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2024 RESIDENTIAL Market Trends

ALSO IN THIS ISSUE:

- **The Best of Rob Falke: Selling with Diagnostic Leads**
- **Airflow Measurement: Old School Meets New Tech**

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COVER STORY:

2024 Residential Trends and Opportunities

What is happening in the U.S. that will impact your business and open opportunities this year? Here are some thoughts.

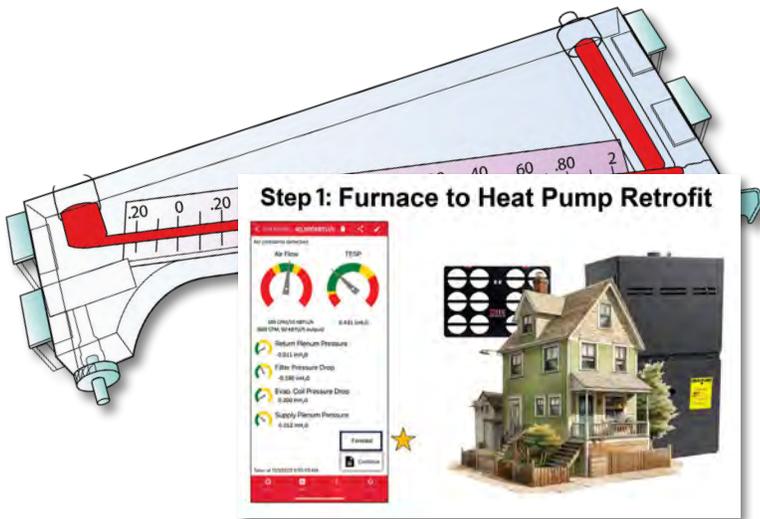


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Eight Traits for Leading Your Company to Current and Future Success



Mike Weil is editor-in-chief and director of communications and publications at National Comfort Institute, Inc. Contact him at ncilink.com/ContactMe.

It's never been easy to run a small business. With the constant amount of change impacting our daily and professional lives, leading your High-Performance HVAC™ company is challenging on many levels.

A great HVAC contractor, like any effective leader, needs to have a combination of technical expertise, interpersonal skills, and business acumen. As we kick off this new year, here are some leadership qualities to consider:

1. Technical Proficiency — This includes having decent industry knowledge based on understanding how HVAC systems (not just equipment) work, what latest technologies are available that provide your team the best chance of achieving solid system performance, and staying abreast of industry trends.

The latter means participating in industry events, reading trade journals, and training yourself and your team continuously.

2. Leadership Skills — Book after book has been written on the vital importance of having great **communication skills**. Effective communication benefits both your team and your customers. It ensures everyone understands their roles and responsibilities.

Leadership also means **motivating**. You must find ways to remove roadblocks for your team's success and help inspire them to be their best all the time.

And finally, you need to have **strong decision-making skills**. This is crucial, especially in high-pressure situations.

3. Customer Service — Having a **Servant Leader** mentality means putting customers first by addressing their concerns quickly. This is best done by creating a High-Performance HVAC™ **professional culture** in your company.

4. Business Management — This means you

need to understand and manage all **financial aspects** of your company including budgeting, pricing, and profitability. It also means **thinking strategically**. Success depends on planning for the future, anticipating market changes, and building in flexibility to deal with the changes that constantly take place.

5. Team Development — Your future depends on your **commitment to training**. Investing in the continuous training and development of the team enhances their skills and keeps them up-to-date with industry advancements.

But training isn't enough. A great leader **empowers** team members to take initiative and make decisions within their areas of responsibility based on their experience and education.

6. Ethical Conduct — Let's face it. In today's world ethical behavior is often compromised. It is vital for you and your team members to have integrity and to build trust by maintaining high ethical standards.

Being transparent about business practices and ensuring honesty in all dealings greatly contributes to a positive reputation in your market. This will make your company and brand stand out.

7. Adaptability — The HVAC Industry is dynamic with evolving technologies and regulations. A great leader must be flexible to adapt to these changes. They must be willing to embrace innovation.

8. Safety-Minded — Last, but not least, a focus on safety and following safety protocols is critical. A great leader prioritizes the well-being of both team members and clients.

In this issue of **High-Performance HVAC Today**, we offer some strategic, forward-focused, and technical content that can help you be the leader your company needs to meet these challenges, both today and tomorrow. 

Written by HVAC Professionals for HVAC Professionals

Dwyer 490W Hydronic Differential Pressure Manometer

During the last decade, one of the most significant balancing instrument advancements is the incorporation of wireless communication technologies and smart phones into measuring instruments. Hydronic pressure differential manometers are no different.

The **Dwyer Company** introduced its first award-winning wireless hydronic manometer in 2017. Since then it has been further developed to the newest version available now.

When using a conventional hydronic manometer for balancing, you first must zero and install the instrument, purge it of air, then measure the pressure drop.

Next you reference the measured pressure drop to a flow chart, slide rule, or a flow wheel to determine the flow in GPM at that given pressure differential measurement.

This is how hydronic balancing was performed for decades.

With the introduction of wireless technologies and smart phone apps, the process of balancing has greatly reduced the time necessary to balance. This directly relates to project profit margins by lowering the cost to balance. Such savings have been realized in all realms of balancing, not just hydronic projects.

The most significant advantage to this approach is that you select the specific model and type of valve or circuit setter and the flow in GPM will be instantly displayed on the smart phone. There is no



longer a need to reference a flow chart to complete most projects.

After the **490W's** initial award-winning release in 2017, Dwyer continued to update the instrument and various kits every year. They also updated the hydronic application software.

The integration of the software to the instrument is not just for the water side of balancing, the other instruments on this platform have huge benefits on the air side as well.

Learn more about **Dwyer's 490W Hydronic Pressure Manometer** at nclink.com/Dwyer490W.

— by Jeff Sturgeon, NCI Instructor

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2024 Trends and Opportunities *in the Residential Marketplace*

With 2024 just one month old, it's still essential to put together a plan for the year to map out the best path to maintain last year's business level and find opportunities for the rest of the new year and beyond. To do that, you must know what's happening in your immediate marketplace and understand the industry trends that can impact your company and your plans.

From national regulations to residential market statistics, new technological opportunities and customer demands, the next 11 months will offer challenges, opportunities, and roadblocks. Some of these come from increased demand in high-efficiency and Indoor Air Quality (IAQ) to housing issues, high prices, and labor shortages.

First, let's take a look at the residential housing market across the U.S.

U.S. HOUSING MARKET TRENDS

According to the [Trading Economics website](#), housing starts went wild in November 2023. They “soared 14.8% month-over-month to an annualized 1.56 million, the highest rate in six months, and well above market forecasts of 1.36 million.”

Trading Economics also reports that this increase may be due to a decline in mortgage rates and an increase in inventory. They say that housing starts jumped 18% to 1.14 million, breaking the record set in April 2022.

Even so, [Reuters](#) reports that total single-family U.S. housing starts are only moderately up by 0.2%, while multi-family starts are up 4.9%.

“U.S. single-family homebuilding increased marginally in October, and activity could remain moderate in the near term amid higher mortgage rates, which sent homebuilder confidence

tumbling to an 11-month low in November,” according to Reuters. They go on to report that new construction will remain key by “an acute shortage of houses on the market.”

“Homebuilders have an opportunity to capitalize on the low supply of homes on the market,” says **Chief Economist Jeffrey Roach from LPL Financial** in Charlotte, North Carolina. “If mortgage rates move lower in the latter half of next year, we could see some improved demand for residential real estate.”

From a home sales standpoint, **Greg McBride, Chief Financial Analyst for Bankrate** — a financial advisory company founded in 1976 — mortgage rates have come down from their peak but are still high, and steep home prices are dissuading would-be buyers. He also says that if rates drop in 2024 (and there is a chance they will), that could spur the market for buyers and sellers.

In a [blog post](#) on the Bankrate website, McBride says, “As long as the economy continues to motor along, the new normal of higher rates is here to stay. A sharp economic slowdown would bring mortgage rates materially lower — but be careful what you wish for.”

Bankrate reports that the median home sale price as of November 2023 was \$387,600, up 4% from one year ago. They state the [U.S. inflation rate](#) as of November 2023 was 3.1% — slightly higher than the Federal Reserve's stated goal of 2%.

LEGISLATIVE TRENDS TO NOTE

Several regulatory movements are in play that will impact your High-Performance HVAC business in 2024 and beyond. First is the ever-increasing demand for more efficient equipment



2024 TRENDS

(often erroneously called systems), making this one of the most significant contributors to the North American HVAC marketplace.

As part of this growing demand, many states have enacted [electrification](#) programs to replace older gas-fired heating equipment with newer, highly-efficient heat pumps. There are several issues contractors face with this trend. Still, there are also many opportunities for [dual-fuel heat pump systems](#), [geothermal](#), [variable refrigerant flow \(VRF\)](#) technology, and even [solar-powered HVAC systems](#).

Advances in these technologies make this equipment more viable in regions where they traditionally didn't offer the same level of comfort as gas-fired high-efficiency furnaces.

By the way, did you know that more than 50% of HVAC customers are willing to pay more for these “eco-friendly” and energy-efficient products? It's true, according to a [blog post on the SBE website](#).

However, consumers today also expect to work with HVAC contractors who are true professionals and who not only deliver the comfort and efficiencies they want but can prove it. Consumers also want [immediate](#)

[responses to their inquiries](#), quickly scheduled services, personalized communication, and convenience at every touch point.

The good news here is that as High-Performance HVAC professionals, you already meet or are in the process of meeting these requirements based on your training, technical expertise, and ability to solve root problems.

Speaking of eco-friendly – another legislative issue faced in both the residential and the commercial HVAC markets is the push toward newer refrigerants with much less global warming potential. This change is the result of the [American Innovation and Manufacturing Act \(AIM Act\)](#) of 2020, which authorizes the EPA to “address hydrofluorocarbons (HFCs) by providing new authorities in three main areas: to phase down the production and consumption of listed HFCs, manage these HFCs and their substitutes, and facilitate the transition to next-generation technologies through sector-based restrictions.”

We are talking about new non-HFC refrigerants that have slightly flammable properties. Known as [A2L refrigerants](#), these refrigerants are already included in equipment being

manufactured and installed in the U.S. today. There are changes regarding how technicians handle these refrigerants, what tools they need, and even how systems are charged.

This means contractors must focus on technical training for servicing and changing out older equipment for new A2L-based products.

SMART/CONNECTED HVAC TRENDS

Smart thermostats and smart HVAC equipment are nothing new. However, with the huge popularity of home automation systems provided by Microsoft, Apple, Google, and others, consumers – especially Gen Zers – want to control their home environments in the same way they manage their lights, music, and more from apps on their smart phones.

Today, HVAC systems can connect to online networks and devices that allow contractors to monitor, maintain, and control equipment remotely. Often, this connectivity enables gathering real-time data on temperature, humidity, and other HVAC system metrics.

This technology is starting to lead to something called predictive maintenance, where Smart Systems gather

data and analyze it to find operational anomalies and potential defects. This data analysis enables contractors to monitor and repair potential issues BEFORE they become problems! Imagine adding this to your service agreements.

Even homeowners can access these capabilities. The entire [Internet of Things](#) phenomenon continues to change the HVAC Industry. As contractors, it certainly behooves you to stay abreast of this technology and find ways to take advantage of the opportunities it provides.

HVAC AS A SERVICE

This sounds goofy, right? Of course, most residential HVAC contractors offer service to their customers. This is something different.

HVAC as a Service is a different approach to selling and installing HVAC equipment. With normal HVAC services, the homeowner purchases and owns the equipment, which the HVAC business installs and maintains.

With [HVACaaS](#) (HVAC As a Service), the HVAC business *maintains ownership of the equipment* and the *homeowner pays a monthly subscription* for the business to service and maintain it — largely through connected devices and the cloud.

This approach has been working in the manufacturing community for years and is only beginning to work its way into the residential HVAC arena. It can be a win-win: HVAC

businesses get more predictable revenue streams and customers experience the satisfaction and cost savings of maintenance and efficient service.

WORKFORCE ISSUES

The HVAC Industry continues to suffer, along with most other industries, from labor shortages that impact a company's ability to handle the increase in consumer demand. In an article by Dr. Charles Allgood of Chemours Company, the current U.S. HVAC workforce is only a third of what it needs to be to meet demand, "threatening operations of businesses of all sizes.

"This, combined with new technologies, including A2L refrigerants that require special safe handling considerations, means companies must place an even higher priority on training."

He adds that "The crews in the field today need to be proficient in working with HFCs, HFOs, A2Ls, and possibly even older legacy refrigerants that are "hanging on" in some applications."

[Read this article by David Holt of National Comfort Institute](#) that discusses the important role of training.

COMPETITION AND MARKETING MOVES

Competition inside and outside the HVAC Industry is nothing new. Yet contractors generally don't make good use of marketing communications to explain what makes their company unique to potential customers.

Sure, most contractors make use of the avenues provided by digital communications — social media, email, digital video, and texting. But most of the time these efforts are used for initial contact and not used enough for setting appointments, generating future business, and keeping their brands top-of-mind.

Marketing veteran **Kristen McCormick, of Hatch** (a web-based marketing organization for targeting leads, prospects, or existing customers), says that consumers today prefer digital communications over the phone. And that's not just for initial contact, but also for appointment confirmations and bill pay.

She adds that the U.S. HVAC Industry should continue growing through 2026, which means that competition will also continue growing. Contractors should take every opportunity to optimize sales AND marketing strategies to keep their competitive advantages. Such efforts should be their top priorities.

Her advice: "Invest at least seven to 10% of your revenue into sales and marketing strategies and tools like online advertising, SEO, listings, lead aggregators, CRMs/FSMs (Customer Relationship Management/Field Service Management), as well as sales training and business coaching.

"Invest is the word here. When done right, none of the money you spend on marketing is wasted. In fact, the average cost per lead for HVAC

marketing on Google is **\$62** — and with jobs earning you thousands of dollars, the ROI is undeniable.”

One more thought about marketing and sales — know your audience. Right now, Gen Zers are the newest generation of homebuyers and business owners. They have a completely different outlook on what they buy and most importantly, why. They are savvy buyers who want transparency and corporate responsibility. I guess that is the key to their decision-making.

Your marketing strategy needs to not only recognize this, but it also must prioritize sustainability.

McCormick says, “Sustainability is not just in the products and services you offer but in your own day to day operations. Go paperless to reduce

waste. Offer tips on conserving energy. Adopt the same practices they do, and you’ll have Gen Z customers in no time.”

GET GOOD AT SERVICE

In the end, HVAC contractors really should become experts at service — not just equipment, but people too. And be sure that you price your services properly so you can make the profits you deserve.

Follow the industry trends and work on adding services and technologies that fit in best with your business model.

High-Performance HVAC contractors should also consider marketing and advertising key to building their reputation and profits by explaining

what services they offer that put them at the head of the pack. Don’t cut your budgets for them — if anything, increase your budgets. No one will understand why they should do business with you unless you tell them.

As we look forward into 2024, there will be challenges for sure. But there will be opportunities too. Be a strong team leader, set the tone for everyone in your company and lead your team to success in this new year. **NCI**



Mike Weil is Director, of Communication for National Comfort Institute, Inc. and the Editor-in-Chief of **High-Performance HVAC Today** magazine. You can reach him at ncilink.com/ContactMe.

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The Best of Rob Falke: So, You Have a Diagnostic Lead - Now What?

“Either write something worth reading or do something worth writing,” writes Benjamin Franklin.

Any article from a good writer is worth reading again and again. This is most certainly true for those written by the late, great Rob Falke. Rob was the president of National Comfort Institute (NCI) and one of the architects of what is now known as the High-Performance HVAC Contracting movement.

With that in mind, we’d like to revisit an article he published in this magazine in July 2021. It is just as pertinent today as it was then. So without further ado:

The first critical ingredient to create a system upgrade sale is your conviction that each system needs more than equipment replacement. Your ability to successfully sell more than a box swap depends on being able to communicate that conviction. You’ll use it along with your skill, expertise, and creativity



In the quest for sales leads, diagnostics may be your strongest tool. Help customers discover their system’s defects and you will close the sale.

to deliver a custom system built on the foundation of diagnostics.

Let’s take a look at the events you’ll arrange in your customers’ homes to help them understand their system, discover its failings, and get them to ask for help improving the performance of their system.

Let’s also acknowledge upfront; this new system will usually cost more than they anticipated. Your job is to help customers learn enough about it, so they’re delighted to pay the higher price. If they’re not, you have done a disservice. Sadly, some will be unable to afford more than a box, and that’s OK.

Fortunately, if you have a diagnostics sales lead in hand, your customer has shown some level of interest in system upgrades and may want more.

This sales approach is very different than what is normally practiced within the general HVAC industry and taught by its best sales trainers and manufacturers.

A UNIQUE SERIES OF EVENTS

It’s up to you to orchestrate a unique set of events that we’ll call an in-home **Learn-O-mercial**. Sorry for the weird word, but after nearly 40 years of personally practicing this sales method and trying to teach it to others, it’s the most accurate description. This is the secret sauce for closing diagnostic sales leads.

You need to be a detective to discover the diagnostics sales lead. In the quest for sales leads, diagnostics may be your strongest tool. Help customers discover their system’s defects and you will close the sale.

If you carefully study, practice, and develop your brand of in-home Learn-O-mercial, following these principles, I can promise you increased success and enjoyment in your sales efforts. Typically, sales closing rates nearly double, margins and profit naturally increase, and you’ll never need to exert pressure on a customer again.

This unique series of events will result in a successful sale the moment that you and your customer discover any issues together and agree



upon their resolution. You have now made this the homeowner's custom project.

As you develop and master your Learn-O-mercial style, you will have no competition. The product you create for customers is a truly customized product. Your system upgrades will give customers more than any self-proclaimed competitor can.

A diagnostics-generated lead flows into a sales process unlike anything else. You'll notice several new steps to take and old ones to eliminate as you recreate how you sell. Like any change, it can be challenging to create and capture your vision of how to tutor and coach your customers to discover what you have available for them.

FIRST SALES CONTACT

Whether your first sales contact is on the phone, in an email, or at the front door, having test results and an initial diagnosis in hand, you're uniquely qualified to change the normal sales conversation.

Understand that the Learn-O-mercial is already underway, and the diagnosis becomes the foundation upon which

you rely throughout your visit. At this point, the spirit of your visit is to help customers understand their system defects and discover the solutions.

Don't worry about selling until your customer completely understands what you offer and what they will get from it. This approach mirrors the elevated sales position of a service tech. Be like the technician whose initial greeting is "Hi, I'm here to help."

AT THE KITCHEN TABLE

First contact sets the stage for the diagnostics sales lead. Still, it's the diagnostics that change the playing



field and lead customers to buy your designs to solve their problems.

field and lead customers to buy your designs to solve their problems.

Remember, the Learn-O-mercial is rolling out. Keep your conversation focused on diagnostics, and don't fall back into old comfortable habits.

A typical industry sales call begins with a monologue about the virtues of your company and the superiority of the manufacturer you represent. Blah, blah, blah.

With the diagnostics approach, speak only briefly about the values of your company and your relationship with your manufacturer. Let your primary message be conveyed by what YOU do with and for your customer.

People care about the value they receive for their money and that they are making a smart purchase. They show interest in diagnostics when they agree to your visit, so talk about the issues the diagnostics revealed. Learn more detail here: ncilink.com/Translate.

Now it's time for a discussion leading to the next level. If the diagnosis is high static pressure, teach the customer about it and ask questions to engage them in the discussion. They want to understand this pressure thing and

how it affects them. This is the diagnostics sales lead.

Some good questions to ask include, “Have you replaced your filter with a high-efficiency one recently?” “Did you notice any room airflows seem lower lately?” “Have you had anyone crawl through your attic in the last couple of months?”

Each of these questions can lead to discussions that engage customers deeper into the diagnostics and the solution. Take time to explain and discover with them. Can you see what’s happening?

SIMPLE DEEPER DIAGNOSTICS

Each diagnostic test has a cousin test that reveals a little more of the picture. If your Learn-O-mercial is working, customers will eagerly engage in some very simple diagnostics with you. Invite them to join in the discovery process and get them up and moving with you.

The diagnostics sales lead comes from a discovery process which may be a simple inspection of a suspected problem you identified together. Maybe the two of you check whether that new filter is restrictive. Or maybe you both take a static pressure profile at the equipment if it is accessible or finding closed dampers.

My favorite approach is taking the customer into the most uncomfortable room, then helping them estimate airflow.

For example, say you help them calculate 125 beach balls of air per minute (read ncilink.com/beachballs for a full explanation). Then invite them to measure the register airflow

with a balancing hood.

Be still. Say nothing when the hood measures just 38 and watch the Learn-O-mercial work its magic.

Measure supply and return duct static pressures and compare your results to 20% of rated static pressure. Be sure you teach them what the maximum pressure should be before measuring it. When it’s high, ask them what might cause the high pressure.



Be patient and give hints to help them find solutions when appropriate.

If duct temperature loss is the initial diagnosis, one quick and effective diagnostic you can do together is to place a temperature probe in a return grille and supply register farthest from the equipment.

Set the system to fan only and let it run. When duct heat gain or loss is present, the home gets uncomfortable in a few minutes. Calculate the difference between the supply and return air. It should be zero. Watch their faces as they learn and let the test data build their desire to own a solution.

When you allow customers to discover a system defect through diagnostics, they become highly motivated to fix the system. They’re not buying

your recommendation; they want to hire you to repair the problem they discovered themselves.

BUT WHEN DO I START SELLING?

Did you miss it? It already happened. The customer made the sale for you as they participated in your Learn-O-mercial. They learned about their system and decided they wanted the solutions only you can offer.

That is the heart of the diagnostics sales lead.

Each time you help customers discover system defects, they decide to buy independent of you. It’s the events you coached them through that did the selling. They want the sale each time they ask, “Can you fix this?”

EVERYTHING ELSE IS PAPERWORK

During the Learn-O-mercial, it’s your job to take notes to define the work for the inventory team and installers. You form the scope of work while you uncover each system defect to be corrected. NCI has reports to help you identify the scope of work.

As each flaw is uncovered during diagnostics, briefly explain to your customer how you’ll fix it. They usually don’t care; they want to hear you are fully qualified to make the repair.

It’s not time to write a proposal yet. It is time to talk about the customer’s repair priorities. Price comes up at this point. So, pull out your phone and answer the six questions in your trusty NCI Air Upgrade Price Calculator or use your flat-rate pricing. Discuss and agree upon upgrade priority and price.

Lock down any outstanding decisions such as financing, project start/

end date, construction details, and commitments for both of you.

Always include verification and final testing to prove you delivered what you promised.

Oh, how about equipment? At the kitchen table, you spoke about your relationship with your manufacturer. The customer trusts that relationship because they already bought you.

A discussion about types of equipment and costs is all you need at this point. Since they are purchasing the best system, isn't the best equipment the obvious choice?

Before writing a proposal, settle any outstanding system issue details until you both agree. Nod in agreement, shake hands, or get a hug. Respond however your customer chooses to

indicate total agreement.

THE PROPOSAL

Then create the proposal. Keep it brief when appropriate. You may include the most important points to your customer and whether you include equipment replacement.

Keep the scope of work minimal to deflect a spouse or others shopping your price.

JACK IN THE BEAN STALK

The diagnostics sales lead seed looks different from the seeds planted to grow a typical equipment replacement sale. Jack planted magic beans to make his dream come true.

The seeds you plant during the Learn-O-mercial bring a sense of magic

to the services you offer customers.

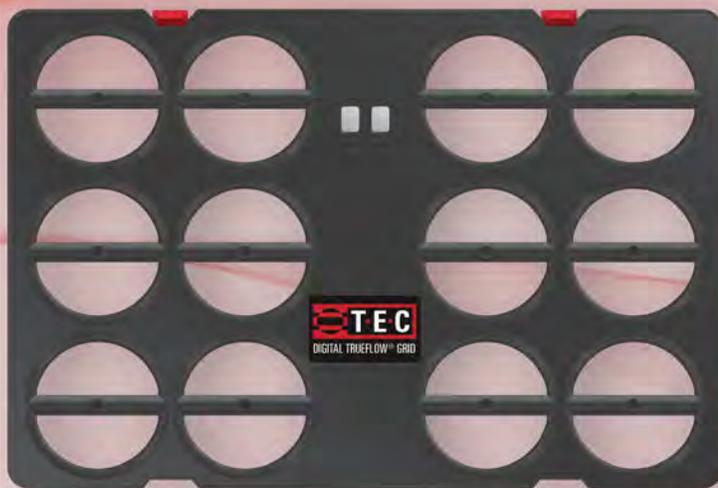
Why shouldn't an HVAC guy bring some magic into customers' homes? The magic is in the Learn-O-mercial and what they discover, think, feel, and receive from you. If what you do in their home doesn't feel like magic, you're planting the wrong seeds. 



Rob Falke co-founded National Comfort Institute (NCI) with Dominick Guarino in the early 1990s and led the technical training and curriculum development teams of the company. He is credited for bringing commercial-style air balancing to the residential marketplace and NCI's training mission continues to be driven by his vision that HVAC system performance can be effectively measured and diagnosed under live operating conditions in the field. Rob passed away in May 2022.

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Airflow Measurement: Old School Meets New Tech

When it comes to residential HVAC, many people believe airflow measurement has always been available to this side of the industry. The fact is that belief is not valid. So where did it come from?

This article explores some airflow measurement history and its ultimate importance to our industry today. The fact is airflow principles won't change – but the ways we measure them will.

IN THE BEGINNING ...

Airflow testing and measurement started in the commercial HVAC space in the 1960s. Commercial air balancers used instruments to ensure their customers the systems design and installation delivered what was promised. This idea was unlike anything residential technicians ever considered.

In the 1960s, the instruments used to measure and test were analog and there was an art to using them. Most residential HVAC contractors didn't know about them. You see, balancing was a very specialized trade.

Engineers performed testing to verify their designs. In those days, many engineers were disappointed their designs didn't work after installed in the field. Two such engineers, **Taylor Kahoe** and **George Coultas**, decided to find a way to make their designs work. So, they began testing their systems and measuring airside performance.

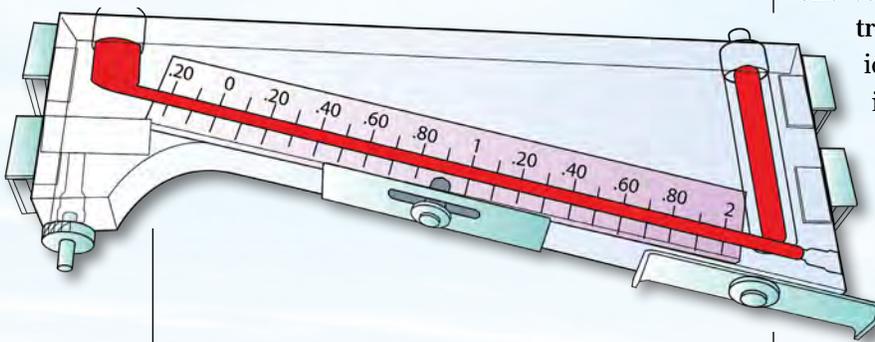
This testing and measuring led to founding their new company, Kahoe Air Balance, in Cleveland, OH in 1960. Taylor Kahoe went on to help found **AABC** (Associated Air Balance Council).

Commercial air balancing became a specialty trade of people who measured systems with specific tools and skills. These tools included the inclined manometer, Magnahelics (analog manometer), rotating vane anemometers, static pressure tips, and pitot tubes. The skills included static pressure measurements, duct traverses (and then using math to calculate airflow), and terminal device (grille, register, and diffuser) traverses.

LET THERE BE LIGHT ...

Kahoe created formalized testing and balancing for the commercial marketplace. However, one commercial air balancer named Rob Falke transitioned these tools and skills to the residential market. While working in his family's residential HVAC business, he saw how many residential HVAC systems performed pathetically, and his company often had to own those problems.

Rob saw the benefits of air balancing commercial systems and thought it might make sense in residential HVAC, so he brought those specialties over to his family's business. He started measuring, testing, and discovering the real reasons residential systems worked so poorly. This realization was



This illustration shows a typical inclined manometer used by commercial HVAC technicians to help them balance systems in the 1960s. © National Comfort Institute.

the birth of a new product called duct renovations. Rob used them to differentiate their family company and repair airflow issues.

The transition from the old school to where we are now began when Rob started teaching residential air balancing. He shared those commercial air balancing principles with residential technicians, starting with static pressure measurements. He taught them to use those results to generate leads. That eventually led to doing airflow diagnostic testing.

In this process, technicians would take measurements, prescribe a scope of work, and then sell it. The struggle was helping consumers understand what was happening with their systems. That struggle disappeared once techs could verify that what they promised was being delivered.

Over time, test instruments got better and technology changed. They evolved from analog to digital instruments that did all the math. That led to more training on measuring, testing, and diagnosing system issues.

LET THE FUTURE START NOW

That was the massive transition from the past to where we are today. Falke connected residential static pressure and system performance, which are discussed throughout the HVAC industry today. However, twenty-five years ago, that was NOT the case. Static pressure was barely discussed unless you were an NCI-trained technician.

You can't get performance out of your systems without proper pressure and airflow. Those two items are the foundational pillars of everything. They are the "why" technicians need

to test and measure. Falke understood this and helped the industry understand airflow was the lifeblood of any HVAC system.

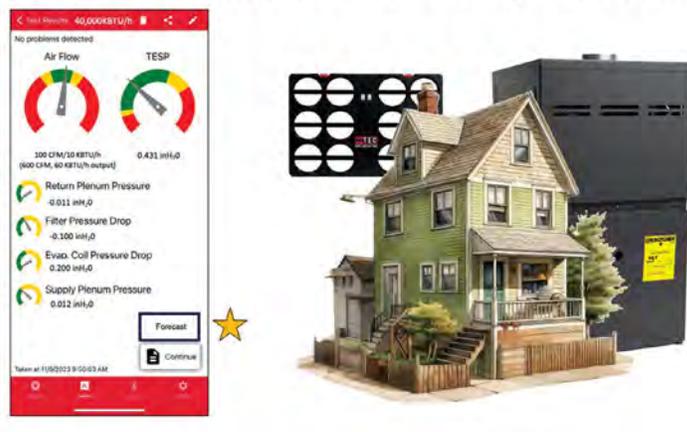
Now that technicians understand the importance of airflow, they see how it ties into system longevity, reducing component failure, callbacks, and all the problems that contractors run into in the field.

Today, an ever-growing number of residential companies embrace this mentality and use it to change their business culture.

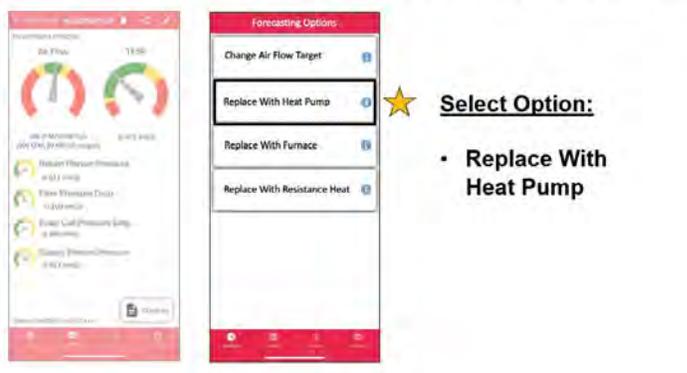
The next step is to take the measured data and learn how to apply it to correct poorly performing systems. Without this step, inefficient systems remain unchanged.

That is where companies like **The Energy Conservatory (TEC)** come into focus. Their mission is to build user-friendly tools and instruments to help HVAC contractors take airside measurements and then interpret that data to convert it into sales tools.

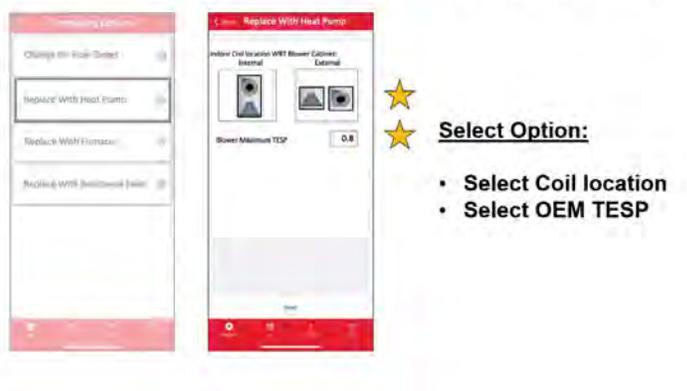
Step 1: Furnace to Heat Pump Retrofit



Step 2: Furnace to Heat Pump Retrofit



Step 3: Furnace to Heat Pump Retrofit



Their **TrueFlow® Grid** product is one result of those efforts.

SHOW NOT TELL

The TrueFlow Grid solves a problem that NCI has had for years. It provides a simple way for a salesperson to measure airflow and get a third-

party report of the results. The TrueFlow walks you through the entire process. It is hard to make a mistake.

Not everyone will use this tool – many will continue to use Total External Static Pressure (TESP), static pressure diagnostics, and a fan table to get an idea of whether they are close. Selling technicians will more likely use the TrueFlow Grid to take the same measurements but then turn them into a report that eventually becomes a scope of work.

This tool provides contractors and their field personnel a third-party means to **show** customers how their system is performing. Then they can verify that what they promised is being delivered. They can use this as an assurance report.

THIS CAN CHANGE EVERYTHING

The future is technicians who can do things they never could before – like predicting the scope of work.

Think about this: once you have a TrueFlow report, and by using some additional math, you can then **predict** what would happen by **adjusting** airflow.

Could we not do the same thing with changeouts? In other words, if you have a TrueFlow report on an existing system that includes the static pressure and airflow measurements, we essentially KNOW what the ductwork can handle no matter what you throw at it.

With that much data, taking it to another level is not far-fetched. You'll know how things respond to airflow. If you move x-amount of air at a specific pressure drop, you can predict what will happen to that static pressure if we increase airflow. Why is that important?

Our industry is currently going through a heat pump revolution that's driving us towards electrification. Many gas-fired furnaces will likely be replaced with electric heat pumps. There will also be many furnaces that will remain installed acting as a vital component in a dual-fuel system.

The airflow required to move the same capacity to these areas in predominantly heating climates will potentially increase. It be-

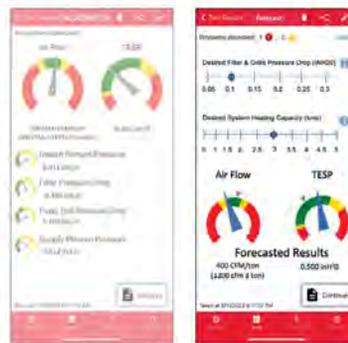
comes a huge decision about whether you can keep the exiting ductwork in the house or if upgrades are necessary. You have to consider whether a furnace to heat pump retrofit will really work.

Many times that's a ductwork question. If you have static pressure and you don't have an airflow reading, you don't have enough information to make an accurate decision. For example, if the system is dirty at all, you won't have airflow, and your static pressures will look great.

But if you have static pressures and airflow, you have all the information you need to start **predictive measuring or forecasting**.

Soon, the next release update of the TrueFlow app will enable you to take airflow measurements and then push

Step 4: Furnace to Heat Pump Retrofit



Use Forecast Tool:

- Use Active Sliders To Design Your New Heat Pump Installation
- A Load Calculation Is Required For Tonnage Selection

Heat Pump Retrofit Report In Seconds!



Forecast Report:

Know the result before you start

a button to forecast results of increasing or decreasing airflow, while also providing guidance on the type of equipment you select.

This type of software helps to create a scope of work and ensure you don't inherit or create a bad duct system. It enables you to forecast and simulate what could happen if the changes to the duct system aren't made. Plus, it could predict whether the new equipment airflow delivery will work properly or not.

FORECASTING AND SIMULATING WILL BE A GAME CHANGER

The beauty of this is that it's not you saying it. This automated third-party report has credibility and provides the customer with information they

can use to decide.

Not having third-party validations is why many contractors don't consider doing duct renovations in the first place. Plus, technicians are worried they will make a bad decision. Predictive tools like this help you overcome the fear of making bad decisions and instill confidence to make the right decisions.

GETTING CREATIVE

With such technology, companies will need to be creative. If they want to install a heat pump and the ductwork isn't big enough, that doesn't necessarily mean they can't install a heat pump. The contractor will have many options to provide the comfort their customer needs, include using sup-

plemental electric resistance heat, an existing gas-fired furnace, and more. Technicians and designers need to keep this thought process in mind.

They don't necessarily have to completely size the heat pump for the heating load.

The good news for the South and other regions that are predominantly a cooling climate is that when switching over to a heat pump, chances are that the ductwork is already adequately sized. In predominantly heating climates, that is where techs will see undersized ductwork and have some decisions to make.

This is the direction the industry is going. Think of all the opportunities and bad duct systems avoided from being able to predict how a duct

system will perform before changing out equipment or upgrading to a heat pump. Such a tool can guide the contractor's design decisions BEFORE they touch the existing system. 



David Richardson serves the HVAC industry as Vice President of Training for the National Comfort Institute, Inc. (NCI). If you have questions, reach out to David at ncilink.com/ContactMe.



Chris Hughes is the Business Development Manager at TEC and has over 18 years of HVAC experience in both residential and commercial applications. He also co-founded Hughes Mechanical and is an HVAC education advocate. You can reach him at ncilink.com/ContactMe.



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NCI HAS MAJOR PRESENCE AT AHR EXPO

National Comfort Institute (NCI) had a significant presence at the **AHR Exposition** in Chicago in January. Besides exhibiting at the trade show, the team presented five educational sessions and participated in two panel discussions.



The Expo is the HVAC Industry’s largest trade show event that brings together manufacturers, suppliers, and contractors of all sizes and specialties. Besides showcasing the latest products and technology, AHR Expo also holds concurrent workshops and educational sessions.

Here are links to each of the NCI sessions and panel discussions on the AHR Expo website:

- [How to Sell and Deliver High-Performance HVAC](#) – Dominick Guarino of NCI and Dawn Mroczek of GV’s Heating and Air Conditioning were the presenters
- [Airflow Measurement: Old School Meets Latest Tech](#) – presented by NCI’s David Richardson and Chris Hughes from The Energy Conservatory
- [Where Home Performance Meets](#)

[HVAC Design](#) – NCI’s David Richardson presented this session with Adam Mufich of A-Team Heating and Air Conditioning

- [Benefits of Modern-Day Combustion Safety Testing: Realtime vs. Steady State](#) – This session was presented by Casey Contreras of NCI and Tyler Nelson of Sauermann America

- [Climate Resilient HVAC: Where the Rubber Meets the Road](#) – Ben Lipscomb, P.E. of NCI, copresented this session with Bill Spohn, P.E. and Eric Kaiser of TruTech Tools

- [HVACR State of the Industry Leadership Panel Discussion: Today’s Market, Challenges, Opportunities and What’s Ahead](#) – Dominick Guarino of NCI was joined on this panel by Brian Orr of HVAC School and Kalos Services, Ginger Scoggins of ASHRAE, Greg Walker of ASHB, Steve Yurek of AHRI, and Talbot Gee of HARDI

- [Addressing the Workforce Talent Gap through Educational Partnerships](#) – NCI’s Dominick Guarino joined Alison Neuman of the North American Workforce Development Program at Johnson Controls, Bryan Feilen of Lincoln Tech, Jose De La Portilla of Rheem Manufacturing, Scott Shaw of Lincoln Tech, and Bryan Orr of HVAC School and Kalos Services on this panel.

If you want to download the PowerPoint slides from the NCI educational sessions, click on this link: ncilink.com/AHRppts.

ATD CLASSES HIT THE ROAD

National Comfort Institute is pleased to announce that the popular [Airflow](#)

[Testing and Diagnostics \(ATD\) courses](#) are being held in many more cities in 2024.

Intended for HVAC contracting firm owners, managers, and technicians, this course provides technical training on performing static pressure testing, properly installing static pressure test ports, and measuring and interpreting static pressures.



ATD attendees learn to:

- Identify Fan Type and Fan Speed
- Locate Fan Tables and Plot Fan Airflow
- Diagnose and Perform Air Upgrades on HVAC equipment and duct systems
- And much more.

Some of the cities where ATD classes are to be held include:

- Austin, TX
- Denver, CO
- Hartford, CT
- Landover, MD
- Louisville, KY
- Phoenix, AZ
- Salt Lake City, UT
- Tampa, FL.

To see a complete schedule go to ncilink.com/TrainSched. Check back here often to see all the new cities being added throughout the year.

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Call an NCI certified professional about your home through listing on MyHomeComfort.org. You will be able to see the most qualified and reliable energy pros in your area.

Safety

An advanced, patented gas leak detector is a serious threat to your and your family's health in your home.

Learn about the dangers and what you can do to protect your family. In your home, there are many hidden dangers that can be detected through individualized professional assessments. Be warned.

Energy

Call an NCI certified professional about your home through listing on MyHomeComfort.org. You will be able to see the most qualified and reliable energy pros in your area.

Health

The air you breathe is the most important part of your health. There are many hidden dangers that can be detected through individualized professional assessments. Be warned.



Call NCI Customer Care at 800.633.7058 to find out how to be listed and featured.

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It's Time to Get Serious About Rebuilding Our Workforce



Dominick Guarino is publisher of *High-Performance HVAC Today* magazine and President & CEO of National Comfort Institute, Inc. He can be reached at ncilink.com/ContactMe.

According to the Bureau of Labor Statistics, at the current rate of employment in HVACR, we will only have one in two technician slots filled by 2027 – just three years away! As an industry, we must work together to reverse this course – ASAP.

At AHR this year, I had the honor of hosting a panel of leaders from different segments of our industry, including manufacturing, education, and contracting. The panel was titled, “*How Do We Address the Workforce Development, Recruitment, and Retention Gap?*” Video of the discussion will soon be available on AHR’s website at ahrexpo.com.

The consensus of the group was not only do we have to work together to attract new people to our industry, but we also need to retain our existing workforce. Of course, there will always be attrition due to retirement, but we must work to replace them while keeping people from leaving for other careers.

The real challenge is increasing awareness of the great opportunities in HVACR. What’s truly unique about our industry is the variety of knowledge that is needed. Not only do our field people need to understand the refrigeration cycle and combustion, they must be proficient in electrical, controls, plumbing/piping, and air distribution. With the advent of AI in building controls and smart homes, the skills list grows longer.

CAREER PATHS ARE KEY

Each of these areas can become a career path within our industry. There are many opportunities to specialize in one or more of them. Just in the past decade HVACR technology has advanced significantly and continues to evolve at a break-neck pace. The need for the best and the brightest

is more urgent than ever.

We need talented people who can understand and work with not just hardware, but the software that is prevalent in every aspect of HVACR. Systems are less forgiving than ever and must be precisely installed, tested, and adjusted to perform as designed. New tools, instruments, and software are coming online every day. These tools require advanced learning and skills training.

This is not our grandfather’s HVAC industry. We need our new generations to help take us to the next level. I believe many are up for the challenge. Millennials and GenZers grew up with computers and smart devices in their hands since practically birth. These devices are a big part of what they will need to work on products and systems hitting the market today.

While all of this will present challenges for our existing infrastructure, particularly in the area of education and training, it also presents significant opportunities to attract a larger segment of the population. The key will be our ability to articulate all of the benefits we have to offer – especially as an alternative to a college education.

OVERCOMING THE STIGMA

The HVAC industry and the trades in general are feeling the pinch more than other service industries. While the facts prove differently, in many circles the trades are still viewed as dead-end low-paying jobs.

There have been numerous studies that show how someone entering the HVAC industry at age 18 can out-earn a typical college grad – especially in the first eight years. Plus they’re not saddled with tens, if not hundreds of thousands of dollars in student debt! 

This column continues on the website at ncilink.com/o224OMT2.

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UPCOMING NCI TRAINING: FEBRUARY - MARCH 2024

PUBLIC LIVE TRAINING

Duct System Optimization & Residential Air Balancing Certification Program

February 27-29: Hillside, IL
 February 27-29: Glen Burnie, MD
 March 26-28: Richmond, VA

Residential HVAC System Performance and Air Balancing Certification Bundle

February 6-8: Denver, CO
 March 12-14: Kissimmee, FL
 March 26-28: Tampa, FL
 March 26-28: Troy, MI

Combustion Performance and Carbon Monoxide Safety Certification Program

February 13-15: Austin, TX
 February 13-15: Hartford, CT
 February 13-15: Louisville, KY
 March 12-14: Centennial, CO
 March 12-14: Monroeville, PA
 March 19-21: Utica, NY

Commercial Air Balancing Certification Program

February 13-15: Monroeville, PA
 February 20-22: Morristown, TN
 March 5-7: Union City, GA
 March 12-14: Glen Burnie, MD

PUBLIC LIVE TRAINING (cont.)

Airflow Testing & Diagnostics

February 27: Tampa, FL
 February 27: Phoenix, AZ
 February 27: Salt Lake City, UT
 March 19: Austin, TX

Duct System Optimization Certification Program

February 28-29: Tampa, FL
 February 28-29: Phoenix, AZ
 February 28-29: Salt Lake City, UT

Refrigerant-Side Performance Training Program

March 20-21: Austin, TX

PUBLIC ONLINE LIVE TRAINING

Commercial Air-side Recertification - ONLINE LIVE

March 5-6

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Airflow Testing & Diagnostics

February 6: Anaheim, CA

Refrigerant-Side Performance Certification Program

February 7-8: Anaheim, CA

*SCE SPONSORED LIVE TRAINING (cont.)

Combustion Performance and Carbon Monoxide Safety Certification Program

February 27-29: Anaheim, CA

Hydronic Testing, Adjusting, and Balancing

March 5-6: Anaheim, CA

Residential HVAC System Performance and Air Balancing Certification Bundle

March 12-14: Anaheim, CA

**TECH CLEAN CALIFORNIA TRAINING ncilink.com/TECHCleanCA

Airflow Testing & Diagnostics

February 6: Hayward, CA
 March 19: Anaheim, CA

Refrigerant-Side Performance

February 7-8: Hayward, CA
 March 20-21: Anaheim, CA

High-Performance HVAC Design and Redesign for Electrification

March 5-7: Sacramento, CA
 March 26-28: Anaheim, CA



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