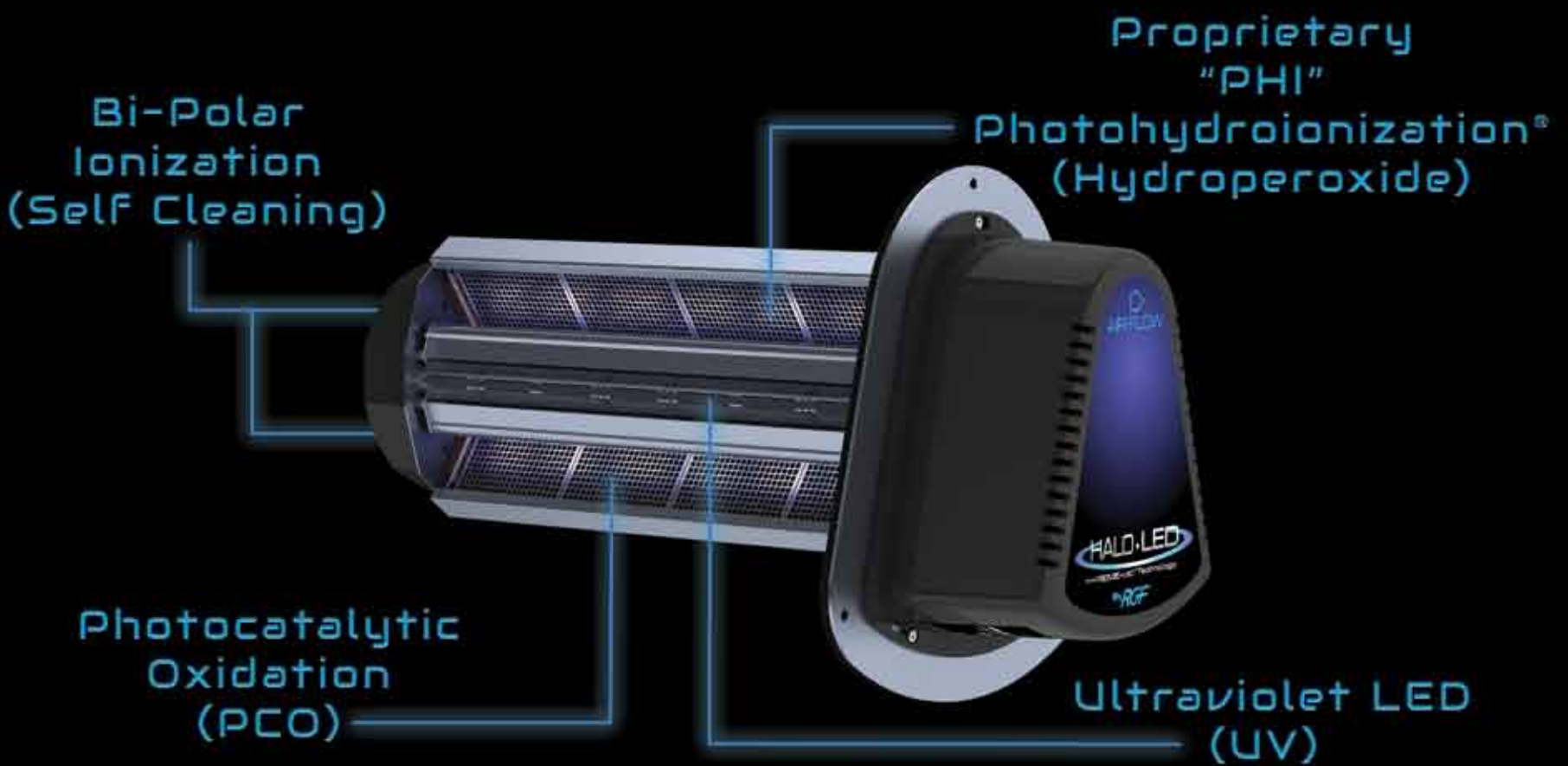
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# Trade Talk:

By **Tommy Castellano**  
 Owner, *Castellano A/C Services*  
 in Tampa, Florida



## 3 Ways to Develop Mental Toughness Right Now

Knowing how to deal with stress is a competitive advantage. One thing every contractor quickly discovers is that building a business is an emotional roller-coaster ride.

That ability to ride the ups and downs is one of the few things you actually control in building your company. It can also be your greatest competitive advantage, as the faster you're able to bounce back from a setback, the faster you'll be able to move forward.

You develop mental toughness and resilience just like you develop a physical muscle, by applying stress so it becomes stronger. The good news is that every day of building a company offers plenty of opportunity to train and get better.

Even if you weren't born an effervescent optimist, you can train yourself to bounce back quicker and stronger. Here's how: Hit fast forward to acceptance.

When you're focused on a certain outcome — landing a major client that will validate you in the market and generate much-needed revenues — it's painful when it doesn't happen. Wishing for a different outcome, however, creates resistance that only slows you down and keeps you from taking positive action. You don't have to like what happened, just accept that it did.

Reframe the situation.

Still, when things aren't going your way, it's normal to be discouraged and wish it weren't so hard. This is where mental toughness — the ability to persevere in the face of adversity — comes in. Contractors who perform well under pressure learn to put a different spin on challenging situations. They see obstacles and think: "Here's a chance to prove myself."

Shift to solution mode.

As humans, we're wired to focus on problems. But, as a retired air conditioning contractor told me, if our largest client cancels "and I run around the office

with my hair on fire screaming at everybody because we just lost our most profitable client and we're going to be negative for the next quarter, what kind of message does that send to the team?"

To be successful as a contractor, you have to override the natural tendency to focus on the problem and train yourself to quickly shift your focus to how to solve it. If you control your emotions, stay calm and step back and assess the true reality of the situation and start developing some possible solutions to it then you're going to be able to make good decisions in a chaotic environment.

The One Quality Most People Want From A Leader

"Stepping back" is a piece of advice you can take literally. It gets you out of your head and makes the shift to solution mode more concrete. In fact, you can adopt "The 10-step rule" from golfer Tiger Woods' playbook. When he misses a shot, he allows himself to feel bad about it for the time it takes to walk 10 steps. After 10 paces, he shuts the door mentally on the negative thoughts and focuses on moving forward. It may sound easier said than done — 10 paces isn't all that long to rebound from most problems — but the idea is to avoid dwelling on your setbacks without thinking about how to move on.

Now that you're in solution mode, ask yourself: "What's one thing I can do now?" After losing three big clients in three days, a young contractor sent 30 handwritten letters to his existing clients, updating them on his company and thanking them for their business. He didn't lose another client for a year.

What are you going to do to get mentally tough?

Until next time,  
 Tommy Castellano

## Service Nation Launches Remodeling Best Practices Group

(COPPELL, Texas) – July 1st, 2020- Service Nation, the largest residential contracting group in the US, announced the launch of Service Nation Alliance for Remodeling to provide residential remodeling contractors the systems, processes, and training necessary to build, grow, and sustain a strong, profitable, modern business.

Since 2002, Service Nation has helped thousands of small business owners achieve unparalleled results in the home services industry. The average Service Nation Alliance member grows their business 30% year over year by embracing systems and processes derived from the Service Nation Alliance program. These business fundamentals are the cornerstone of their members' success.

"Service Nation Alliance's mission is to help home services business owners thrive. Until now, Service Nation Alliance has focused on HVAC and Plumbing business owners," said Matt Michel, President of Service Nation. "The next logical step was to incorporate remodeling into the other home service industries we serve. HVAC and Plumbing are essential components to make a house function as it should; remodeling helps make a house a home."

"I have been in the remodeling industry for the last 25 years," said Carol Longacre, Remodeling Vertical Market Manager for Service Nation. "My husband and I built our remodeling business from the ground up, and it was not an easy process. That process would have been much easier, and the profitability would have come faster, if we had the business tools that Service Nation Alliance provides. I am proud to give back to an industry I love and proud to work for a company that powers business owners to great success."

Service Nation Alliance will host an Online Success Hour for their Remodeling program on July 30th at noon CST. The webinar will feature remodeling business owners who will share their secrets to business success as well as other industry leaders who will discuss systems and processes to help business owners take their companies to the next level.

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## Message from FRACCA President Rick Sims



Congratulations to all our 2020 apprenticeship program graduates. I wish we could all be together in person to celebrate with you, but these are difficult times for such gatherings. Many of our graduates this year have not enjoyed the kind of ceremonies we have experienced in past years. Even if we are unable to shake your hand please know that we are no less inspired by your accomplishment.

RACCA chapter in the Tampa area and CFACCA chapter in central Florida were able to hold limited graduation events with distancing and safeguards in place. This was carefully planned and implemented with restrictions on attendance and interaction. Apprenticeship graduates were recognized as in past years, but graduates were unable to invite their families to attend. This is about as close to normal as is possible in 2020. Congratulations to the RACCA and CFACCA programs for safely pulling this off.

Other programs have had to find ways to recognize apprentices without including a physical gathering. We appreciate our students, teachers and volunteers and we are inspired by the determination you have shown to complete this unprecedented school year. Apprenticeship administrators, instructors and various committees have used their isolation time well.

They have found innovative ways to successfully complete the 2019 year and adjust to circumstances beyond their control. Many have partnerships with local public school systems and will be effected by public school reopening policies, the circumstances may not be the same for all regions of Florida. Local boards and administrators are trying to work out the best regional outcomes. None of us has any experience at this.

Much work has taken place behind the scenes to expand HVAC apprenticeship opportunities available in Florida. New programs are being es-

tablished from north to south. TRACCA (Tallahassee Regional ACCA) is rolling out Florida's newest HVAC apprenticeship program to develop talent in northwest Florida. The Lorenzo Walker Technical College has partnered with SWACCA ( SW Florida ACCA ) employers to open a new apprenticeship program in Naples. Both are now taking applications.

FRACCA is working with VACCA ( Volusia ACCA ) to bring HVAC apprenticeship training to the Daytona area. We are also looking toward the future in Brevard county where an HVAC apprenticeship program is greatly needed.

If you find insufficient HVAC talent and training resources for your area to meet your future workforce demands, we see no better investment than a solid HVAC apprenticeship program. Your government agrees and has allocated millions for use to improve, expand or promote existing programs or start one from scratch in your area. Apprenticeship program funding is available in Florida.

Career Source Florida is one of our Florida resources that governs the use of some of those government dollars intended to be directed toward improvement or expansion of our apprenticeship programs. Last year they approved an additional \$80,000.00 special funding for projects in Central Florida alone. They are a great resource. FRACCA can help you develop partnerships and connections and assist you in accessing these resources in your area.

If starting from scratch, FRACCA can show you how successful programs have been created elsewhere in Florida and help find the best solutions for your area. To find out more about HVAC apprenticeship opportunities for Florida contact FRACCA Executive Director Paula Huband (404) 676-0031. Also please visit the FRACCA website at [www.fracca.com](http://www.fracca.com)

## AHRI Releases April 2020 U.S. Heating and Cooling Equipment Shipment Data

### Central Air Conditioners and Air-Source Heat Pumps

U.S. shipments of central air conditioners and air-source heat pumps totaled 777,815 units in May 2020, down 22.7 percent from 1,005,646 units shipped in May 2019. U.S. shipments of air conditioners decreased 20.7 percent, to 522,624 units, down from 659,423 units shipped in May 2019. U.S. shipments of air-source heat pumps decreased 26.3 percent, to 255,191 units, down from 346,223 units shipped in May 2019.

Year-to-date combined shipments of central air conditioners and air-source heat pumps decreased 6.8 percent, to 3,362,822 units, down from 3,609,723 units shipped during the same period in 2019. Year-to-date shipments of central air conditioners decreased 7.1 percent, to 2,101,664 units, down from 2,262,364 units shipped during the same period in 2019. The year-to-date total for heat pump shipments decreased 6.4 percent, to 1,261,158, down from 1,347,359 units shipped during the same period in 2019.

## New Belimo Room Sensors - The Foundation Of Comfort

Belimo is excited to announce the release of new Room Sensors, which complement the existing sensor product range. The Belimo Room Sensors measure temperature, humidity, and CO<sub>2</sub> in a wall-mounted design offering high accuracy and fast response. The sensors are maintenance-free and provide long-term reliability for a comfortable room environment. Integrated with Near Field Communication (NFC) allows for fast programming, commissioning, and troubleshooting with the Belimo Assistant App and a belimo-room-sensorsmartphone. The product series consists of Temperature, Temperature with Setpoint, Temperature and Humidity, and Temperature, Relative Humidity, and CO<sub>2</sub>.

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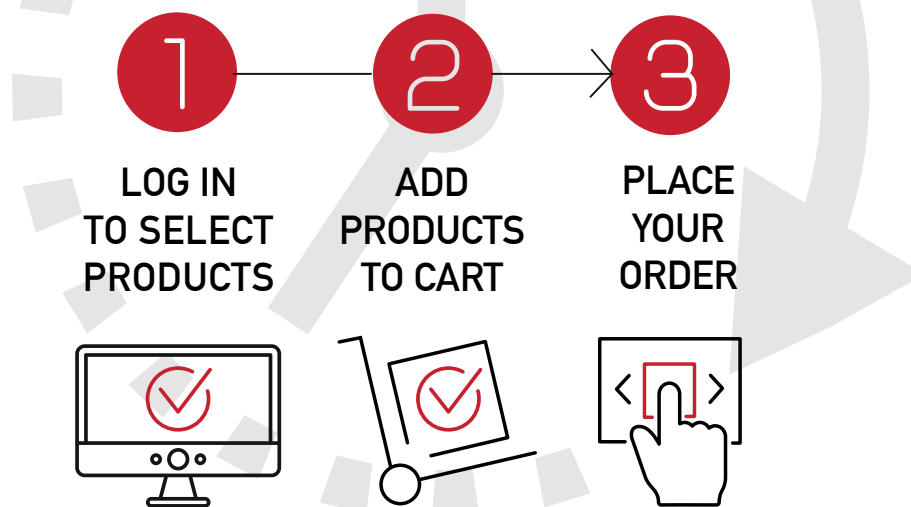


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## General Filters' New GeneralAire® Model 5500 Steam Humidifier Designed For Ease of Installation & Maintenance



General Filters, Inc. announces the launch of their new GeneralAire® model 5500 Steam Humidifier.

The new electrode steam model is smaller than previous GeneralAire® steam models and offers several new features; features that reduce installation and

maintenance time and speak to the advanced technology with which it is made.

- One model now accommodates either a 115 or 230V installation (with the flip of an internal switch).

- One cylinder accommodates regular and low water conductivity.

- Offering one unit and one cylinder makes it much easier for a contractor, who now only needs to carry one unit in his / her truck for almost any steam installation.

- The model 5500 indicates the square feet the humidifier can accommodate, simplifying contractor selection at the wholesale counter.

- Spark-plug style cylinder wire connectors have been incorporated into the design. The "SNAP-in-place" connectors mean changing the cylinder does not require tools and assures a solid, secure connection.

- With just a single-screw cover release, maintenance is now quick and hassle free. Permanently attached to the cover, the screw cannot fall to the ground roll away.

- The unit includes the new GFX4 humidistat, which now controls the furnace blower motor. Humidity levels will be more steadily maintained with or without a call for furnace heat, turning the blower on when there is a call for humidity.

- A mounting kit and installation straps are included, reducing extra materials a contractor might need to bring to the installation.

- General Filters maintained the numerous function indicators and error codes of the previous control screen,

but enhanced the screen's color to an easy-to-read fresh blue.

"Design enhancement suggestions were garnered through numerous contractor focus group meetings held across North America. We believe the resulting new unit meets the criteria contractors require for a successful installation and subsequent home owner satisfaction", said Bob Abraham, President & CEO. "Our goal for all new products and product enhancements is to support contractors' efforts in the market."


For additional information, contact: Allan Feys, Director of Sales & Business Development at 866-476-5101 x 201 or [allanf@generalfilters.com](mailto:allanf@generalfilters.com)

## Ritchie Introduces The AccuProbe™ IR Leak Detector



BLOOMINGTON, MN (July 21, 2020) – Ritchie Engineering Company, Inc., the leader in service tools for HVAC/R professionals and manufacturer of YELLOW JACKET® products, is proud to introduce their new AccuProbe™ IR Leak

Detector. Identifying the smallest leaks is now fast and easy. The AccuProbe™ IR detects all CFC, HCFC, HFC and HFO refrigerants, including R-134A, R-404A, R-410A and R-1234YF. The Smart-Alarm® LED shows the size of the leak on a rising scale. Coupled with two modes for sensitivity, the AccuProbe™ IR will locate a leak of any size. For more information, please visit <https://yellowjacket.com/product/accuprobe-ir-leak-detector/>.



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# WHY 400 CFM PER TON?

OR IS IT? COULD IT BE 320 CFM/TON?  
300 CFM/TON? HOW ABOUT 1,000 CFM?

article by  
Andrew C. Ask, P.E.



I'm told that "400 CFM/Ton" is a hot topic amongst those of you who prowl the internet and chat rooms late at night. I wouldn't know, long past my bedtime.

So, why do we need 400 CFM per ton of cooling? Was it set by code? Nope. We didn't have 20 people sitting around a table indicating 400 CFM/Ton as a consensus standard by holding up paddles.

Did Rick Sims decide it was 400 CFM/Ton? Nope. It was before his time, otherwise I'm sure he would have. So is it up to you guys in the chat rooms? Nope. I'm interested in your opinion but you don't get to decide this one.

400 CFM per Ton is science. Physics. A part of physics known as thermodynamics. A part of thermodynamics called psychrometrics, which is the science of gas-vapor mixtures. In our world the gas-vapor mixture is moist air and I make my living understanding a little about how that all works.

Before I explain the 400 CFM thing, let's review a few formulas, one of which I used last month:

Moisture Removal in lb/Hr =  $(4.5 \times \text{CFM} \times \Delta \text{Grains}) \div 7,000 \text{ Gr/lb}$

Where does the "4.5" come from? It converts CFM to lb of air per hour:

$$.075 \text{ C.F./lb} \times 60 \text{ minutes/hour} = 4.5$$

Once we know how many lb/hr of moisture is removed, we take it times the latent heat of vaporization, hfg, to get Latent BTUH. hfg varies with temperature. I'm going to use 70 °F. today where hfg = 1,045 BTU/lb.

L-BTUH = lb/hr of moisture removal x 1,045 BTUH hfg

Before we get done I'll need to calculate Sensible BTUH, and that formula is:

$$\text{S-BTUH} = 1.08 \times \text{CFM} \times \Delta T$$

Most of you know that formula, but do you know where the "1.08" comes from? The specific heat of air is .24 BTU/lb. Combine it with "4.5" from above to get BTU per hour per CFM:

$$.24 \text{ BTU/lb} \times 4.5 = 1.08 \text{ BTU per CFM per Hour}$$

Now imagine a world where 400 CFM of air at 80 °F. db and 67 °F. wb and a moisture content of 78 grains is cooled at 75% Sensible Heat Ratio (SHR) to 59.2 °F. db. Since I peeked at my psych chart I know the leaving grains are 66.8. You might want to look at your psychrometric chart while you are reading this.

How much latent cooling did we do?

$$[4.5 \times 400 \text{ CFM} \times (78-66.8)] \div 7,000 = 2.88 \text{ lb/hr} \times 1,045 \text{ BTU/lb} = 3,000 \text{ L-BTUH}$$

How much sensible cooling did we do?

$$1.08 \times 400 \text{ CFM} \times (80-59.2) = 9,000 \text{ S-BTUH}$$

How much total cooling did we do?

$$3,000 \text{ L-BTUH} + 9,000 \text{ S-BTUH} = 12,000 \text{ BTUH}$$

or, 1.0 Ton

That's all there's to it: if you lower the temperature of 400 CFM 20.8°F. and the SHR is exactly .75 you do a ton of cooling while extracting 3 lb of moisture (2.88 rounded up).

Did I stack the deck with my "imaginary" conditions? Absolutely. Change the entering conditions to 75°F./50% rh and the story ends differently, I'm gaming the system to make my point. If this were a story about one-on-one basketball, I'd start out by saying "imagine I'm 7' tall and faster than LeBron James..." If properly set-up, unitary equipment operates at about 75% SHR and these numbers can work in the Real World.

Do we have to operate at 400 CFM/ton? No. Let's see what happens if we slow the fan down to 320 CFM/ton and get 57°F. leaving air temperature.

$$\text{S-BTUH} = 1.08 \times 320 \text{ CFM} \times (80-57) = 7,949 \text{ S-BTUH}$$

If we are still doing 1.0 ton of cooling (not quite true), our latent cooling becomes:

$$\text{L-BTUH} = 12,000 - 7,949 = 4,051 \text{ LBTUH} \div 1,045 = 3.88 \text{ lb/hr}$$

We have simultaneously reduced sensible cooling to 88% (7,949/9,000) and increased latent cooling to 135% (3.88/2.88). But now the unit has to run 1/.88 =

1.14, 14% longer. We could expect overall moisture removal to increase by  $1.14 \times 1.35 = 1.54$ , or a 54% increase. This is why it is important to reduce airflow in our climate.

Let's go over that again. When you reduce airflow over a DX coil you may depress leaving dew point by only 1 or 2 grains, wringing out a bit more water. But the big payoff is that you have reduced sensible capacity, making the compressor run longer, which in turn removes still more moisture.

Unless you are unable to cool the space for lack of sensible capacity, and high humidity is a concern, always set airflow to 320 or even 300 CFM per ton. But don't go below the manufacturer's recommended airflow.

### VARIATIONS

Now put a heater downstream of the cooling coil in our original example that adds 10 °F. of heat, raising the leaving air temperature to 69.2 °F. Our room sensible cooling becomes:

$$1.08 \times 400 \text{ CFM} \times (80-69.2) = 4,666 \text{ S-BTUH}$$

The system is still doing a "ton" of cooling but it only looks like one-half ton to the space.

What if we have a warm coil that can only cool the 80 °F. air to 69.2 °F., not allowing it to reach saturation, resulting in 100% sensible cooling, no moisture removal.? How many CFM/ton in this system? Since L-BTUH = 0, S-BTUH = T-BTUH, and CFM = BTUH  $\div$   $[1.08 \times (80-69.2)] = 12,000 \text{ BTUH} \div (1.08 \times 10.2) = 1,089 \text{ CFM / Ton}$

I actually did this once refrigerating freshly-picked green beans that had to remain moist. Yup, 1,000 CFM/Ton. Moisture removal didn't mean a hill of beans.

So, the answer is NO! Airflow does not have to be 400 CFM/ton. The CFM-per-Ton can be higher or lower (and so will the SHR). Until next month then... stay tuned.

Andy Ask is a Ft. Myers HVAC Engineer and Building Science Consultant to Madison IAQ.



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## RenewAire's DN Series DOAS Wins HVAC Category in Spaces4Learning New Product Awards



Waunakee, Wis.—RenewAire's new DN Series dedicated outdoor air system (DOAS) was recently named the HVAC category winner in the New Product Awards by Spaces4Learning, a Woodland Hills, Calif.-based trade magazine that covers education facility design, operation and maintenance. The competition judges manufacturers' outstanding product development achievements that enhance the learning environment.

The DN Series reverses deficient indoor air quality (IAQ) threats in educational settings by introducing additional outdoor air. Complementary to the HVAC system, this ventilation dilutes and expediently removes biological and volatile organic compounds (VOC) contaminants from the classroom, such as viruses, bacteria and CO<sub>2</sub>. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has recommended introducing more outdoor air as a preventive to SARS-COV2, the coronavirus that causes COVID-19 disease and spreads easily in occupied buildings.

Contaminants, and especially CO<sub>2</sub>, decrease student cognitive functions, productivity and test performance when surpassing 1,000-ppm, according to a 2015 study by the Harvard University's T.H. Chan School of Public Health, Boston. Furthermore, the DN Series also employs energy recovery via its renowned static plate enthalpy core technology to significantly reduce the inherent energy costs of preconditioning outdoor air.

Creating a healthy, comfortable environment that promotes well-being for teachers and students has never been of greater importance," said David Nagel, editor-in-chief, Spaces4Learning. "On top of it all, HVAC systems need to be economical and environmentally friendly.

## Venstar Thermostats Help Ensure Perfect Growing Environment, Enable SoCal Cannabis Grower to Double Crop Production



Authorized Venstar Dealer Chaffin Air Conditioning has helped the grower double crop production and increase profits. Based in Cathedral City, Calif., Chaffin Air is a family-operated heating and air conditioning company.

"Using Venstar's Skypoint, we remotely control ColorTouch thermostats to maintain proper temperature and humidity to guard the health of the cannabis crop," said Patrick Chaffin, owner of Chaffin Air Conditioning. "By ensuring the perfect environment, we've helped the cannabis grower double the crop production and increase profits."

### Challenge: Maintain Temperatures and Humidity in Cannabis Grow Rooms

Environmental controls are essential to ensuring successful cannabis crops. CBD production requires a very expensive and complex growing process. The plants need specific daytime and nighttime temperatures as well as consistent humidity to maintain the balance needed for a quality product. One environmental deviation could potentially lose the entire crop.

The grower was looking for an HVAC energy management system that would: 1) Enable remote monitoring of HVAC equipment. 2) Control humidity and temperatures in the grow rooms. 3) Enable remote control of thermostats using a single mobile app. 4) Provide an affordable solution to solve the energy

management challenges. 5) Have one brand of thermostat to control all types of HVAC systems. 6) Solution: Venstar ColorTouch Thermostats and Remote Sensors.

Chaffin recommended Venstar's ColorTouch Wi-Fi thermostats (model T8900) and Remote Temperature Sensors (model ACC-TSENWIFIPRO), which are remotely monitored by Venstar's free Skypoint Mobile App.

Chaffin Air installed more than 100 ColorTouch thermostats at the grower's facility, which encompasses dozens of growing rooms ranging from 900 to 1,200 square feet. Each grow room has six ColorTouch thermostats: three thermostats control the air conditioning units with steam humidifiers while the other three thermostats control the de-humidification units. In addition, Venstar's remote temperature sensors were installed in the grow rooms to monitor and ensure exact temperatures.

The grow rooms operate on 12-hour cycles: 12 hours dark and 12 hours light. During the dark hours, the temperature is maintained at 75–78 degrees. Within 30 seconds of the lights coming on, the temperature can reach 99 degrees.

**Results: Controlling the Environment Doubles Production, Increases Profits**

### Results: Controlling the Environment Doubles Production, Increases Profits

Using Venstar's solution to control the temperature and humidity in its grow rooms, the grower is able to produce a crop in half the time as a non-controlled growing environment. This faster production time as well as the reduction in lost crops helps the grower increase profits.

Benefits of the Venstar energy management solution include: 1) An affordable alternative to an expensive HVAC energy management system. 2) Remote monitoring and control of temperatures and humidity. 3) Reliability to ensure the proper environmental conditions. 4) Ability to remotely view the system and energy usage

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North Florida Air Conditioning Contractors Association hosts a Clay Shoot at Jacksonville Clay Target Sports on Friday August 28th. We will gather at 8am, shotgun start at 9am, Followed by lunch. Visit [www.nfacca.com](http://www.nfacca.com) for more information, and also to register for this event.

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## Pompano Beach Contractor Turns Back Time Looking for the Oldest AC in Broward County

POMPANO BEACH, FL - GMC Air Conditioning Services is on an archaeological expedition to find the oldest working air conditioner and replacing it with free energy efficient air conditioner.

GMC is excited to uncover this relic and reverse the curse of a high energy bill for one lucky winner. Entering is simple, fill out the entry form on their website, shoot them a like on facebook and you're entered! Enter while you can, the winner will be announced on July 31, 2020!

A representative of GMC will stop by to verify

the age of the system and survey the area for the potential installation. If you think your air conditioner is an ancient artifact, enter today to win! All entrants will receive a certificate to save \$500 on a new air conditioner from GMC.

GMC AC Services is a family-owned and operated business serving residential and commercial customers as a one stop shop for all indoor comfort, air quality, HVAC service and maintenance needs. GMC is in Pompano Beach and serves Broward county and parts of Palm Beach County.

## New Evap-Fresh Ready-to-Use Spray Fights Viruses



St. Louis, MO – Nu-Calgon has launched a new pump spray version of Evap-Fresh No Rinse coil cleaner and disinfectant. The ready-to-use liquid spray is a non-abrasive, one-step cleaner and disinfectant for evaporator coils in small air conditioners, commercial air handling equipment, HVAC cooling coils and refrigeration equipment. It is the first product of its kind in the industry to receive EPA registration for such claims.

Although Evap-Fresh is highly

effective at cleaning and controlling mold and mildew on evaporator coils, it also has demonstrated effectiveness against viruses similar to 2019-nCoV on hard, non-porous surfaces. Evap-Fresh's chemistry is listed on the EPA's Registered Antimicrobial Products for Use Against Novel Coronavirus SARS-CoV-2, the Cause of COVID-19.

In addition to the new 32-ounce spray bottle, Evap-Fresh liquid is also available in a one-gallon size. For over 70 years, Nu-Calgon has been providing quality specialty chemical products for the HVACR market. For more information, visit [www.nucalgon.com](http://www.nucalgon.com).

## National HVACR Educators and Trainers Conference Goes Virtual

HVAC Excellence is pleased to announce the 2021 National HVACR Educators and Trainers Conference will be held online, making it simple, affordable, and safe for all to attend.

Over the past few months, the HVAC Excellence executive board has been closely monitoring the COVID-19 situation, CDC guidelines, and the valuable feedback and input we received from those who participate in, and support, our annual event. After carefully evaluating all the data available to date, the board has unanimously decided to move forward with a virtual event for 2021.

Many of our trusted industry partners, participating organizations and attendees have expressed concerns regarding their desire and/or ability to travel based on a variety of personal, organizational, and/or medical issues. HVAC Excellence, in part by convening its annual conference, knows that our industry's educators reap great value from the training sessions, comradery and partnerships that are forged and strengthened by the event. HVAC Excellence also realizes that significant benefits can be realized by our educators and trainers regardless of where the event is convened or how the valuable content is delivered.

When the pandemic reared its ugly head, many who were teaching live classes one day, found themselves learning, very quickly, how HVACR training could be offered differently. Blended, remote and distance learning, once thought to be options to support live training, are now taking the lead in terms of content delivery. These instructional methods are forging the path toward a new normal in education. Even after a vaccine for the virus is found, proven and readily available, it is highly unlikely that the delivery of HVACR training will return as we knew it in our pre-COVID world. With that in mind, HVAC Excellence concluded that there is no better way to conduct the event than in a manner that closely mirrors the face of today's training.

The 2021 conference will be an event unlike any before! Participating organizations will be able to conduct training programs from their facilities, allowing them to showcase technologies not readily available at an event conducted at a hotel or convention center. A face-to-face conference typically runs for a few days, offering many concurrent sessions, forcing attendees to ultimately select one session over another. The 2021 conference format ensures that all attendees will have the opportunity to attend ALL sessions and learn about ALL the companies that make the event possible. How? All sessions will be available not for two or three days, but for 120 days! This format will allow ALL attendees to attend EVERY session as they are broadcast beginning March 15, 2021, watch them again and again, or show them to students if they so choose. Upon completion of a session, attendees will be prompted to download a continuing education certificate, which they can print or file electronically.

The \$129.95 conference registration will include: access to all sessions as broadcast, access to all sessions post conference for 120 days, the opportunity to learn about industry partners that can strengthen and support your program and earn continuing education units that directly relate to the content being offered. Those who have previously registered will receive an account credit to compensate for any difference between the registration fee paid and the new registration fee. This account credit can be used for HVAC Excellence or affiliate examinations, publications or elearning products.

Understanding that instructors must request permission to participate in training events such as this one at the beginning of the academic year, it is imperative that a schedule of offered sessions be readily available to them early on. As such, HVAC Excellence has already begun to reach out to our educational partners, and hope to have a list of sessions available by the end of August. It has been, and will continue to be, the mission of HVAC Excellence to improve the overall quality of education in the HVACR industry. With no travel, hotel, or meal costs to consider, professional development for HVACR educators and trainers has never been easier. Visit <https://www.escogroup.org/hvac/>.

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# Performance Pointers

by David Richardson



## The Impact of Attic Supply Duct Leaks in the Summer

The other day someone asked me an interesting question. "Do supply leaks in attic duct systems pick up and transport hot attic air into the living area?" I must admit, I never looked at attic supply duct leakage in the cooling mode this way. However, it brought up some great discussion about what happens when it exists.

If you install and service HVAC systems in attics, it's important to understand how supply duct leakage affects your customer's comfort and how your systems perform. Let's look at what happens when supply air leaks into a hot attic. It may lead you to solutions for some of your long-standing problems.

### Loss of Conditioned Air

The first issue to consider is what happens to air lost into the attic through supply duct leaks. It helps to review two airflow principles that illustrate what happens as air circulates through a supply duct system.

1. *Air takes the path of least resistance* - it's easier for air to pass through a large duct leak (or multiple small leaks) near the air-handling equipment than to travel to a supply register.

2. *One cfm in = One cfm out* - our industry measures airflow in cfm (cubic feet per minute). Ideally, for each cfm of air that goes into a supply duct system, the same amount should also come out.

Let's say you have a three-ton cooling system and determine the supply duct system has 1050 cfm blowing into it. In a leak-free duct system, you should also have 1050 cfm blowing out from supply registers. However, if the supply ducts leak, air will follow the path of least resistance and you'll no longer have one cfm in and one cfm out.

In this scenario, there is less conditioned supply air available from the registers to cool the building. As a result, equipment often can't keep up and

maintain comfortable conditions and you end up with hot and muggy rooms. This is when the complaints begin. You'll notice these issues are from a lack of delivered airflow, not attic air pushing into the living space.

Also, supply air that leaks from an externally insulated duct system can lead to condensation between the duct and insulation. If you ever deal with a moisture-damaged ceiling, and the cause isn't obvious, supply duct leakage might be the reason.

### Addition of Unconditioned Air

While supply duct leaks in an attic do not directly pick up and transport attic air into the living space, they can create a negative pressure (vacuum) situation that pulls attic air and outside air into the living space. This leads to extra heat and moisture that the HVAC system tries to remove. Unfortunately, the equipment can't handle the excess load and capacity plummets.

Remember the principle of one cfm in = one cfm out. The blower tries to move the same amount of air. It doesn't care where it comes from. Let's say that you have 200 cfm of supply duct leakage, but all the return duct is inside the living space and sealed airtight.

Now you have a difference in airflow amounts. There is too much return air pulled from the living space and not enough supply air is blown into it. If you measured airflow from this system, you would see 850 cfm total from the supply registers and 1050 cfm through the return grille.

Imagine how your customers will feel when the extra 200 cfm of return air comes in from the attic and outdoors. It doesn't take long to overwhelm a system's capacity when you mix 140°F attic air and 72°F dew point outside air. You're left with a system that runs non-stop and doesn't remove enough humidity or lower the space temperature.

### Action Steps

If you suspect a supply duct leakage problem, begin with a visual inspection of the duct system. You may notice your problem is something simple, like a disconnected supply branch the cable guy kicked loose. However, if there is a deeper problem, consider additional testing beyond this article.

One test is to perform a building pressure test with a micromanometer. It's a quick test that tells you a lot about attic duct system integrity. At a high-level, you turn the air handler fan to its highest operating speed and watch what happens to pressure inside the living space. If it goes into a vacuum (negative pressure), it could reveal supply duct leakage. Remember, systems with a central return and/or closing interior doors can amplify this effect.

If the results are inconclusive, it's time to measure delivered airflow with a quality balancing hood. You should charge an additional fee for performance testing like this—don't do it for free. If you find supply duct leakage, add a quick total external static pressure test to assure the duct system can handle sealing or if you need to recommend additional duct upgrades.

*David Richardson serves the HVAC industry as a curriculum developer and trainer for the National Comfort Institute, Inc. (NCI). NCI specializes in training focused on improving, measuring, and verifying HVAC and Building Performance.*

*If you're an HVAC contractor or technician interested in learning more about airside testing, contact David at davidr@ncihvac.com or call him at 800-633-7058. NCI's website [www.nationalcomfortinstitute.com](http://www.nationalcomfortinstitute.com) is full of free technical articles and downloads to help you improve your professionalism and strengthen your company.*

## ASHRAE Introduces Updated Reopening Guide for Schools and Universities

ATLANTA (July 22, 2020) – The ASHRAE Epidemic Task Force has developed guidance on the operation of HVAC systems to help mitigate the airborne transmission of SARS-CoV-2 as schools prepare to reopen for the fall academic year.

The 41-page Presentation includes convenient checklists to prepare educational buildings to resume occupancy such as starting up HVAC systems as well as checks and verifications to maintain during the academic school year. The guidance is meant to provide practical information to school districts and university campus environmental health managers, facility managers, administrators, technicians and service providers.

"As schools prepare to reopen for the fall academic semester, it's important to keep children and school staff safe," said 2020-21 ASHRAE President Charles E. Gullledge III, P.E. "ASHRAE's school reopening guide will serve as a resource to school leaders as they work in lockstep with health experts to finalize plans to keep everyone safe."

The guide includes the following topics:

- Determining Building Readiness
- Equipment & System Specific Checks & Verifications During the Academic Year
- New/Modified Facility Design Recommendations
- Filtration Upgrades
- Operations of Occupied Facilities

- Controlling Infection Outbreak in School Facilities
- Higher Education Facilities Recommendations

Also included is guidance formulated to help designers retrofit and plan for the improvement of indoor air quality and to slow the transmission of viruses via the HVAC systems as well as new guidance on student health facilities, laboratories, athletic facilities, residence halls, and large assemblies, lectures and theatres.

"School and university officials are challenged with making very difficult decisions on how to best protect both students and staff as education facilities reopen, said Corey Metzger, ASHRAE Epidemic Task Force Schools Team lead. "This guidance offers a solid framework on ventilation control, filtration and maintenance that can be applied to different climate zones, building types and HVAC systems."

For the complete ASHRAE Epidemic Task Force school reopening guide and other COVID-19 resources, visit [ashrae.org/COVID-19](http://ashrae.org/COVID-19).

Founded in 1894, ASHRAE is a global professional society committed to serve humanity by advancing the arts and sciences of heating ventilation, air conditioning, refrigeration and their allied fields. ASHRAE is celebrating 125 years of shaping the built environment. Become a member of ASHRAE by visiting [ashrae.org/join](http://ashrae.org/join).

## Armacell's ArmaFlex® Ultra with FlameDefense™ Technology Becomes First Flexible Elastomeric Foam Insulation to Receive UL Classified Mark



Chapel Hill, North Carolina, 8 July 2020 – Armacell, a global leader in flexible foam for the equipment insulation market and a leading provider of engineered

foams, announced the commercial market release of ArmaFlex Ultra with FlameDefense technology, the first flexible elastomeric foam insulation UL Classified as to UL 723 with a 25/50 rating.

Armacell's innovative FlameDefense technology helps resist burning and reduces smoke development. In the event of fire, materials that are UL 723 classified will burn slower and produce less smoke, giving occupants and first responders precious extra time. With patent pending FlameDefense technology, ArmaFlex Ultra goes beyond the required building codes and international safety regulations, thus furthering the company's commitment to safety and energy efficiency.

"Safety is at the center of what we stand for at Armacell and as such, we are constantly looking at ways to improve our products while making safety a top priority," says Ciro Ahumada, Armacell's Vice President AMERICAS. View more information about ArmaFlex Ultra: <https://www.armacell.us/products/armaflex-ultra>



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# What Should My Superheat Be?

By Bryan Orr



Bryan Orr

The most common and often most frustrating questions, that trainers and senior techs get goes something like this. “What should my \_\_\_\_\_ be?” or “My \_\_\_\_\_ is at \_\_\_\_\_ does that sound right?”

Usually, when the conversation is over both the senior and junior techs walk away feeling frustrated because the junior tech just wanted a quick answer and the more experienced tech wants them to take all of the proper readings and actually understand the relationships between the different measurements.

In this series of articles we will explore the, “What should my \_\_\_\_\_ be?” questions one at time and hopefully learn some things along the way. So what should the superheat be?

First, what is superheat anyway? It is simply the temperature increase on the refrigerant once it has become fully vapor. In other words, it is the temperature of a vapor above it's boiling (saturation) temperature at a given pressure.

The air around us is all superheated! Head for the Hills! How can you tell that the air around us is all superheated? Because the air all around us is made of vapor. If the air around us were a mixture of liquid air and vapor air, first off you would be dead and secondly, the air would be at SATURATION. So the air around us is well above its boiling temperature (-355° F) at atmospheric pressure which means it is fully vapor and SUPERHEATED. In fact, on a 75-degree day, the air around you is running a superheat of 430°

But why do we care? We measure superheat (generally) on the suction line exiting the evaporator coil and it helps us understand a few things.

#1 – It helps ensure we are not flooding the compressor

First, if we have any reading above 0° of superheat we can be certain (depending on the accuracy and resolution of your measuring tools) that the suction line is full of fully vapor refrigerant and not a mix of vapor and liquid. This is important because it ensures that we are not running liquid refrigerant into the compressor crankcase. This is called FLOODING and results in compressor lubrication issues over time.

#2 – It gives us an indication as to how well the evaporator coil is being fed

When the suction superheat is lower it tells us that saturated (boiling) liquid/vapor mixture is feeding FURTHER through the coil. In other words, lower superheat means saturated refrigerant is feeding a higher % of the coil. When the superheat is higher we know that the saturated refrigerant is not feeding as far through the coil. In other words higher superheat means a lower % of the coil is being fed with saturated (boiling) refrigerant.

The higher the % of the coil being fed the higher the capacity of the system and the higher the efficiency of the coil.

This is why on a fixed orifice system we often “set the charge” using superheat once all other parameters are properly set. Adding refrigerant (on a fixed orifice / piston / cap tube) will feed the coil with more refrigerant resulting in a lower superheat. Removing refrigerant will increase the superheat by feeding less of the coil with saturated (mixed liquid and vapor) refrigerant.

This method of “setting the charge” by superheat does not work on TXV / TEV / EEV systems because the valve itself controls the superheat. This does not negate the benefit of checking superheat, it just isn't used to “set the charge”.

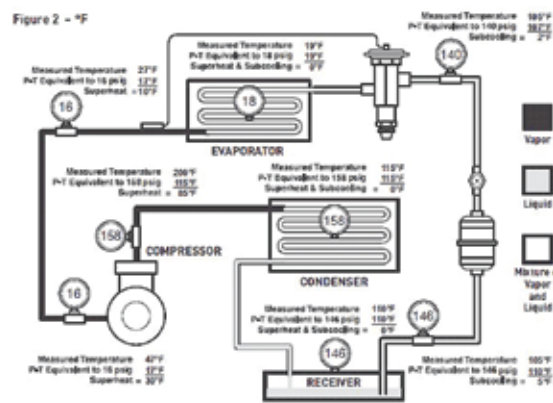


Image courtesy of Parker / Sporlan

#3 – We can ensure our compressor stays cool by measuring superheat

Most air conditioning compressors are refrigerant cooled. This means that when the suction gas (vapor) travels down the line and enters the compressor crankcase it also cools the motor and internal components of the compressor. In order for the compressor to stay cool, the refrigerant must be of sufficient volume (mass flow) and low temperature. Measuring superheat along with suction pressure gives us the confidence that the compressor will be properly cooled. This is one reason why a properly sized metering device, evaporator coil, and load to system match must be established to result in an appropriate superheat at the compressor.

#4 – Superheat helps us diagnose the operation of an active metering device (TXV / TEV/ EEV)

Most “active” metering devices are designed to output a set superheat (or tight range) at the outlet of the evaporator coil if the valve is provided with a full liquid line of a high enough pressure liquid (often at least 100 PSIG higher than the valve outlet / evaporator pressure). Once we establish that the valve is being fed with a full line of liquid at the appropriate pressure we check the superheat at the outlet of the evaporator to ensure that the valve itself is functioning properly and /or adjusted properly. If the superheat is too low on a TEV system we would say the valve is too far open. If it is too high the valve is too far closed.

#5 – Superheat is an indication of load on the evaporator

On both TEV / EEV systems and fixed orifice systems (piston / cap tube) you will notice that when the air (or fluid) going over the evaporator coil has less heat, or when there is less air flow (or fluid flow) over the evaporator coil the suction pressure will drop. However, on a TEV / EEV system as the heat load on the coil drops the valve will respond and shut further, keeping the superheat fairly constant. On a fixed orifice system as the load drops so will the superheat. It can drop so much on a fixed orifice system that when the system is run outside of design conditions the superheat can easily be zero resulting in compressor flooding.

When the load on the evaporator coil goes up a TEV / EEV will respond by opening further in an attempt to keep the superheat constant. A fixed metering device cannot adjust, so as the heat load on the coil goes up, so does the superheat.

When charging a fixed orifice A/C system you can use the chart below to figure out the proper superheat to set once all other parameters have been accounted for or you can use our special superheat and delta t calculator .

Superheat for A/C with fixed Orifice R-22

Outside Air Temperature Dry bulb	Evaporator Inlet Air Temperature Fahrenheit Wet Bulb (enthalpy)																			
	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82			
60	7	11	13	17	18	20	24	26	28	30										
65		8	11	13	15	17	18	22	25	28	30									
70			8	11	12	14	16	18	22	25	28	30								
75				7	10	12	14	16	18	23	26	28	30							
80					6	8	12	14	16	18	23	27	28	30						
85						6	8	12	14	17	20	25	27	28	30					
90							6	8	9	12	15	18	22	25	27	28	30			
95									7	11	13	16	20	23	24	26	28	30		
100										5	8	11	14	18	20	22	24	26	28	
105											6	8	12	15	19	21	23	25	26	
110												5	7	11	12	17	19	21	23	25
115													5	8	13	15	17	20	22	23

Using this chart requires that you measure indoor (return) wet bulb temperature so that the heat associated with the moisture in the air is also being accounted for as well. This is one of MANY target superheat calculators out there, you can use apps, sliderules etc... Here is ANOTHER ONE. Remember, this chart ONLY applies to fixed orifice systems.

So what should your superheat be in systems with a TEV / EEV? The best answer is... like usual... Whatever the manufacturer says it should be. If you really NEED a general answer you can generally expect

High temp / A/C systems to run 6 – 14 degrees of superheat / Medium Temp – 5-10 / Low Temp – 4-10

Some ice machines and other specialty refrigeration may be as low as 3 degrees of superheat

When setting superheat on a refrigeration system with any type of metering you often must get the case / space down close to target temperature before you will be able to make fine superheat adjustments due to the huge swing in evaporator load. Once again, refer to manufacturer's design specs.

— Bryan

## WHVACR 17th Annual Conference

We will be holding our 17th Annual Conference this September 9-11th in Chicago, Illinois. Join us for this exciting event as you reconnect with old friends and network with other women leaders in the HVACR industry.

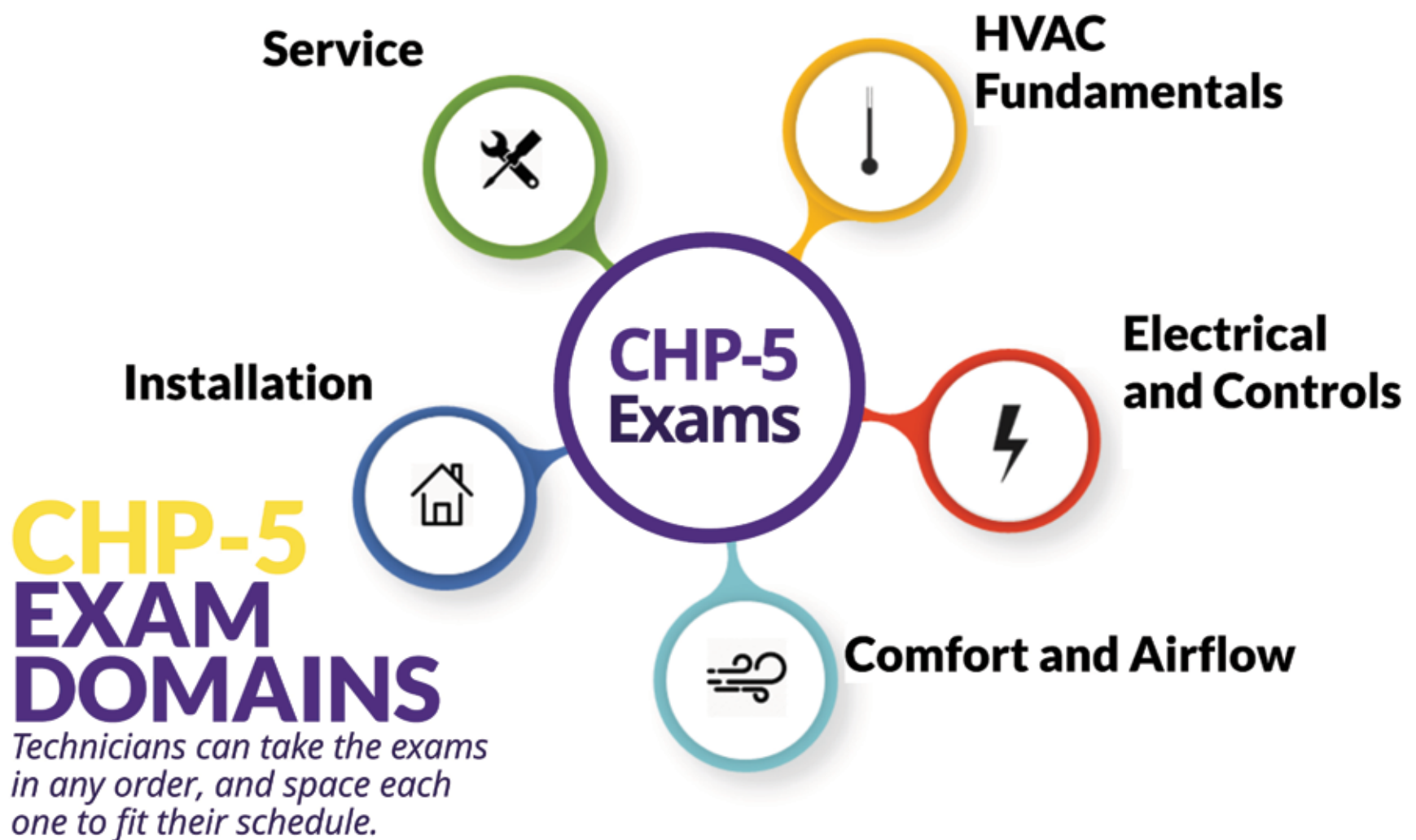
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## Fieldpiece Instruments Welcomes Jeb Ball as New Vice President of Sales



Jeb Ball

Orange, Calif., July 2, 2020 -- Fieldpiece Instruments, the only company solely dedicated to creating tools and test instruments for HVACR professionals, announces that Jeb Ball has joined the company as Vice President of Sales. Jeb is a proven sales leader with a

focus on driving results, building strong partner relationships, delivering excellent customer service and developing team and employee success.

"I'm excited to have Jeb join us to help drive sales and our overall growth," said CEO Cameron Rouns. "Jeb's business knowledge and experience combined with his proven track record are well suited for Fieldpiece's expansive growth strategy."

Most recently, Jeb worked with Fieldpiece in an advisory role helping with strategic planning and leading their go-to-market efforts. Previously, he held a number of Executive positions with technology and visual marketing companies. His positive impact of sales leadership in industry leading firms included companies such as Noosh where he was Executive Board Member and Coloredge where he was CEO.

"I'm proud to be part of the Fieldpiece team during a time of industry growth and increasing customer demand for our new, technology-driven products. I look forward to working with our customers and accelerating Fieldpiece's tremendous success," said Jeb.

## Steve Foutch Joins Comfort Supply as Executive Vice President



Steve Foutch

NASHVILLE, Tenn. – July 20, 2020 – Leading Tennessee HVAC wholesale distributor Comfort Supply announced today that Steve Foutch has joined the company as executive vice president. Foutch has more than 29 years of experience in the HVAC industry, both residential and commercial.

As EVP, Foutch will oversee all seven Comfort Supply locations in Middle Tennessee as well as the company's commercial department within the corporate office. His other responsibilities include developing plans and strategies for business development, managing customer and vendor relationships, coordinating sales training programs and overseeing branch managers.

"Steve is a seasoned professional and a strong leader with tremendous business acumen," said Comfort Supply President Clay Blevins. "We are confident he will be an asset to our team and are thrilled to have him with us."

Foutch previously worked at Lennox Industries, a HVAC manufacturer and distributor in Nashville. He joined Lennox in 2004 as a regional business manager and was promoted to district manager in 2006. He was named zone manager in 2009 and served in that position for 11 years, overseeing 12 of the company's distribution locations. During his time at Lennox, he received several awards, including Zone Manager of the Year in 2010 and 2019 and the Lennox Top Gun Award in 2010 through 2014 and 2018.

Prior to his time at Lennox, Foutch worked in Texas for a number of HVAC manufacturers and suppliers. He served as an area sales manager for Comfort Supply Incorporated (a division of Watsco), a regional sales manager for Lindab Incorporated and Krueger, and a district sales manager for Research Products Corporation. Foutch earned his bachelor's degree in business administration, marketing from Texas Tech University in Lubbock, Texas.




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# ASHRAE Introduces 2020-21 President, Officers and Directors

ATLANTA (July 2, 2020) – ASHRAE is pleased to introduce its 2020-21 Society president, executive committee officers and directors. ASHRAE's 2020-21 president is Charles E. Gullledge III, P.E., Fellow ASHRAE. During his inaugural presidential address, Gullledge announced the new Society theme will be "The ASHRAE Digital Lighthouse and Industry 4.0." The theme focuses on reimagining the building industry by not only integrating industry segments, but technology. He explained how capturing and linking knowledge requires an understanding of how to collect, store and analyze data so that it is insightful and actionable.

"We have an opportunity to challenge what work is, how it should be approached and where it can be performed," said Gullledge. "We can engage our workforce in activities that seek and create value. Data, becomes a critical resource. Everything that unfolds in the future revolves around data." Gullledge is a senior mechanical engineer at Environmental Air Systems, LLC in High Point, North Carolina.

Elected officers who will serve one-year terms are as follows:

**President-Elect:** Michael C.A. (Mick) Schwedler, P.E., Fellow ASHRAE, LEED AP, staff applications engineer, Trane, La Crosse, Wisconsin.

**Treasurer:** Farooq Mehboob, P.E., Fellow Life Member ASHRAE, principal consultant, S. Mehboob & Company Consulting Engineers, Karachi, Pakistan.

**Vice President:** Donald L. Brandt, Life Member ASHRAE, sales engineer, Trane, Phoenix, Arizona.

**Vice President:** K. William (Bill) Dean, P.Eng., Life Member ASHRAE, regional site operations manager, National Research Council of Canada, Saskatoon, Saskatchewan, Canada.

**Vice President:** Tim McGinn, P.E., HBDP, principal, McGinn Technical Services, Calgary, Alberta, Canada.

**Vice President:** William F. (Bill) McQuade, P.E., Fellow ASHRAE, LEED AP, vice president sector services, Air Conditioning, Heating, & Refrigeration Institute, New Cumberland, Pennsylvania.

ASHRAE introduced its newest Directors and Regional Chairs who will serve three-year terms from 2020-23: **Region VII Director and Regional Chair:** Chris M. Gray, Ph.D., P.E., chief technology officer, RENU Communities, Atlanta, Georgia. **Region VIII Director and Regional Chair:** Randy C. Schrecengost, P.E., senior project manager, Stanley Consultants, Austin, Texas. **Region IX Director and Regional Chair:** Tyler J. Glesne, mechanical engineer, Control Services, Inc., Omaha, Nebraska. **Region X Director and Regional Chair:** Devin Abellon, business development manager, Uponor, Los Angeles, California. **Region XIV Director and Regional Chair:** Andres J. Sepulveda, president, Commtech, Madrid, Spain.

ASHRAE also introduced its newest Directors-at-Large (DALs): Kenneth Fulk, principal, Reed Wells Benson & Company, Allen, Texas. Wade Conlan, P.E., principal, Hanson Professional Services, Maitland, Florida. Adrienne Thomle, retired, Reno, Nevada.

## General Filters' New GeneralAire® Models 3200 & 4200 Evaporative Humidifiers Designed For Today's High-Efficiency Furnaces



General Filters, Inc. announces new GeneralAire® models 3200 & 4200 Evaporative Humidifiers, designed with high efficiency furnaces, lower plenum temperatures, tight installation spaces, and ease of contractor installation in mind. Virtually every component of today's typical humidifiers has been redesigned.

First, the new low-profile cover eliminates unnecessary cavities that allow hot furnace air to circulate and cool before passing through the Vapor Pad. The low-profile design of the new cover directs hot furnace

air immediately through the Vapor Pad at its warmest point to maximize output.

Additional enhancements that maximize output include a new water distribution trough that distributes water more evenly throughout the entire Vapor Pad®; a redesigned pad frame that ensures maximum pad surface exposure; and a stainless steel water supply tube that allows for hot water installation. The resulting 3200 & 4200 models represent a radical and efficient departure of current evaporative humidifier designs to achieve maximum output with today's new furnaces.

The 3200 accommodates a 3200 square foot home and the 4200 accommodates a 4200 square foot home; helping counter sales and contractors easily select the right model for the job. The compact case design also addresses the issue of reduced installation spaces and offers a simple process for the reorientation of the by-pass and solenoid valve (L to R). The humidifiers are constructed using sturdy UV stable plastics, with an easy snap-in-place cover that features the new GeneralAire® brand logo design.

Performance, selection, ease of installation and simple maintenance are achieved by this revolutionary design. For additional information, contact: Allan Feys at 866-476-5101 x 201, or email allanf@generalfilters.com

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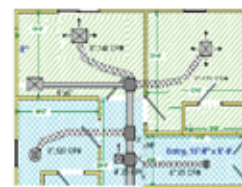
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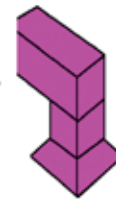
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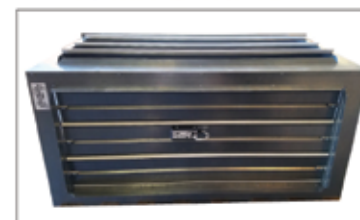
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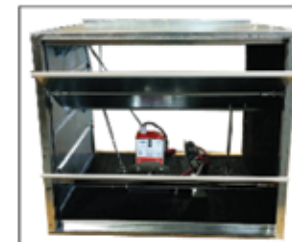
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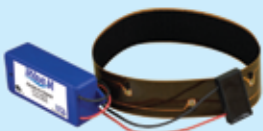
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### **PurCool® Strips** 61043

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An outstanding general purpose coil cleaner, providing detergency and degreasing as well as deodorizing capability. Its positive emulsion technology is very effective against oily grime as it converts the deposits into a more liquid form that can be easily rinsed. Non-acid, non-toxic, and biodegradable. NSF registered. Great for microchannel coils.

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