

HIGH PERFORMANCE HVAC TODAY™

If You Don't Measure, You're Just Guessing!™

**Become a
Performance-
Based Marketer**

**The Fallacy of Refrigerant Charge Adjustments
Why System Performance is So Important
Contractor Spotlight: Hydes Air Conditioning**



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MAY 2018 VOLUME 2 NUMBER 5

HIGH PERFORMANCE HVAC TODAY™

MARKETING:

How To Become a Trusted Performance- Based Marketer

What are the realities of marketing your Performance-Based business today. Contractor Nancy McKeraghan explains.

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CUSTOMER SERVICE:

Why is Residential System Performance So Important?

How can you deliver the comfort you promise customers if you do not test, measure, and verify. Contractor Scott Getzschman shares how his company greatly improved customer service.

COMMERCIAL:

Refrigerant Charge Adjustments: Not a One-Size-Fits-All Solution

Engineer Ben Lipscomb, P.E. says proper charge is critical for system performance. But it is not the key to solving comfort issues.

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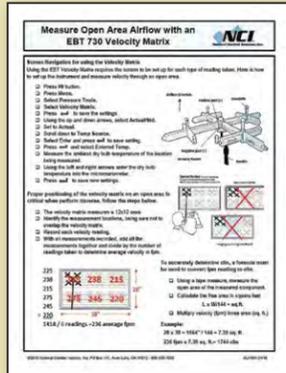


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Monthly Download



This month we provide you instructions on how to use an Anlor EBT 730 micro-manometer to measure open area airflow.

It includes step-by-step instructions on how to set the instrument up. The procedure sheet also highlights proper positioning of the velocity matrix, and shares a

formula you can use to convert fpm to cfm.

Illustrations make following the process faster and easier.

Go to ncilink.com/md0518, or use your phone with the QR Code below.

By registering for free on NCI's website, access this download and many more.



Online University

Featured this month is the course on Pulley Adjustment and Belt Sizing. Adjustable pulleys are the most common method for changing fan speed in light commercial rooftop and package units.



In this course you will learn how to **change the pitch** on an adjustable pulley, understand how to **adjust motor mounts** to set belt tension, learn how to **align the motor and fan**, be able to **de-**

termine correct belt deflection, and learn the **formula for determining new belt sizes**.

Read more here: ncilink.com/ou0518



BLOG POSTS

COLONOSCOPY & AN HVAC SERVICE CALL



You might find it difficult to relate HVAC and colonoscopy customer service. In this blog post from 2017, NCI President Rob Falke compares how the medical profession addresses a customer's need to be informed versus how the HVAC profession does it. Read his post at ncilink.com/colon

HOW KINETIC ARE YOU?



David Richardson writes about how the use of energy is what drives an HVAC system. He goes on to define the differences between kinetic and potential energy how each impacts an HVAC system. Sound interesting? Well guess what -- he then examines how we can apply these principles daily to our personal lives.

Read this blog post at ncilink.com/kinetic

There's an App for that . . .

There are many mobile apps intended for use by HVAC contractors. But who knows which ones are legit? NCI's David Richardson has found a number of them pertinent to the Performance-Based Contracting Community™, and we present those here.



This month, we feature the **ASHRAE HVAC Duct Sizer App**. It is available in both the [Apple](#) and [Google](#) App stores and allows technicians to quickly size HVAC ducts using the constant friction method.

The app provides for sizing by airflow, dimensions, and "range of duct sizes." You can specify duct shape, air temperature, and air pressure. All inputs and results can be emailed out for further analysis using your laptop or desktop computer.

The app costs \$5.99 and was last upgraded in Feb. 2018.



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Daniel De Leon
General Manager, Plumbing Division
Cissie Wester
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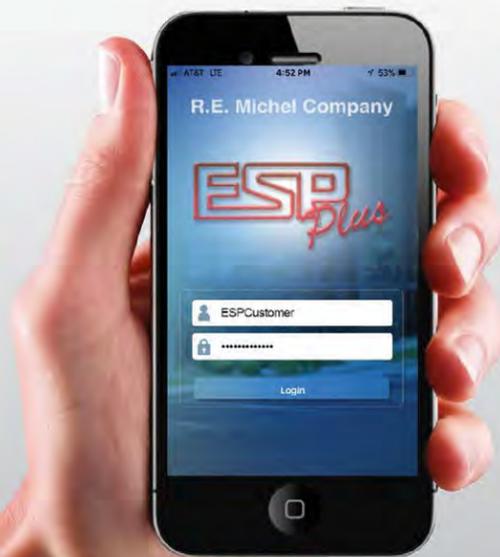
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Refrigerant Phaseouts Are Back in the News



Mike Weil is editor-in-chief and director of Communications and Publications at National Comfort Institute, Inc.

Not that they were ever really out of the news, but 2018 is another milestone year in the never-ending story of refrigerant chemicals and climate change. First a little “catch-up” background.

The Environmental Protection Agency (EPA) initially called for the phaseout of R-22 (and other hydrochlorofluorocarbon-based refrigerants), beginning in 2010. That year, they banned the import and production of R-22 for use in new equipment. Technicians can still use it to service and repair existing systems, though that will also be banned beginning in two years.

After 2020, only recycled and reclaimed R-22 can be used for those purposes.

Other types of refrigerants were added to banned/phase-out lists soon after 2010, most notably those meant to replace the CFC-based ones. These are refrigerants containing hydrofluorocarbons (HFCs).

Fast forward to 2018. In accordance to the [Kigali Amendment of the 1987 Montreal](#)

[Protocol](#), 2018 is the year the U.S. and other developed nations are to **stop producing HFCs, then decrease their use by 10% in 2019 and 85% by 2036.**

With the imminent complete ban on new R-22 production and increasing phaseout of R-410A and other HFCs, the HVAC Industry will have to rely on recycled and reclaimed stockpiles to continue servicing existing equipment.

But according to the EPA, annual reclamation has slowed down, and that may negatively impact the availability of “[pure](#)” refrigerants in the not-too-distant future.

For example, EPA says more than nine million pounds of R-22 was reported reclaimed in 2016. Sounds good right? In fact it is. That number shows a gain over reclamation in 2014 and 2015, but EPA says it is still significantly lower than the numbers reported in 2008.

WILL THERE BE ENOUGH?

So everyone knows I am no math genius, but it doesn't take one to figure out that if reclaimed R-22 continues a downward spiral, there is a good chance we won't have enough to service all the HVAC equipment out there when the complete ban goes into effect.

It really is in everyone's best interest to take another look at recovering and reclaiming R-22 and other banned refrigerant chemicals. Many of the refrigerant distributors around the country have programs to help.

Even the EPA has ways to help. There are companies that will pay contractors for recovered refrigerant. These firms will even help you with your legal responsibilities. The EPA lists these companies on their website.

So don't be part of the problem. Join forces with contractors nationwide and be part of the solution. Stop your technicians from venting and let's pull our collective heads out of the sand and look to the future.

EPA 608 2018 Requirements

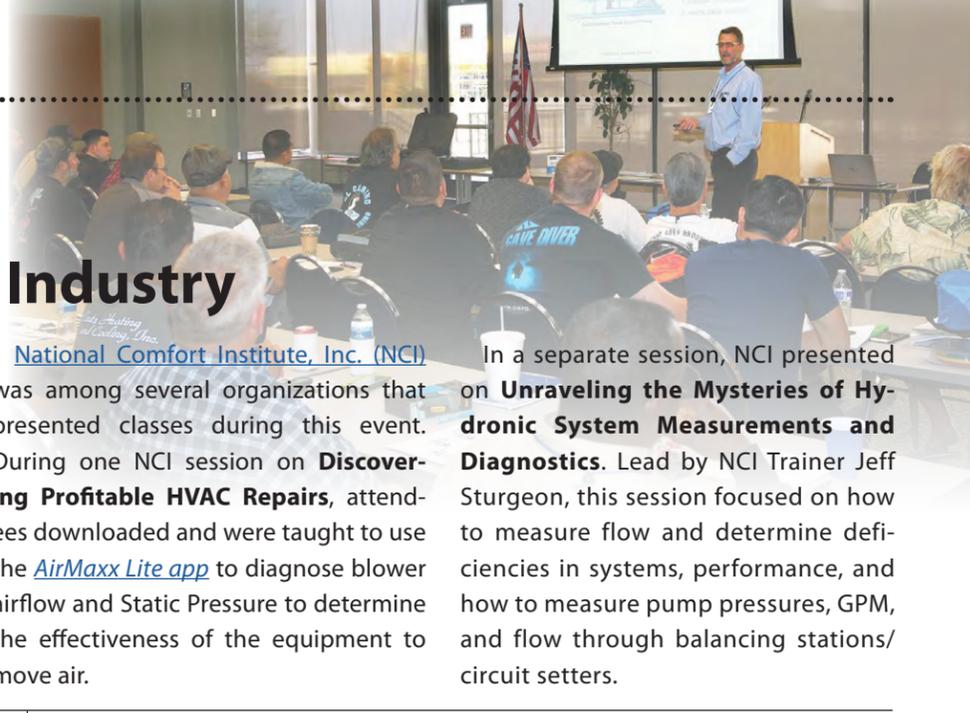
- Expands recordkeeping requirements for technicians who dispose HVAC appliances between 5-50 lbs. of fluorocarbon refrigerant.
- Requires technicians who handle hydrofluorocarbons (HFCs) to be EPA 608 certified.
- Extends evacuation level requirements to appliances with HFCs.
- Restricts the sale of HFC refrigerant to EPA certified technicians.
- Requires those who sell or distribute HFCs to keep invoices records.
- Extends evacuation level requirements to small appliances with HFCs.

Around the HVAC Industry

NCI TEACHES AT THE CALIFORNIA RSES SPRING CONFERENCE

The [Long Beach Chapter of RSES](#) and the [California RSES \(CARSES\)](#) hosted their 2018 Spring Conference and Technology Expo at El Camino College in Los Angeles earlier in April. This event educates attendees on the latest information on low mass hydronic heating systems and hydronic piping design.

[National Comfort Institute, Inc. \(NCI\)](#) was among several organizations that presented classes during this event. During one NCI session on **Discovering Profitable HVAC Repairs**, attendees downloaded and were taught to use the [AirMaxx Lite app](#) to diagnose blower airflow and Static Pressure to determine the effectiveness of the equipment to move air.



FIELDEDGE ACQUIRED BY ADVENT INTERNATIONAL

Recently, [Advent International](#), one of the largest global private equity investors, completed the acquisition of [FieldEdge](#) – a leading full-service management software provider. Advent then merged FieldEdge with another recent acquisition – service payments solution provider [Clearent](#). Financial terms of this transaction were not disclosed.

FieldEdge will retain its existing brand and operate as an independent subsidiary of Clearent. It joins Clearent's platform of independent software vendors (ISVs) servicing

Advent International
GLOBAL PRIVATE EQUITY

CLEARENT INTELLIGENT PROCESSING **FieldEdge**

select vertical markets with integrated payment solutions.

FieldEdge was founded in 1979 as dESCO and was originally designed to help its founders run their own HVAC contracting business. Today, the company provides a leading software-as-a-service (SaaS) solution called FieldEdge to provide field service management software to home service contractors.

FieldEdge is also a preferred partner of National Comfort Institute, Inc.

BAKER OPENS NEW DISTRIBUTION/SALES CENTER IN TEXAS

[Baker Distributing Company](#) announced on April 4, 2018 the opening of both a distribution center and a sales center in Arlington, TX. This expansion marks the company's third distribution center in the United States. The distribution center was previously located in Houston, TX, but was relocated to better service customers.

In addition, a sales center adjoining the distribution center also opened. Between the two new locations, more than 13 people are expected to be employed. Baker Distributing Company's sales centers are wholesale locations for contractors.

According to Company President Matthew Roth in a press release announcement, "The new distribution center is in a strategic location to better serve our customers. This distribution center, along with our continued focus on technology like our ecommerce platform and mobile application, will allow us to ship products to our other sales centers more quickly and efficiently."

He adds that the sales center being located right next door enables Baker customers to "purchase a wide variety of products without having to wait for their order to be shipped from a different location, allowing customers to purchase and receive products the same day – often within minutes."

Baker Distributing has provided customer service and high-quality heating, ventilation, and air conditioning since 1945, with more than 200 locations in 22 states.

Baker Distributing Company is a subsidiary of [Watsco \(NYSE: WSO\)](#).



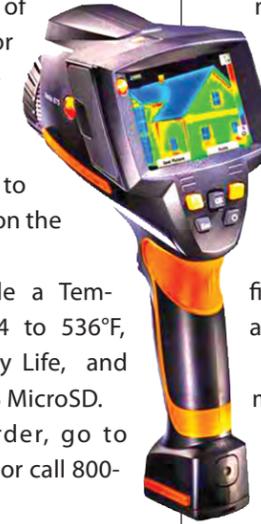
TESTO THERMAL IMAGER

This feature-packed adjustable lens thermal imager is ideal for a variety of applications including thermal imaging inspection. The Testo 875-1i has a temperature resolution of 80mK and a large sensor (160 x 120 pixels) providing superb image quality.

Testo uses enhanced digital image processing to maximize image quality on the color display.

Other features include a Temperature Range from -4 to 536°F, Long 4-hr/charge Battery Life, and plenty of storage via 2GB MicroSD.

To learn more or order, go to ncilink.com/Testo875-1i, or call 800-633-7058.



JL2 JOBLINK™ SYSTEM WIRELESS TRANSMITTER

With this transmitter, combined with the JobLink app, you can start running your HVAC jobs through your mobile device. You can fill out inspection checklists, view live measurements, gather in-depth diagnostics, and adjust systems to live data.

Take photos and notes for each system. All reports can be emailed to customers and your office, as well as saved in the cloud for access at anytime.

The JL2 Transmitter receives measurements from any Fieldpiece wireless manifold (SMAN4, SMAN440, SMAN460), the Fieldpiece wireless dual in-duct



psychrometer (SDP2), and wireless clamp meters (SC460 & SC660). Measurements are sent via radio frequency for extra distance - up to 100' from instrument to phone.

Then the JL2 transmitter converts all live measurements and data to a bluetooth connection with your mobile device. It comes with a belt clip, a 3.7 VDC rechargeable battery via a mini-USB port, and a USB charging cable.

For more information or to order, go to ncilink.com/JL2, or call 800-633-7058.

Upcoming NCI Training & Event Schedule

Combustion Performance & Carbon Monoxide Safety Certification Program

May 1-3: St. Cloud, MN
May 15-17: Los Alamitos, CA

Introduction to Hydronic Testing, Adjusting, & Balancing

May 8-9: Los Alamitos, CA*

Residential HVAC System Performance & Air Balancing Certification Program

May 15-17: Minneapolis, MN

Commercial HVAC System Performance Certification Program

May 22-23: Richmond, VA

Commercial Air Balancing Certification Program

May 8-10: Nashville, TN
May 15-17: Boston, MA
May 22-24: Los Alamitos, CA*

Duct System Optimization & Residential Air Balancing Certification Program

May 22-24: Milwaukee, WI

*Subsidized NCI training offered by Southern California Edison.

Performance is The Turning Point for Success

Question: How does one go from aerospace engineering to owning and operating an HVAC company? **Answer:** Very carefully. At least that is the story of Brian Hyde, an immigrant from England to Canada in 1955.

Four years later, Brian Hyde and his wife emigrated again, this time to Chula Vista, CA. For years he worked in the aerospace industry, raising his family.

But in the late 1960s and early 1970s, the aerospace industry suffered from economic woes that led to many layoffs. Brian Hyde became very disenchanted and got into the appliance repair business. He opened a shop in Orange County, CA. Besides appliance work, the company dabbled in HVAC repairs.

Hyde's sons originally had no desire to work in the family business, but did work their way through high school and college with the intent of starting their own careers.

While they worked with him, Brian Hyde instilled in them the power of treating customers right, of doing good work, and standing behind it. He taught them how those things created loyal customers. That modus operandi is still behind Hydes Air Conditioning today.

Eventually Brian left the business and moved to the desert to try his hand in the real estate business, which didn't work out. So he opened an ap-

pliance and HVAC company there.

That was in December 1980.

As his sons graduated college, they too eventually joined their parents in Palm Desert and began helping in the business.

Mike Hyde is one of three siblings. He says he moved to the desert in 1984.



They sold the Orange County company and focused on building the air conditioning business in Indio, CA.

Sometime around 1999, the company first crossed the million-dollar mark. "We hired our first sales person at that point," Mike Hyde says. "We became a lot more focused on the heating and air conditioning side of the business and spent less time on the appliances."

The reason, the appliance business wasn't growing, and air conditioning was bursting at the seams. He says appliance repair was a very small part of the business but generated cross referrals for air conditioning work.

EYE-OPENING CHANGE

Then, everything changed.

"The very next year I attended my very first HVAC Comfortech event in Atlanta, GA. I was eager to learn more about the industry and the business, and wasn't worried about trying new things," he says.

"I was an avid reader of the trade magazines. When I read about Comfortech, it looked to be different and more inviting than many of the other trade events in this industry. So I went, and that is where I met Rob Falke and Dominick Guarino of the [National Comfort Institute](#).

"It was so eye opening for me. I was in awe. It was like I was in a live version of the trade magazine. All the writers and editors were there. They were willing to spend time with someone like me. It had a huge impact on me," he adds.

"I signed up for a class with Rob Falke, and our company has been an NCI member and a believer in Performance-Based Contracting™ ever since."

Interestingly, Mike Hyde says that as great as that first Comfortech experience was, he realized he and his team really didn't know anything. He says he came



The Hyde clan from left: Mark Hyde, Barry Hyde, Brian Hyde, Mike Hyde. Founder Brian Hyde passed away in 2011.

to understand that they most likely designed and installed systems wrong.

Talk about eye-opening! So he and his brothers committed to correcting

their ways and focus on providing the very best comfort to their customers.

Today Hydes Air Conditioning remains family owned. Mike and his two brothers are in the business together, as well as some of their children. The company employs 35 people and operates 20 service and installation vehicles. Last year its gross sales were over \$8 million. They focus on the residential retrofit and replacement marketplace in their area.

EDUCATION IS VITAL

As he said earlier, Mike Hyde has never been afraid to try new things. His introduction to the concepts of performance not only changed their overall approach to system design and service, but also put the company on path of continuous training and certification. In fact, Mike says one of the things his team is very proud of is the NATE certification of all their technicians.

"We spend a lot of time and effort consistently training," he says. "We are really honed into training on system renovations and air upgrades. That started from the very beginning. The light bulb went off at that first Comfortech when I realized we couldn't just change out equipment. We needed to measure the system before and after we work on it."

He says he bought his first flow hood after attending Rob Falke's class in 2000 or 2001. Since then they've added nearly a dozen more of them.

"One of the things I learned is to have technicians do their own testing. That means they have to have their own tools and instruments.

"So currently, each installation team has their own flow hood, duct blaster, and basic tools like vacuum pumps, digital gauges, and even hot wire anemometers.

"I like good tools, and we really help



Founded in 1972 in Indio, CA, Hydes Air Conditioning employs 35 people (not all shown here) and grossed \$8 million in 2017.

make sure our technicians have good tools," Hyde explains.

Technicians are given a tool allowance. Hyde says he just upgraded and bought many tools for his team.

Besides providing his people training and certification, the Hyde team also buys state-of-the-art tools to help the team stay on the cutting edge to provide true system performance.

Hydes Air Conditioning is a member of several national groups in addition to NCI. The reason: peer contacts. "I like the people involved with these organizations," Mike says. "We learn so much from other contractors that it is worth the investment in the organizations. It doesn't matter if we are on opposite ends of the country, we can have similar problems."

Hydes has memberships in [ACCA](#), [EGIA](#), the [Service Nation Alliance](#), and



Hydes' employees receive on-site training on static pressure testing from NCI.

others. He invests in the training and education of his entire team.

They also participate in manufacturer and distributor technical training as well as in soft skills training. He says soft skills are equally important to technical skills because that is how customer-facing people learn to better help the customers.

IT'S ALL ABOUT PERFORMANCE

Mike Hyde says, "We are a [performance-based contractor](#). Meaning not only do we follow the tenets of performance, we believe in them. And not just in the field. We train for performance in every facet of the business, including office work and management. We set goals, provide incentives, and pay well. As a result, we have very little staff turnover."

To do this, he says, requires having checks and balances, so team members continue to do what is prescribed and how it is prescribed. Mike Hyde adds that this is one of the hardest aspects of Performance-Based Contracting™. Once you implement it, if you don't have a system in place, your performance endeavors will fall by the wayside.

Mike adds that in the early days for his company, implementation was too much. The reason: he was trying to do everything himself. He was the only one

being trained in it. The solution was to involve more people. To work to get more people involved.

One way to do this is to take advantage of programs to live-train your field force. "My nephew had just bought a house with an HVAC system that had never been tested. There were two condensing units that were delivering around 40%. After testing, we removed both units – three tons each -- and replaced them with one four-ton unit. We added zoning, new duct work, cut ins, and more."

He explains that this case is fairly typical for Hydes Air Conditioning. In addition, we usually find the transitions are terrible and need to be repaired. But not every customer is onboard with the amount of work required and the expense.

DON'T FORGET TO MAKE MONEY

"I remember something Rob Falke said in one of our classes. He said, 'You can't

stop doing what makes you money.' In other words, don't jump into home performance exclusively. If you make money selling boxes, that is fine. Just add duct renovation and air upgrade services on as menu items. I think that is very critical."

That is exactly what Mike's team is trained to do. He says it is an education process for the customer.

"We developed our own system, based on NCI teachings, but customized for our company. We tell customers exactly what we are going to do, and then if they buy in, we write up a proposal. Our proposals always focus on the reason for the original call, and then include what we are going to do with some other things and air side stuff.

"Then we come out on a separate visit, run a load calculation, measure the air-flow, and get a baseline. We also test out after our work is done to assure the customer we delivered what we promised."

"For our business, we usually like to get



Mike Hyde receives one of National Comfort Institute's Contractor of the Year Awards in March 2018.

approval and buy in from the customer before we do our full test-ins. When we are done with the job, the installation crew does the test-outs. So our install crews do more than install. I find that if they measure their own jobs, they see the consequence of making mistakes or cutting corners."

Furthermore, Mike requires his crews to take pictures of every job – before and after shots. He says they use the pictures to check each crew's work. He calls it a final check, making his crews accountable.

"We had one job very recently where the technician sent me a picture of a finished job. We didn't like what we saw and had him go back and change the plenum. With pictures you can do so much more."

THE PERFORMANCE IMPACT ON THE BUSINESS

Mike Hyde says that becoming a Performance-Based Contracting company has totally changed their business. Though he didn't use the word culture, he did de-

scribe it as a different mindset and approach to not only the technology part, but also the business systems in the office. Training is key. Practice is vital. And learning is the cornerstone to success.

"We are focused on delivering comfort to our customers. It is not about just selling equipment, even though we do that as well," he says. "We've been operating as a Performance company for so long that I believe it is just ingrained in everything we do."

The company has enjoyed a long period of growth and Mike attributes that to the processes built in by the performance-based approach. He says his Performance-Based success is also based on these three practices:

- Really listen to customers
- Deliver the best customer service

• Price your services properly so you can stay in business.

"Pricing properly was the turning point for our company. My college degree is in accounting, so it's not like I don't understand business. But it's too easy to get caught up with thinking about why we can't price things high, because no one will buy them. Once I realized I was killing the business by NOT charging enough, I raised our prices. The other side of that is if you raise prices, you absolutely better deliver. That is the key."

Pricing properly enables Hydes Air conditioning to be profitable, to pay employees well, to train them well, and grow. Mike says that he doesn't want the company to grow too fast, however.

"We try to keep it small and hands on. My brothers and I are active in all aspects

of the business. So we look to keep our growth to around 10% per year so we can keep track of where we're going, who we're hiring, and how we're doing."

When hiring new people, he says they start them at the bottom level and "train them up." By doing this, he says they have very low turnover and really great employees.

Mike Hyde says he loves the HVAC industry. He says contractors in general need to be involved in it, not just by running their companies.

"Get active in the trade associations and other affiliate groups. They keep us all on the cutting edge. They impact our businesses and our lives. They help us have a positive impact on our customers' lives. And for me, that is what we are in business to do."



In 2017 Hydes Air Conditioning celebrated 45 years "of Family Service."

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How To Become a Trusted Performance-Based Marketer

Today's contractor is faced with challenges not even considered ten or even five years ago. This is particularly evident when one looks at advertising and marketing. Perhaps one of the biggest challenges is getting proper marketing messages to customers and potential customers.

Customers are generally more sophisticated today than they were in the past. With the internet revolution, they can now be "educated" with the push of a few buttons. No one needs to be 'tied' to a computer to gain this information, it is available on mobile phones and tablets.

Unfortunately, not all the information found on the Internet is factual and can lead a customer into making poor decisions. So how can consumers find a trustworthy source of information? More importantly, how can YOU become that trustworthy source?

Not too long ago, manufacturers supplied it through traditional print media ads. In many cases, contractors could align themselves with a manufacturer or two using their co-op dollars. However today co-op dollars are not as readily available as they once were, nor is manufacturer "brand" as essential as it was once thought to be.

CONSIDER THESE MARKETING AND ADVERTISING REALITIES

Performance-Based HVAC contractors want to and should advertise their own stories, expertise, and offers. Radio and television ads may be out of reach for

Typical radio and television advertising campaigns may be too expensive for the average contractor. Direct mail still has some reach. But the Internet has so much more.

the average contractor, and with so many other "channels" available, it is difficult to determine which is the 'right' one that fits their target/desired demographic.

For example, **directory advertising** is expensive and not particularly effective.

Print is rapidly going out of style. Several years ago, Canco went from spending more than \$30,000 per year in our local market, to spending zero, with little difference. Flyers generally have a short shelf life and unless you can accurately predict weather patterns, flyers arrive either too early or too late.

Direct mail can be effective -- although the cost of printing and postage adds up, especially if you want blanket coverage.

Another of today's realities is that attaining a new customer can cost more than \$500 depending on your geographical location. Therefore, it is



true that it costs less to keep an existing customer than to acquire a new one.

So, what does the wise contractor do? How can they determine where to spend their advertising budget?

TIPS FOR MARKETING TODAY

First, pay attention to how existing and potential customers contact you. Track every phone call and computer inquiry. For Canco, our software program does this. We have found that our top source is referrals, thanks to our existing customers.

Whether you use software or not, be sure to make 'referral categories' specific: i.e. not just the internet. In other words, find out if the referrals are coming from your website, your google ads, your manufacturer's site, etc. Request email addresses at every opportunity.

Once this information is available, it is easier to choose a marketing or advertising method that best appeals to your target market.

Remember: customers are looking for a trustworthy source of information. YOU are that source for existing clients and their network. Make sure that your website is user and mobile friendly.

Ask yourself the following:

- Does it encourage users to spend time gathering valuable and current information?

Five Tips to Becoming a Trusted Resource

- Use your email data base to supply educational information: new trends and offers, seasonal tips, comfort and health solutions. This can be done through emails or 'posts' on social media.
- Use factual third-party data such as that available through organizations like National Comfort Institute (NCI) or trade associations to boost your credibility. It costs nothing, other than time, to deliver your message through this method of 'direct mail'.
- Encourage your existing customers to share your message with family, friends, and neighbors.
- Perhaps consider running a contest of sorts. NCI has great support materials available and possibly a future newsletter.
- Canco has the capability, through our software, to 'attach' our messages -- including maintenance reminders -- to our email data base. If you have a similar capability, or even if you use a third party email service, make sure that an 'unsubscribe' clause is included.

In Canada, we also must adhere to our CASL regulation (Canada Anti-Spam Legislation) which prohibits us from sending electronic messages without consent. 'Implied consent' is from anyone who has done business with us in the past two years. Check your local regulations to see if there are any similar laws in effect.

- Does it have testimonials from satisfied customers and from those whom you made satisfied?
- If the answers are yes, you are well

PAY ATTENTION TO HOW EXISTING AND POTENTIAL CUSTOMERS CONTACT YOU. TRACK EVERY PHONE CALL AND COMPUTER INQUIRY.

on your way to making a positive impact and generating good leads. If the answer is no, fix these things immediately. Ignoring them only hampers your marketing efforts.

Today's contractors may not have available the 'tried-and-true' advertising options of the past; but they

can define their target market and reach it in inexpensive, effective ways that yesterday's contractors knew nothing about.

Those of us who are members of NCI also have the advantage of a network of fellow contractors willing and eager to share their expertise. All you need to do is ask. 



Nancy McKeraghan is an owner/operator along with her husband, Bob, of Canco ClimateCare, established in 1984 in Newmarket, Ontario, Canada. She has been recognized by the HVAC industry for her leadership and innovation and was the

first and only female to be Chair of the National Contractors' Division of HRAI as well as Chair of the full organization in 2007. She can be reached at nancymckeraghan@rogers.com

Why is Residential System Performance *So Important?*

Over the years we've learned that just selling a new furnace and air conditioner doesn't mean we provide customers the efficiency the system is designed to deliver. There are many factors and existing design conditions that stand in the way of having a new system perform at its rated capacity. In fact, we find that most new systems end up operating at 50% of rated capacity. That is just not acceptable.

For our company, this is the key reason we've adopted Performance-Based Contracting™ as the way we want to do business. Our partnership with the National Comfort Institute, Inc.

(NCI) not only helped us train and certify our field workforce in high performance HVAC systems, it also helped change how we managed our company by showing us how to implement Performance-Based Contracting into our culture.

It was a slow process. The first step was with our service department. Our goal was to certify all our technicians in residential system performance and then complete their training on how combustion works. This truly was an enlightening experience.

USING HEATMAXX™ AND COOLMAXX™

As a team we had to figure out how to explain to customers why our new installation already needed revisions to ensure peak performance. We began using NCI's HeatMaxx™ and CoolMaxx™ forms (see sidebar on next page), tailoring them for our G-Force Team. Based on hours of testing furnaces in our own shop, we began to redesign our installations. We changed all of our return boots from 1" filter racks to 4" filter racks; we also designed a return air box with a filter drawer to accommodate 4" filters properly sized for the air flow. Eventually we made it mandatory to install a 4" filter on every residential replacement system installed.

By using HeatMaxx and CoolMaxx forms on all our maintenance and demand service calls, we learned how important proper air flow is to ensure comfort, reliability, and efficiency. For years we

would install a new system, but still have an unhappy customer because all we did was replace their equipment.

Once we began measuring performance, we could determine real efficiency and fix the deficiencies. We also realized how many systems were either over or under charged with refrigerant — all due to poor air flow caused by ductwork issues. It became evident how many component failures were a direct result of poor airflow.

Understanding the impact of combustion performance truly opened our technician's eyes. We became a better company, one that better understood the combustion process and carbon monoxide safety.

Being a performance-based contractor doesn't happen overnight — it's a culture change that must be embraced by your service team. Our service department meets weekly and we still focus on HeatMaxx, CoolMaxx, and combustion performance. After our technicians began the transformation, we began working with our Residential replacement and installation teams.

COMMISSIONING

At Getzschman, we feel if we sell high efficiency systems, they need to perform as efficiently as possible. However, until we began commissioning replacements, we really weren't being honest with our customers. We were like every other contractor — just selling furnaces and air conditioners.

Today with commissioning we set up each replacement to deliver opti-



HeatMaxx™ and CoolMaxx™ Reports

HeatMaxx™ and CoolMaxx™ are exclusive NCI membership service programs. They allow technicians to check approximate BTU output of a heating or cooling system in less than 15 minutes. By measuring static pressure and temperature you can add a system performance evaluation to your service calls or start-ups.

The HeatMaxx and CoolMaxx test reports provide you with the ability to offer customers an initial evaluation of how their heating and cooling systems perform compared to how they were designed to perform. Technicians gather important test data, complete the report, and present the information so customers can understand that better system performance and efficiency is available to them.

To see an article on how to do the calculations of a HeatMaxx test, [just click here](#).

evaporator coil pressure drop, and total static pressure.

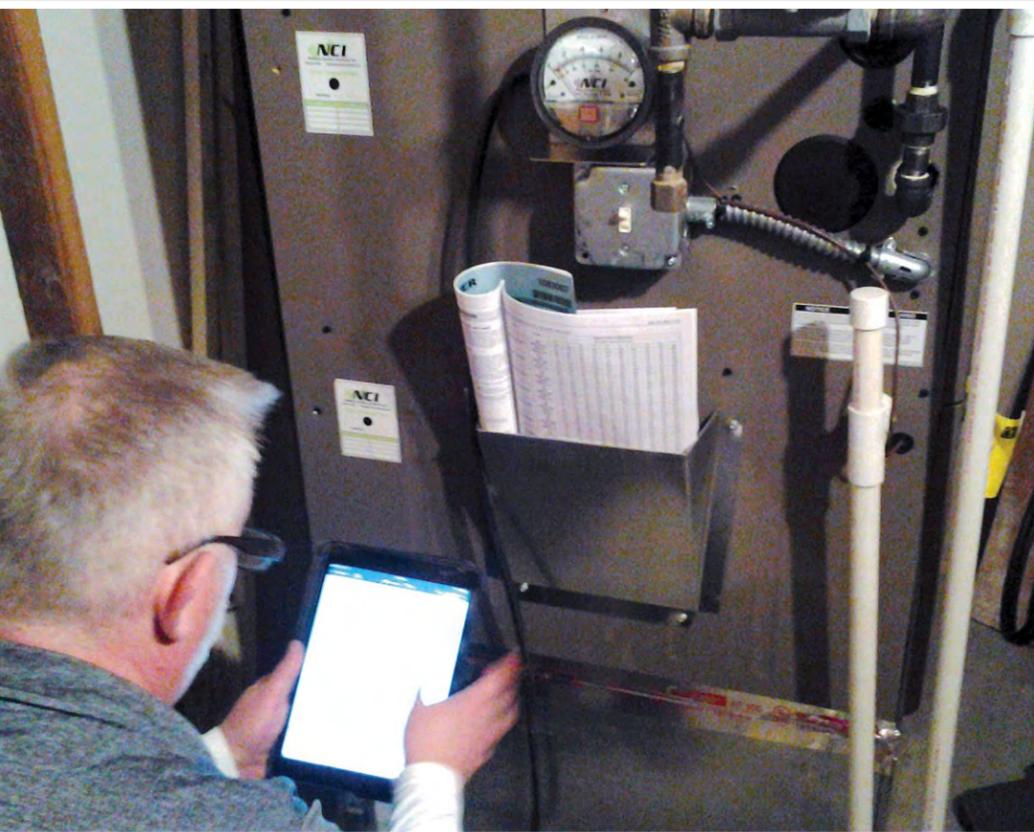
After we take our static pressure readings, we determine delivered airflow. We then take supply air and return air temperature readings, determine the temperature difference, and then calculate actual capacity versus rated capacity. With these calculations we can begin to make final adjustments to the installation, either on the airflow side or the equipment capacity side.

A properly calibrated system is not only more efficient, but it's quieter, will last longer, and have less major component failures. Our G-VERIFY process also gives us an opportunity to answer customer questions and to review the installation one more time to ensure it meets our installation guidelines and safety standards. Since initiating

this process our call backs have drastically decreased. Our customers have the peace of mind knowing their system is operating with proper airflow and at peak efficiency. G-VERIFY ENSURES A QUALITY INSTALLATION.

STILL NOT PERFECT

As we focused more on providing excellence, we found we were still falling short. We really hadn't embraced this concept in all our departments. I am very confident with G-VERIFY — our replacements were exceeding customer expectations. But I knew we weren't providing that same focus to installations in our new home department. Providing performance excel-

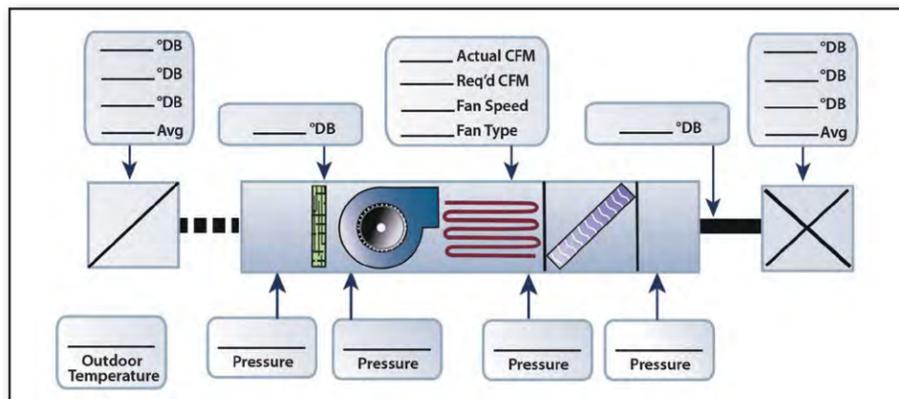


lence must be a total focus. You must reinforce it in all departments each day to succeed.

For years we used rules of thumb: 35 Btu's /sq.ft. for heating and 25 Btu's /sq.ft. for cooling. This usually provided a very safe but usually oversized heating and cooling system that would almost always result in hot and cold

CONTINUOUS IMPROVEMENTS

At Getzschman's Heating, we began to look at all aspects of the system including equipment, zoning, controls, the distribution system — including the quality of registers and grilles — to ensure we deliver real comfort to in each room or zone of the home. We took time to investigate ductwork.



Part of the HeatMaxx Report Form

spot complaints in the home.

Today we use Manual J and perform a load calculation — including heat loss and heat gain — on the entire home. With the information from Manual J, not only do you know the loss and gain of each room, you also know the required airflow. This allows you to begin sizing duct systems accordingly.

We were taught the industry standard for duct sizing, which is still used by many contractors today. The standard calls for sizing the duct system at .10 inches of friction per 100' of duct. It calls for all heat runs to be 6 inches in diameter, and using a wall cavity, to provide 125 cfm of return air using a 14 x 6 grille. However, once you learn and understand airflow principals, it's easy to see why there are so many undersized duct systems. That's why so many heating and cooling systems fail to meet homeowners' expectations.

We studied takeoffs, the different design of boots, and the spacing between takeoffs on the duct system. By reviewing design criteria for the many fittings in a system, as well as the number of outlets serving a system, it became clear our duct sizing had to change. In fact, in almost all cases, designs called for increases in duct size to ensure proper airflow.

On the return side we began using floor grilles for returns. We sized return drops for the proper static pressure and we improved our filtration systems as well. Lastly, we began to add turn vanes in our return air boots. As these improvements began to pay off, customers experienced quieter, more comfortable, and more efficient systems. In other words, they were happier.

However, the real question is how much improvement did we really

make? Did we deliver system capacity and have proper airflow in each room?

GOING FORWARD

The only way to truly determine if our installation performed at peak efficiency was to measure. We had to G-VERIFY and balance our systems. Now this is a common practice. For us it provides the homeowner with the peace of mind that their system is operating as designed. It means providing excellent comfort to each room in their home.

Today our focus is on making sure every system we service, replace, or install new, operates as efficiently as possible. We continue to constantly train and reinforce the residential system performance process and combustion process to our entire team. It truly does separate us from our competition.

This would have never been possible without the tools and support we receive from our partners at National Comfort Institute. In our industry I always hear contractors say they are looking for that silver bullet. In my opinion the residential system performance process is as close to a silver bullet as you will ever get. 



Scott Getzschman is co-owner of Getzschman Heating LLC in Fremont, NE. Getzschman currently employs 55 people who are focused on providing customers with safe heating and cooling systems operating at optimum efficiency and as close to the factory settings as possible. The company was featured in the *High-Performance HVAC Today April Spotlight*. Getzschman also won the prestigious *Medium Contractor of the Year Award* from National Comfort Institute. He can be reached at scottg@getzschman.com.

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Learn how to deliver high quality, profitable duct system renovations that really work! Set yourself apart from competitors by knowing how to optimize a duct system so it delivers the heating and cooling the equipment was designed to provide.

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For more information, go to ncilink.com/DSO or call 800.633.7058

Refrigerant Charge Adjustments: NOT a One-Size-Fits-All Solution

Part 1: The Evidence Against Charge Adjustment

Many **High-Performance HVAC Today** readers are at least familiar with utility energy efficiency programs that pay an incentive for adjusting refrigerant charge. These programs are typically designed to correct low or high refrigerant charges in residential and light commercial HVAC systems. Over the past two decades, many sources have pointed out the significant opportunity in correcting refrigerant charge.

The story goes that charge deficiencies are widespread in split systems and rooftop units. This equipment is nearly ubiquitous in both residential and light commercial buildings, creating a huge energy savings opportunity. The premise seems so simple and promising that literally hundreds of millions of dollars have been spent nationally over the past decade to pursue these energy savings. Here's an unsettling question to ponder: What if we've been wrong all along?

TOUGH QUESTIONS, MIXED RESULTS

Energy Measurement and Verification (EM&V) on Refrigerant Charge Adjustment (RCA) programs has produced mixed results over the past 10 years. Some studies found excellent savings,

while others had trouble detecting savings at all. One study even indicated negative overall savings for comprehensive equipment maintenance that included RCA as one measure.

To understand what's behind the highly variable results, it's important to understand that EM&V impact evaluations can take several different approaches to answer the same question - how much savings did the program achieve?

For RCA, EM&V faces a particularly difficult challenge. The typical savings claimed for RCA tend to be small compared to the energy use of the HVAC equipment, and are downright miniscule compared to the energy use of a whole building. This makes direct measurement of the savings very difficult and expensive, or simply impossible.

Further confounding the results, many RCA programs include a broader tune-up or maintenance program. This means there are many other measures that also impact energy use, so it's easy to lose track of the performance of the RCA measure itself.

To address these challenges, some extremely indirect methods have been developed for EM&V. One approach is to use laboratory research data to establish the impact of varying levels of refrigerant charge deficiencies on equipment efficiency and capacity. This is then coupled with program data on refrigerant charge addition or removal amounts to estimate the efficiency and capacity impacts for each adjustment that the program made.

Finally, the efficiency and capacity impacts are simulated in a building energy simulation program like [eQuest](#) or [Energy Plus](#) to estimate the annual energy savings.

As you can imagine, there are so many in-

accuracies and assumptions in this process that it's difficult or impossible to even put a number on the overall uncertainty of RCA program savings. Nonetheless, a recent study conducted in California examines several aspects of these uncertainties and provides a starting point for understanding them.

*The California Public Utilities Commission Study of Deemed HVAC Measures Uncertainty Year 3 Report (HVAC 4)*¹ strives to achieve a deeper understanding of the energy savings uncertainty of three types of HVAC measures, including RCA. The findings show that only correcting the charge on a highly undercharged system produces a high enough improvement in cooling efficiency or capacity to overcome the associated uncertainty around the improvements.

In other words, the energy savings benefits of doing RCA by itself are questionable except in the case of a highly undercharged system. Furthermore, addressing an overcharged system is likely to produce a negative benefit, with most scenarios showing a decrease in efficiency and capacity.

The HVAC4 study also looks at the uncertainty of RCA when non-RCA faults such as economizer failures are addressed, and the findings lend even less credibility to the idea that RCA itself produces any measurable benefit. In fact, any RCA benefits realized after addressing other faults were overshadowed by the uncertainty of the benefit.

Overall benefits produced by addressing non-RCA faults, in addition to RCA faults, can be traced primarily to the benefit that addressing non-

RCA faults produces. A couple of conclusions within the study itself do a great job summing up the results:

1. "Only units with *egregious charge offsets* and non-RCA faults are expected to be significantly impacted by adjusting the charge to factory levels."
2. "Addressing other non-RCA faults appears to be more beneficial than addressing the charge offset fault itself."

One final point to consider is that this study only partially examined the uncertainty of the RCA measure.

It didn't consider the uncertainty of lab instrumentation, manufacturing variability, or performance responses to varying outdoor and indoor environmental conditions. It also didn't consider persistence of the RCA benefits, uncertainty in the simulations used to project energy savings, or the relative uncertainties of the various EM&V methods used for RCA.

If you consider the additional uncertainties inherent in this chain of dependencies, it's easy to see why EM&V results have been all over the place.

SHOULD RCA BE AN ENERGY EFFICIENCY MEASURE?

With these conclusions in hand, let's consider whether RCA should continue as a utility energy efficiency (EE) program measure. The first thing to think about is what percentage of systems out there are operating with egregious charge deficiencies.

In one study² of 4,168 air conditioners that received refrigerant charge diagnostics and adjustments, approximately 18% received a charge addition of 20% or higher. With

roughly 100 million residential and small commercial HVAC units in the United States, if significant improvements from RCA could be achieved on 18% of those it would still be very beneficial.

Note, however, that 18% received upward adjustments of 20% or higher. Did they need the adjustments in the first place? Did the adjustments produce a benefit?

PROGRAM DESIGN FLAWS

RCA programs typically pay out an incentive for making charge adjustments, which are assumed to produce savings. Some programs also pay a smaller incentive for diagnostics, which don't produce savings directly, but in theory should lead to contractors finding and fixing more charge deficiencies.

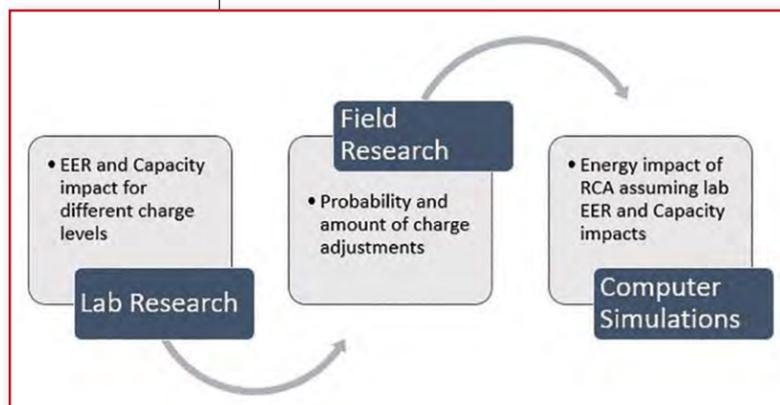
What happens in practice is that some less scrupulous contractors make as many adjustments as they can, whether they are truly beneficial or not.

Why? Because the economics of the program drive them to adjust. Once you're on the roof or in the home and have the gauges on, it's easy to add or remove an ounce or two of refrigerant and claim the larger incentive.

Some programs leave the charge diagnostics entirely to the contractor, requiring them to decide whether to add or remove charge, potentially based only on limited training and understanding of the refrigeration cycle.

Verification on these programs typically happens only after the fact, so if the system is running alright after the RCA measure is claimed, there's no repercussion to the contractor for incorrectly interpreting a charge fault or making an adjustment. Refrigeration

One example of the indirect EM&V processes often used to estimate RCA savings.



Is More Data the Answer?

Some programs prescribe a specific diagnostic approach, or even require a computerized refrigerant manifold with embedded fault detection and diagnostics (FDD) to collect data and identify issues. What if by using FDD, a program could be developed to effectively target only cases of egregious undercharge, therefore providing a high likelihood that significant measurable savings materialize?

There are several major issues with this idea summarized below.

Symptoms of highly undercharged systems are more likely to be noticed by occupants in the form of low cooling capacity causing comfort issues or high utility bills. Therefore, they are also more likely to get fixed outside the influence of a utility program. This diminishes the amount of savings attributable to the program, and/or shortens the measure life that can reasonably be claimed.

There's a serious environmental issue with incentivizing charge adjustments on systems with very low charge. A very low charge indicates a significant leak in a system that is designed to operate as a sealed system. If refrigerant is merely added to the system, it will continue to leak, making this a temporary fix at best.

Worse than that, the leak vents refrigerant into the atmosphere. The most common refrigerants in use in residential and commercial air conditioners are R-22 and R-410a. R-22 is an ozone-depleting substance, and both R-22 and R-410a are greenhouse gasses with a Global Warming Potential thousands of times that of carbon dioxide.

Properly dealing with a leak is an expensive and time-consuming process, the cost of which cannot be justified by energy savings alone. Leaks can be very difficult to find. It takes experience, and in some cases a significant amount of time.

After finding the leak, the process for fixing it typically includes recovering all refrigerant in the system, then fixing the leak or replacing the leaking component (e.g. evaporator, condenser, compressor, etc.).

The system then needs to be pressurized with nitrogen and/or drawing a vacuum to test for leaks and eliminate moisture. Then finally re-charging the system. This whole process typically takes from one half to one full day.

Current FDD approaches produce flawed diagnostics. A 2014 Purdue University study³ evaluated the effectiveness of three FDD approaches and found that all three produced false alarms greater than 25% of the time and misdiagnoses in more than 30% of cases.

False alarms lead technicians to take action when none is necessary, wasting resources and potentially leading to negative impacts on system performance. Misdiagnosis can lead a technician to take the wrong action in trying to correct the fault.

The use of refrigeration gauges requires tapping into an otherwise sealed system. Each time gauges are placed on the equipment, there is a risk of contamination and a small amount of refrigerant loss.

Even small amounts of contamination can cause a major loss in efficiency. Lab studies⁴ show that only 0.3% nitrogen (representing air in the system) reduces efficiency by 18% for non-TXV systems and 13% for TXV systems.

cycle diagnostics are complex, and many different types of issues exist that can easily confuse a technician, leading to frequent misdiagnoses and unnecessary charge adjustments.

There's no question that proper charge is critical for system performance, reliability, and efficiency. However, the evidence is overwhelmingly against the notion that running around doing charge-adjustments in a mass-market utility program produces cost-effective energy savings.

In the next installment of this two-part series we'll look at how charge diagnostics and adjustment can be responsibly incorporated into the Performance-Based Contractor's arsenal of skills as part of a systematic approach to improving performance. 

¹ ncilink.com/HVAC4

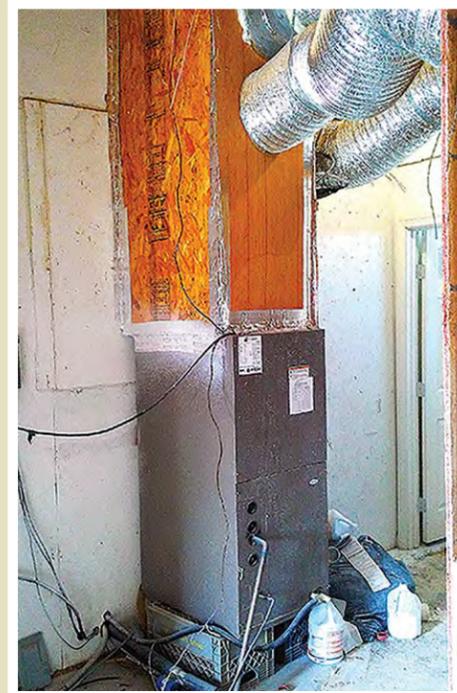
² Mowris et al, 2004, *Field Measurements of Air Conditioners with and without TXVs*. ncilink.com/aceee

³ Yuill et al, 2014, *Evaluating Fault Detection and Diagnostic Tools with Simulations of Multiple Vapor Compression Systems*. ncilink.com/purdue

⁴ Mowris, 2012, *Laboratory Measurements and Diagnostics of Residential HVAC Installation and Maintenance Faults*. ncilink.com/mowris



Ben Lipscomb is a registered Professional Engineer with over 14 years of experience in the HVAC industry including laboratory and field research, Design/Build contracting, and utility energy efficiency program design. He is National Comfort Institute's engineering manager, and may be contacted at benl@ncihvac.com.



“No, this isn't my first installation.”

— Alan Fisher, FisherAir Heating and Air Conditioning Services, Brea, CA

It's not everyday you see something that reminds you how many hacks are out there. From using crates as a base (and possible return?) to a wooden plenum, this installation screams performance, right? Aieeeeeeeee!

Alan Fisher from FisherAir Heating is the May 2018 winner of our Photo-of-the-Month contest (in the What the Heck category), as voted on by the subscribers to [High Performance HVAC Today magazine](http://HighPerformanceHVAC.com) and visitors to the website. He will receive a \$50 gift card.

You can too – submissions are always welcome. If you'd like to submit a photo for consideration in our Photo-of-the-Month contest, click here or copy and paste this URL into your browser: ncilink.com/POMSubmit. Then fill out the information as requested.

THE JUNE CONTEST OPENS ON MAY 14, 2018.

That gives you plenty of time to submit something in any of our three categories: **The Good**, **The Bad**, **WTH (What the heck)**.

MyHomeComfort.org

The source for home owners to find the right contractor (you!)



As an NCI-certified professional, you are uniquely trained to solve comfort, energy, safety, and health issues for home owners. **They are looking for you, so don't miss out!**

MyHomeComfort.org is the place where home owners can get their questions answered and to find you, the professional they need.

You can only be listed if you or your company are currently NCI-certified, so be sure that all your certifications are up-to-date. NCI members get a premiere listing with additional information about your company. **Be sure to take advantage of this lead-generating tool today!**



Call NCI Customer Care at 800.633.7058 to confirm your listing is correct and up-to-date.

HIGH-PERFORMANCE HVAC ALLIANCE NOW OPEN TO NCI MEMBERS

This March, National Comfort Institute (NCI) announced a new partnership with the [Electric and Gas Industries Association* \(EGIA\)](#), and the creation of a new High-Performance HVAC Alliance for HVAC contractor members of both EGIA and NCI.

By partnering under the **Alliance** umbrella, NCI and EGIA together deliver unparalleled value to HVAC contractors. Alliance contractors are members of North America's most comprehensive HVAC industry organization. It provides the full spectrum of technical and non-technical training, support, and best practices for every aspect and role in your HVAC contracting business.

If you currently participate in NCI training and membership and want to also grow and improve every aspect of your business, think about this: Upgrading to High Performance HVAC Alliance membership makes complete sense and will pay for itself many times over, year after year.

WHAT DO MEMBERS GET?

By upgrading to Alliance membership you'll receive the highest level of benefits from both organizations -- at deeply discounted membership dues. This saves you \$250/month compared to separate dues in each organization!

In addition, Alliance members get a rebate of \$350/month in training funds that can be used towards most NCI and EGIA training. Training funds never expire and can also be used towards 50% off any non-resale purchases. This includes tools, instruments, and support materials bought through NCI.

Alliance Members also get exclusive bonuses adding up to more than \$3,500 each year, including a free Sum-

EGIA MEMBER BENEFITS

- GEOSmart Customer Financing
- Snapshot Survey – Industry Research
- Contractor Marketplace – Discounts and Rebates
- Contractor University:
 - “Contractor Coffee Club” Podcasts
 - “Ask the Experts” Conference Calls
 - “Cracking the Code” Weekly Show Webinars
- Online Classes
- Best Practices Resource Library
- Complimentary EPIC2018 Conference Registration
- Two Free Workshop Registrations per Live Event and Discounts for additional attendees

NCI MEMBER BENEFITS

- Unlimited Toll-Free Support
- High Performance Talk – Online Member Forum
- Premium Find A Contractor Listing
- Unlimited Online University Training and Webinars for all Employees
- Mobile-Friendly Online Technical Tools Technical Forms & Procedures and Marketing Support Materials
- Expansive Online Article Library
- Earn 15% NCI Bucks on NCI Training
- Best Discounts on Live Training and Conferences
- Best Industry Pricing on NCI Online
- ComfortMaxx Verify™ – Full Testing Software with AirMaxx™ Mobile App (\$200/month Value)
- Maximum TIPP Rewards with all Partners
- \$4,200/year in NCI Bucks towards Training!

BONUS Alliance Member Benefits!

- Free 3-Day EGIA Business Success Bootcamp (\$895 Value)
- 70% OFF 5-Day EGIA Success Week Bootcamp – (Normally \$2,499) Just \$699!
- Free Print Subscription to High Performance HVAC Today magazine (\$72/year value)
- One Paid NCI Summit Conference Registration (\$695 Value)

mit seat (\$695 value), a print monthly subscription to **High Performance HVAC Today**, and more than \$2,700 in business building boot camps!

SO WHAT'S INCLUDED IN MY ALLIANCE MEMBERSHIP?

Alliance members get both [NCI's Learning Excellence Premium Membership](#) package and [EGIA's Premium Membership](#) package. Each membership package is packed with valuable money-saving and money-making benefits. Be sure to click on the links above to see the dozens of membership benefits.

Benefits include live and online technical training, coaching. It also includes support, coupled with live and online training, coaching and support in business leadership, management, operations, customer service, sales, and marketing.

[Click here for more detailed information on Alliance member benefits.](#)

HOW DO I JOIN THE ALLIANCE?

Joining is easy. HVAC contractors can call Member Services at 800-633-7058. Just ask for Nick! [Click Here](#), for more info, or shoot Nick an email: Nickg@ncihvac.com.

We will walk through the benefits of the Alliance, and what you get with your membership in EGIA and NCI. The next step is to complete our simple membership application and we'll get you started right away!

**EGIA is an 85-year-old non-profit membership organization dedicated to advancing energy efficiency and renewable energy solutions through the home improvement and renewable energy industries. The organization works closely with utility companies and the government on their energy-efficiency and renewable energy programs and manages one of the largest energy-efficiency financing programs in the country.*

EGIA also provides training, coaching, and support for hundreds of contractor members.

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Market Your High-Performance Difference



Dominick Guarino is publisher of HVAC Today magazine and CEO of National Comfort Institute, Inc. He can be reached at domg@ncihvac.com

We often get asked by our readers, "how should we market what we do differently as a high performance contractor?"

Below you'll find some sample messages that can be used on your website, social media, blogs, email marketing, and of course, traditional print marketing. I've broken the messaging into three categories based on the type of lead you are trying to generate:

1. Service and Maintenance
2. Replacement Sales
3. Solutions to Poorly Performing Systems

Be sure to customize wording to fit your company offerings, the specific marketing vehicle, and what makes you different.

SERVICE AND MAINTENANCE

"Our 21-point Performance Tune-Ups include certified airflow testing to help insure your home comfort system is operating at peak performance. This will improve comfort, reduce energy costs, and extend equipment life."

"We provide certified, professional performance testing on every service or maintenance visit. Our technicians will give you a detailed, computerized report on the health and performance of your system, along with suggested improvements."

REPLACEMENT SYSTEM MARKETING

Here's a longer message for websites and blogs: "Thinking of replacing your old worn out furnace or central air system? According to the National Comfort Institute, every day thousands of homeowners pay top dollar for high efficiency equipment only to be disappointed by the lack of utility bill savings, and the same comfort problems they've lived with for years. Unfortunately, these problems typically cannot be solved by just installing new equipment."

At ABC Heating and Air, before we install a new furnace or air conditioner, our NCI airflow-certified technicians test your existing system to identify comfort issues and energy waste. We then offer solutions that can be included with your new installation. Once we're done, we test again to make sure your system is operating at peak performance."

Short message:

"Our NCI certified technicians fully test every new system we install to help insure you get the maximum comfort and energy efficiency."

POORLY PERFORMING SYSTEMS

"Have you replaced your furnace or central air recently? Are you getting the comfort and energy efficiency you paid for? We are trained and certified to test your entire comfort system to make sure it's operating at peak performance."

"Tired of uncomfortable rooms, high utility bills, or poor indoor air quality? Our technicians are NCI trained and certified to fully test your system and help solve these typical home comfort problems once and for all."

GREAT IMAGES COMPLETE THE PICTURE

As the old saying goes, a picture is worth a thousand words. It's important to balance words with images to help convey your message. You might include before and after pictures, or images of happy, comfortable families. Try to resist pictures of trucks and equipment. To differentiate your company, you can't look like everyone else.

These are just a few approaches to how you can market your high performance HVAC services.

Let us know if you have others you'd like to share. 

Free Shipping

FOR ORDERS OVER \$200

(excludes resale & oversized products)

NCI offers FREE shipping and handling on all tool, instrument and support material orders that total more than \$200. If your order is under \$200, a standard \$15 shipping charge will apply. Oversized items may be subject to additional shipping costs.



Start Shopping Today! Go to ncilink.com/store or call 1-800-633-7058



And BIGGER Benefits for NCI Members!

NCI members can now apply NCI Bucks to pay for up to 50% of your tool and/or instrument order! This benefit is ONLY for NCI members! Resale products excluded.

NCI has also increased the member discount from 2% to 5% on all the tools, instruments and support materials you buy. Resale products excluded.



If You Don't Measure, You're Just Guessing!™

NCI Membership

Let NCI be Your Support Team on Your High Performance Contracting™ Journey



Your key to success in Performance-Based Contracting™ is a strong support network – always there when you need it. NCI helps its members overcome the typical hurdles associated with implementing the measured performance approach.

Call NCI Customer Care to learn how NCI Membership can take your HVAC business to the next level!

Looking to get even more out of your NCI Membership? Consider upgrading.

Upgrades will turbocharge your membership with added learning opportunities and financial incentives. There are three options available, and they all include the basic membership benefits.

	NCI Membership	With Learning Excellence Online Package	With Learning Excellence Live Package	With Learning Excellence Premium Package
Unlimited Toll-Free Support	●	●	●	●
High Performance Talk Discussion Forum	●	●	●	●
Find-A-Certified Professional Lead Generator	●	●	●	●
i-NCI - Mobile Friendly Technical & Sales Tools	●	●	●	●
Hundreds of Technical & Marketing Downloads	●	●	●	●
Members-Only Newsletter	●	●	●	●
Article Library Featuring 100's of Technical & Business Articles	●	●	●	●
Live & Online Training and Conference Discounts	●	●	●	●
Member Rewards NCI Training Bucks on Purchases	5%	15%	15%	15%
NCI Online Store Discounts	●	●	●	●
ComfortMaxx Air™ - Airflow Testing Software	●	●	●	●
Unlimited Online Course Access		●		●
Unlimited Webinar Access		●	●	●
ComfortMaxx Pulse™ - Air & BTU Testing Software		●	●	●
Maximum Training Incentive Partner Program Dollars		●	●	●
Bonus Annual NCI Training Bucks Earned		\$1200	\$4200	\$4200
ComfortMaxx Verify™ - Full System Testing Software				●
Monthly Investment	\$100	\$450	\$450	\$750



Join NCI Today!



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