

HIGH PERFORMANCE HVAC TODAY™

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

Shining the
Spotlight
on
Performance-
Based
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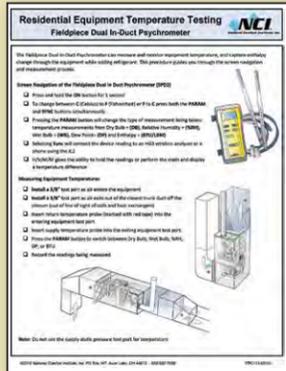
ALSO IN THIS ISSUE:

Build Your Business Through
Measurement and Diagnostics

ABCs of High-Performance
Contracting: Part 6

The Secrets of Customer Engagement

FREE Monthly Download



The **December 2018 Tech Tip** download highlights how to use **Fieldpiece SPD2 Dual In-Duct Psychrometer** to measure and monitor equipment temperature, as well as capture enthalpy change while adding refrigerant.

The data sheet explains how to navigate the SPD2 screens and provides illustrations and photos to provide technicians at-a-glance instructions for use in the field.

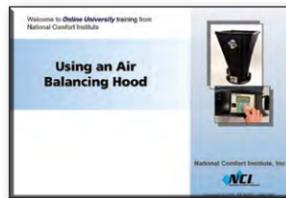
Go to ncilink.com/md1218, or use your phone with the QR Code below.

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



Online University

Featured this month is another module of the National Comfort Institute's *System Performance Testing Series: Using An Air Balancing Hood*. This device is one of the most important tools for maximizing your customers' comfort and energy efficiency.



This online course focuses on how to use the air balancing hood correctly to get meaningful results from system balancing.

You will find out how to do a balancing report, what to do when the grille or register is out of reach, how to create a grille correction factor, and so much more.

Read more at ncilink.com/ou1218



BLOG POSTS

YOUR NETWORK CONNECTION



This blog is part of NCI's Legacy Series, in memory of those who came before us. Nita Brooks, who passed away in 2016, wrote about the importance of creating and maintaining a peer network to help you succeed in your career and your life.

Read her blog here: ncilink.com/connect.

HOW TO PLOT FAN AIRFLOW

The most important diagnostic truth about a system is that you can determine how much air the system fan moves. In this blog post, Rob Falke examines how fan airflow can be plotted in less than five minutes to open the door to a new level of diagnostics and troubleshooting.



He provides five quick steps that explain what to do, how, and why.

Learn more by reading this blog post here: ncilink.com/PlotFanAF

There's an APP for That ...

This month we feature the **Carrier Enterprise-HVAC Contractor Assist** which allows you to log into your online Carrier Enterprise account and check pricing, orders, and add to your cart.



You can see real-time availability for your preferred branch as well as other nearby branches. You can even search and find AHRI matched systems with real-time inventory and system pricing. Other screens include:

- Equipment parts list
- Document search
- Warranty tools
- Pressure-Temperature calculator
- Sales center information.



This **FREE** app is available in both the **Apple** (ncilink.com/CE1) and **Google** (ncilink.com/CE2) stores.

MEMBER NCI REWARDS

Training Incentive Partner Program

Convert incentive dollars into NCI Bucks for immediate use to train your Performance-Based Contracting team. **Why is this such a great benefit?** Let's face it, training is a big investment in terms of time and money. TIPP is designed to earn incentive dollars toward training through purchases of equipment, products, and services that you already buy from NCI industry partners. So when you do have the time to train your team, the dollars are already banked, ready to be used.

Put your TIPP incentive dollars to work! Call **1-800-633-7058**

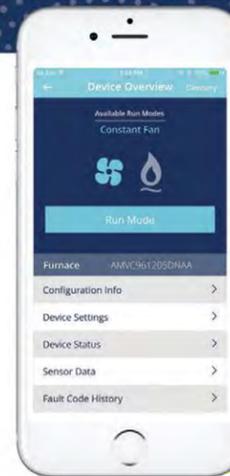


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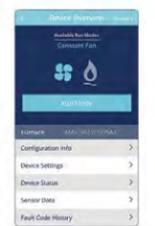


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Our continuing commitment to quality products may mean a change in specifications without notice.

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Cutting-edge Training from the Industry leader in Performance-Based Contracting™

Think you know airflow? Think you know carbon monoxide safety? Think you know how to solve your customer's comfort issues? Be sure. Don't guess. Find the training and expertise you need from the National Comfort Institute (NCI). Only at NCI will you find certification courses like Duct System Optimization and Combustion & Carbon Monoxide Safety, taught by leaders and innovators in the HVAC industry. Find out why NCI says "If You Don't Measure, You're Just Guessing!™" Visit the link below or call 800-633-7058 to find classes near you.

NCI Training for December 2018 thru February 2019

Duct System Optimization & Residential Air Balancing Certification Program

Jan 22-24: Pittsburgh, PA
Jan 22-24: Sacramento, CA
Jan 29-31: Houston, TX
Feb 5-7: Tampa, FL

Residential HVAC System Performance & Air Balancing Certification Program

Jan 8-10: Los Alamitos, CA*
Jan 29-30: Phoenix, AZ
Feb 12-14: Columbus, OH
Feb 19-21: NYC, NY
Feb 19-21: Austin, TX
Feb 26-28: New Orleans, LA
Feb 26-28: Seattle, WA

Commercial Air Balancing Certification Program

Dec 11-13: Cincinnati, OH
Jan 15-17: Minneapolis, MN
Jan 29-31: Baltimore, MD
Feb 5-7: Dallas, TX
Feb 12-14: Mobile, AL
Feb 19-21: Las Vegas, NV
Feb 19-21: Los Alamitos, CA*

Introduction to Hydronic Testing, Adjusting, & Balancing

Dec 18-19: Cleveland, OH
Feb 26-27: Los Alamitos, CA*

Airflow Testing & Diagnostics and Refrigerant-Side Performance

Jan 22-23: Los Alamitos, CA*

Performance-Based Selling Bootcamp

Dec 11-13: Los Alamitos, CA*

Combustion Performance & Carbon Monoxide Safety Certification Program

Dec 11-13: Austin, TX
Jan 8-10: Cincinnati, OH
Jan 15-17: Atlanta, GA
Jan 15-17: San Antonio, TX
Jan 22-24: Charlotte, NC
Feb 5-7: St. Louis, MO
Feb 12-14: Richmond, VA

Discover Profitable HVAC Repair Opportunities

Dec 18: Orange, CA*



* Subsidized NCI training offered by Southern California Edison

Visit NCIlink.com/ClassSchedule to view the latest schedule of NCI Training events

TODAY'S WORD

By Mike Weil

As 2018 Comes to a Close ...



Mike Weil is editor-in-chief and director of communications and publications at National Comfort Institute, Inc. He can be reached at mikew@ncihvac.com

With this being my last editorial of 2018, I thought I might revisit some of this year's events and how they will set the stage for 2019.

The biggest news this year comes from the results of the mid-term elections and the changes they wrought on the political landscape of our country.

The good news: Voter turnout reached the highest level seen in a mid-term election since 1914. **The bad news:** the mid-terms brought about the potential for a lame 2019 Congress with the Republican majority diminished. This will impact President Trump's agenda for the upcoming year. Can you say stalemate?

This year certainly was one for positive change: *Washington Times* writer Robert Knight summarizes by citing many of the administration's accomplishments including tax reductions, the Supreme Court appointees, and much more. Read his article at <http://ncilink.com/Trump>.

FOR THE HVAC INDUSTRY IN GENERAL, THE HIGH-PERFORMANCE CONTRACTOR IN PARTICULAR, THE TRUMP ECONOMY IS A VERY GOOD THING

In addition, we have seen the jobless rate in this country fall and the economy really pick up, which bodes well for small businesses and individuals alike. Let's face it, growth is a six-letter word and for the HVAC Industry in general, High-Performance Contractors in particular, the Trump economy is a very good thing.

Balancing that out, however, the tariff wars he's initiated against China as well as our allies could have long-term negative impacts on the economy and U.S. businesses (farmers are already feeling the heat). What do these tariff wars mean to you? Only time will tell,

but upwardly spiraling costs could be in all our futures.

Furthermore, in 2018, refrigerant phaseouts were back in the news because this year is the deadline for the U.S. and other developed nations to stop producing HFCs. Then, next year, HFC use must be reduced by 10%. By 2036, it faces a reduction of 85%.

That has major implications for the cost of manufacturing, selling, and installing high-efficiency HVAC equipment, which adds costs to consumers in a time when everyone is looking for ways to save energy dollars. It does, however, present opportunities for Performance-Based Contractors™ who can help customers obtain the energy savings and comfort they want and deserve.

One constant theme, year-after-year, is the growing need to attract young people into this industry. The fact is, with the median HVAC technician age today somewhere in the mid to late 40s, we are seeing shrinkage, not growth in the number of people in the trades. So where have all the HVAC technicians gone? How do we turn this around?

One way is to get involved in the STEM (Science, Technology, Engineering, Math) programs. STEM and our industry really go hand in hand, and you should get involved in your local high school and community college programs. This could be a great way to educate and recruit young people.

And finally, 2018 marks the end of the first year of this magazine's existence. Join us in celebrating this exciting milestone for High-Performance HVAC contractors, as we look forward to 2019 and beyond, providing a strong voice for our industry in the pages of this magazine.

So as 2018 comes to a close, here's to a very happy, healthy, and profitable 2019.



Tennessee Governor Bill Haslam (left) congratulates Governor-elect Bill Lee (right) during a joint press conference on Nov. 7th at the State Capitol.

Photo by Shelley Mays/The Tennessean

HVAC Contractor Elected Governor of Tennessee

Who says HVAC contractors don't have an impact on the country? Well Bill Lee, chairman of Lee Company, Nashville TN will directly have an impact after soundly defeating the Democrat Karl Dean. He replaces outgoing GOP Governor Bill Haslam.

Tennesseans elected Republican Bill Lee as the state's 50th governor on November 6th, voting into office a political newcomer who rose to prominence traveling the state in a recreational vehicle. Lee avoided using negative political attacks and appealed to voters as a conservative businessman.

He won the race by 20 points, receiving 59 percent of the vote.

Lee Company, a longtime member of National Comfort Institute (NCI), was founded by Bill Lee's grandfather in 1944.

His father Wallace and Uncle Ted Lee helped propel the Lee company to national prominence through their efforts working with ACCA and other organi-

zations. They were recognized for helping push Design/Build and a contractor-first approach to commercial and residential HVAC contracting. This really put the company on the map.

Wallace's son Bill joined the company in 1981 after earning a Bachelor of Science in Mechanical Engineering from Auburn University.

In 1992, Bill Lee became the president of the company. He continued building on his father's and uncle's legacy. Under his leadership, Lee Company grew to become a comprehensive facilities solutions and home services company employing 1,150 people and earning \$225 million in annual revenue.

In February 2016, Bill Lee retired as CEO to serve as chairman of the company. In an interview with the Tennessean, he said he threw his hat in the ring because he and his wife believed the office of the governor was his calling.

"We felt called to serve," Lee said.

EGIA FOUNDATION STUDY LEADS TO CALL FOR ACTION

Last month the [EGIA Foundation](#) released its newly published industry study that addresses HVAC as a career.

The study, performed and analyzed by Decision Analyst, is called *Bridging the HVAC Employment Gap*. It tackles the awareness and familiarity of high school students and their parents about HVAC as an industry and as a career.

The study found that 64% of high school students believe HVAC is not a career that would make a parent proud. Unfortunately, often unjustly so, these careers are viewed as substandard or undervalued career choices.

To change that perception, EGIA Foundation is focused on promoting HVAC as a first-choice career through a unique coalition of industry stakeholders. The group is devoted to building the workforce through initiatives including public outreach, mentorship programs, scholarships, and employment opportunities.



Says EGIA Trustee Weldon Long, "Through this work, the EGIA Foundation is ensuring the industry can meet labor demands well into the future."

Learn more about what EGIA is planning by downloading a pdf, or request a printed copy of the study at [EGIAFoundation.org/report](#).

WIRELESS STRAIGHT PITOT TUBES

Dwyer Instruments, Inc., recently released their Series 160FW Wireless Straight Pitot Tube Series. The Series 160FW is ideal for measuring air velocity or flow in applications such as building commissioning and building HVAC testing and balancing.

Data is captured and sent to Dwyer's [Mobile Meter](#)® or [TraverseIT](#)™ Software Application via a wireless differential pressure sensor attached to the Pitot tube.

Units are constructed from corrosion-resistant stainless steel, with permanently etched insertion depth graduations. The static pressure port is parallel to the sensing tube for quick, easy alignment of the tube with the air flow. The straight design allows for easy insertion

into ducts, as well as aids in positioning in hard to reach locations where a curved-style Pitot tube may not allow access.

For more information, go to [ncilink.com/160FW](#).

FUJITSU SMARTER BUILDING CONTROLLER

Fujitsu General's Smarter Building Controller has an easy-to-use, plug-and-play building management system for use with Fujitsu's Airstage heating, ventilation, and cooling systems.

The controller offers seamless integration with installed



equipment. Control is done via Internet connection through a simple interface from any connected device. It is easy to setup and use, with advanced users able to generate system performance reports, alerts, and access service diagnostic screens.

The system gives you the option to use a secure cellular LTE network, making complicated IT unnecessary. This provides your building owner extremely secure connectivity and control.

No expensive field controllers are needed at control points and no specialized programming is required.

For more information, go to [ncilink.com/SMcontrol](#).



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Shining the Spotlight on Performance-Based Contractors™

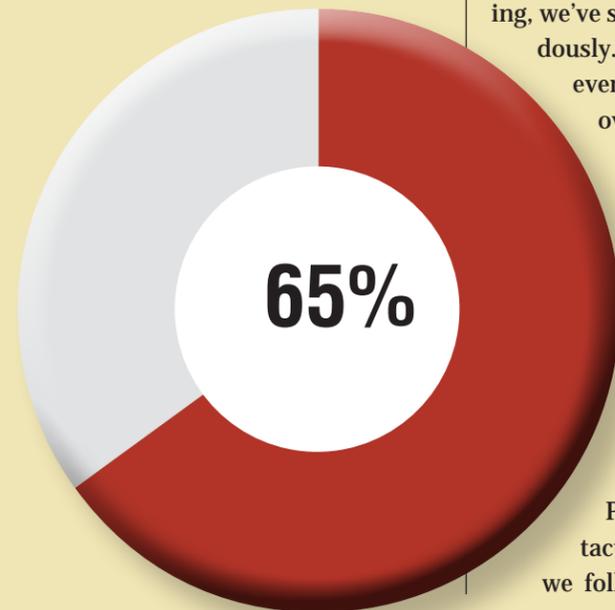
There's a growing voice in the HVAC Industry – a voice of thousands of contractors who are committed to providing the comfort and efficiency they promise their customers every day.

While most contractors imply this promise, many unwittingly are not delivering on it. Not because they are bad tradesmen or have bad intent, but because as an industry, we've been taught that comfort improvements and high efficiency are attained by upgrading and changing out equipment.

But that is changing.

To date more than 25,000 pro-

65% of respondents said they apply principles of Performance-Based Contracting to their business.



professionals in 7,000-plus companies have begun providing measured, verified performance on the HVAC systems they install and service across the country. In other words, they are providing to their customers that the systems they install and service will deliver real comfort and efficiency into the living space in a safe and healthy way.

Of these professionals, more than 14,000 subscribe to this magazine, *High-Performance HVAC Today*. They strive to provide customers with the highest level of quality and performance by testing every HVAC system they come in contact with.

Angel Morales of Russell's Heating and Air Conditioning, Yucaipa, CA, is one such contractor. He says, "Since we've adopted the **performance-based** approach to contracting, we've seen sales improve tremendously. We test-in and test-out every system we install or renovate, so we can prove our systems perform as we say they will."

TRAINING BECOMES CULTURAL

Michael Hyde, general manager of Hydex Air Conditioning in Palm Desert, CA, concurs. He says, "We are a Performance-Based Contractor, meaning not only do we follow the principles of per-

formance, 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."

Hyde also says that to do this prop-

IT IS THROUGH ON-GOING TRAINING THAT WE STAND OUT AND FULFILL OUR CUSTOMERS' EXPECTATIONS.

erly requires continuous investment.

To back that up, *High-Performance HVAC Today* recently surveyed the Performance-Based Contractors™ who read this magazine. We found that 65% of them agree with Michael Hyde and say they are not only trained in the high-performance method, but they also train and work hard implementing the processes necessary to do this.

Jim Altman, president of Four Seasons Air Conditioning in Kingsville, TX says that training really is the key to his company's success in the Performance-Based Contracting arena. "Our mission statement is, 'The Endless Pursuit of Excellence,'" he explains. "Training is the operative word here. It is through on-going

training that we stand out and fulfill our customers' expectations.

This contracting method is tantamount to a cultural revolution for many HVAC contractors. It involves implementing processes and training as well as a re-assessment of their typical business practices. And it requires a top-to-bottom commitment to change.

This is an important distinction from traditional HVAC practices. Successful high-performance contractors include having internal and external training, holding regular meetings where goals are set and roadblocks discussed. They also equip technicians with the right tools and instruments necessary to properly test systems (both equipment and ductwork).

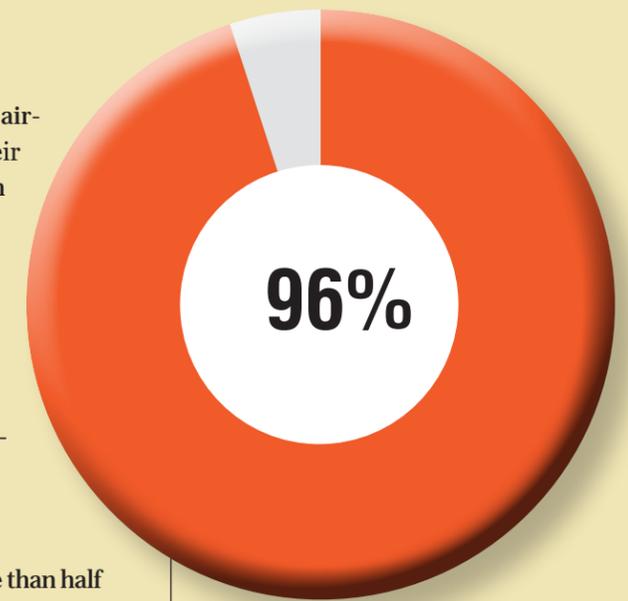
In fact, 96% of our survey respondents – who are decision makers for their firms – say they invest in state-of-the-art tools, instruments, and software to help them in their Performance-Based Contracting™ work.

"One of the things I learned is to have technicians do their own testing," adds Michael Hyde. "That means they must have their own tools and instruments. Each of our installation teams have their own flow hood along with basic tools like vacuum pumps, digital gauges, and even hot wire anemometers.

"I like good tools, and we really help make sure our technicians have them," Hyde explains. He says his company provides technicians with a tool allowance.

The reason? They test nearly every HVAC system they encounter. He is not alone. Our study shows that 65% of respondent contractors apply the principles of Performance-Based Contracting™ to their businesses by conducting static pressure measure-

ments and interpreting airflow on at least half their service and more than 60% of their installation calls. They do this to verify that each system is operating at optimum performance and efficiency. Then they can provide customers documented proof.



A GAME OF BALANCE

We also found that more than half of the contractors we surveyed balance the systems they work on at least 50% of the time, with nearly 40% balancing their installations 80 to 100% of the time. This means Performance-Based Contractors™ go well beyond their competitors when it comes to ensuring their customers' HVAC systems are operating as designed.

Says Michael Page of Air-Tech, Inc., Perris, CA, "Part of the culture change for us is to learn to balance the difference between what people want and what they can afford. Still as we move forward, we are adding profit to the company on jobs we would have otherwise not obtained."

Page and other contractors we talk to say that it does take more time to conduct the testing and diagnosing, so they must reflect that in the cost of their services.

Kris Knochelmann, who owns Cincinnati, Ohio-based Schneller Heating

96% of Performance-Based Contractors invest in state-of-the-art tools, instruments and software.

and Air adds that by pricing things correctly he sees net profit contributions around 20% from Performance-Based Contracting.

He says, "This performance culture is about setting yourself up for more profitability and doing it the right way. And if you put all the pieces together the right way, you can package your company around that model and be successful for your customers, your team, and your family. That is a great legacy. It sets you apart from everybody else."

DON'T TRY TO DO EVERYTHING AT ONCE

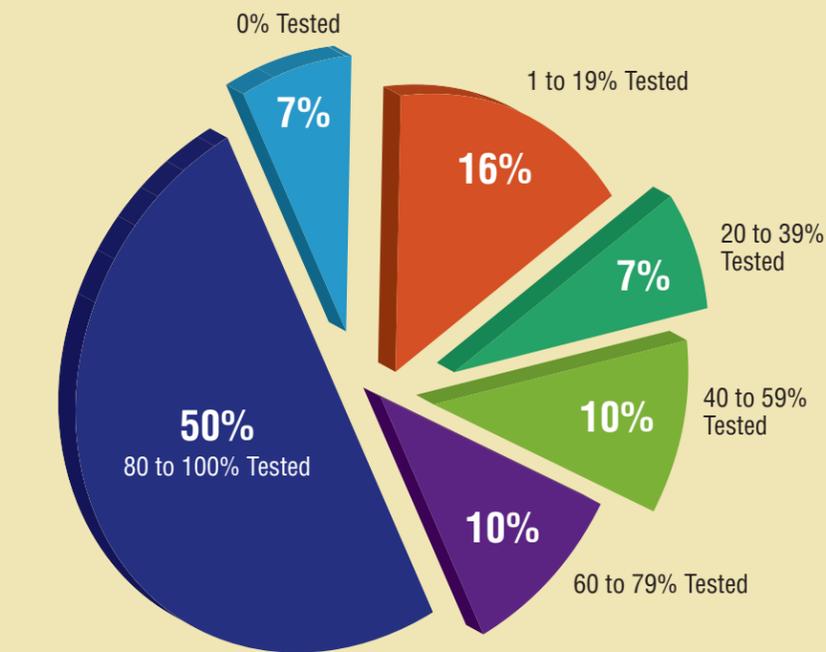
In the town of Newnan, GA, Progressive Heating and Air Corp. owner Greg Wallace sees implementing perfor-

PART OF THE CULTURE CHANGE FOR US IS TO LEARN TO BALANCE THE DIFFERENCE BETWEEN WHAT PEOPLE WANT AND WHAT THEY CAN AFFORD

mance as a step-by-step process that can take time to put into place. In the last three years Progressive has made huge efforts to convert internal systems and processes to better manage the Performance-Based approach. Wallace says you have to go slowly so you don't overwhelm your team.

With that in mind he recommends to start by having techs do simple static pressure tests on maintenance calls to get them used to doing it.

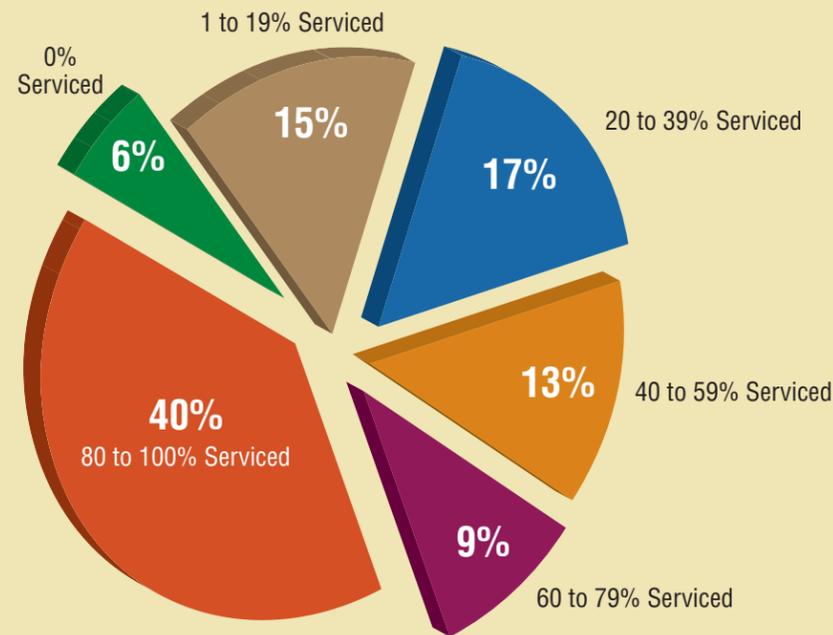
"Doing that opened my technicians' eyes," he says. "Add in training, both in-house and with organizations that focus on performance – like the National Comfort Institute – and our techs say a light bulb goes off in their heads. Now they know that HVAC is so much more than just pushing air



Percentage of HVAC installations tested for proper static pressure and airflow.

through duct work. They know that customers deserve to receive the comfort and efficiency they were sold. And

they want to deliver it!"
 Mike Hartman, president of Thomas E. Clark, Silver Spring MD, cau-



Percentage of HVAC Systems serviced where static pressures were taken and airflow interpreted.

tions that with selling High Performance, it's important to not throw out the baby with the bath water.

"I remember something Rob Falke said once in one of our classes. He said, 'You can't stop doing what makes you

money.' In other words, don't jump into HVAC performance exclusively. If you're a successful HVAC contractor, you're probably making money selling equipment, and need to continue doing that. Just add duct renovation and air upgrade services on as menu items. I think that is very critical."

The Performance-Based Contracting industry has been 25 years in the making. Today, thousands of HVAC contractors have made the transition and represent an industry within the overall HVAC industry.

Based on what these contractors are saying, Performance-Based Contracting provides them a leg up over competitors and they get paid a premium for providing a service consumers cannot get anywhere else.

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The Five Keys to Quality Training

Training is an ongoing process. It is never done. The whole point of training is progression. As you learn new things, your mind becomes ready to accept the next level, and the next, and so on.

You will have a much better chance of success with a plan, goals, and milestones to assess progress, make course corrections, and maintain a strong, vibrant training program.

By working with literally thousands of contractors since the early 1990s, one important lesson is clear: unless your company can make significantly more money testing performance, and delivering system improvements, you likely won't stick with it long-term.

To help ensure this happens, the NCI education process infuses our technical training with customer interaction, sales, marketing and business opportunity aspects of the Performance-Based approach. In this article we'll examine five important keys to building a training program focused on High Performance HVAC:

1. Determine Your Training Needs
2. Short and Long-Term Training Goals
3. Knowledge, Skills, and Abilities

4. Training by Role
5. Formal Versus Internal Training

1 DETERMINE YOUR TRAINING NEEDS

At NCI we have trained tens of thousands of professionals in thousands of HVAC companies from around the world for more than two decades. We've benefited from this experience by seeing what works and what doesn't in different types of companies at different stages in their progression towards High Performance.

While there are similarities between companies, we find when it comes to training needs, each organization can be as unique as a fingerprint. Each company is greatly influenced by the entrepreneur who built it, coupled with local market conditions, geography, and other factors.

These other factors include business mix like residential/commercial, and service/installation. They also include specialty work ranging from geothermal, to home sealing and insulating, to solar and other technologies.

Because of this diversity, training needs vary significantly from one company to the next. As you evaluate your needs, you need to first ask yourself a very important question: "How quickly do I want to grow into a Performance-Based Contractor?"

Are you on a slow, steady path and prefer to take several years, or do you want to fast track your company, and build a Performance-Based culture in a year or less?

The answer will help you make decisions on the resources you're willing to invest in training – especially the initial formal training. Your biggest investment is not the cost of the training itself. It really is your employees' time away from work, lost opportunities, and lost revenue. As with any training, these costs are real, and must be worth the investment.

If you're just getting started and want to take it slow and steady, begin by sending your field people to basic performance training classes like NCI's *Duct System Optimization* class, where they will learn about measuring static pressures, airflow, and how they are connected.

In this type of class they will also learn to translate test results into lay language. This is to teach customers about the condition of their comfort system, and how to improve it.

If you want a faster track, you may want to send your people to a rapid series of training: starting with *Duct System Optimization*, then in a month or so jumping to *Combustion Efficiency and CO Safety*. Soon after, they can move up to *Residential System Performance*.

You'll also want your key people, who will balance systems after new installations or duct renovations, to take an *Air Balancing Certification class*.

2 SET SHORT AND LONG-TERM GOALS

Once you've determined a comfortable pace to invest in training, it's time to set some measurable, quantifiable goals against which you can determine your progress as you move forward.

Short and long-term goals are equally important. If you only focus on long-term goals you may find it difficult to stay the course, as the goals may seem so far off it's hard to gauge where you are in the process. Remember the old adage, "the way to eat an elephant is one bite at a time."

It's still important to have long-term goals when it comes to training



Fig. 1: Example of Long-term Training Vision

"By January 1st, 2021 all six of our service technicians will be trained, certified, and equipped to perform full system performance testing using NCI's ComfortMaxx software. They will also be Combustion Efficiency and Carbon Monoxide Safety certified, and test for safety in every home or building they enter. They will know how to discuss their findings with our customers and offer next steps towards solving safety, health, comfort, and energy efficiency issues.

Both of our maintenance technicians will also be trained and certified to test and provide customers with performance information about their systems, and turn over leads to our two Customer Service Representatives (CSRs). Our CSRs will have also taken, at minimum, online training to understand the difference testing can make. At least one will have Duct System Optimization training so they can share knowledge with our customers where appropriate.

Our two comfort consultants will have the training and the tools to perform initial testing on the HVAC systems they are evaluating for replacement, and they will offer customers High-Performance upgrades.

Four of our residential installers will be fully trained in HVAC system performance testing and know how to renovate air distribution to achieve high levels of delivered performance. Our two commercial install crews will be trained in Commercial System Performance and will be well-versed in performing commercial renovations. We will have at least two field personnel fully trained and certified in residential and commercial air balancing to allow us to fully commission the systems we install and upgrade."

the troops and achieving the end result you want.

Consider creating a "Training Vision Statement." Put together a concise, but detailed vision of what your company's workforce will look like in the future. Choose your goal date based on how slow or fast you want to bake performance-based contracting into your company culture.

If you want to take it slow, it might take as long as three to five years. If you are on a fast-track, your long-term target may be one or two years.

As you spell out your vision, describe the end-result in clear, measurable terms that you can look at every few months and determine if you are on track, and what course corrections you need to make. **Figure 1** illustrates what a long term vision might look like.

Short term goals should be reasonably achievable in six months or less. They can even be 30-day goals. The value of setting these goals is they can provide fairly quick wins that can help you build momentum, and get your



Catch up on all the installments of this series:

Part 1: What is High-Performance HVAC and Why Do It? ncilink.com/ABCs-1

Part 2: Is It the Right Fit for Your Company? ncilink.com/ABCs-2

Part 3: Five Steps for Becoming A Performance-Based Contractor. ncilink.com/ABCs-3

Part 4: Five More Steps to Becoming a Performance-Based Contractor. ncilink.com/ABCs-4

Part 5: Your Investment in Performance. ncilink.com/ABCs-5

team excited about what you are doing differently.

A short-term goal can be as simple as getting two service techs trained and certified to test static pressure – and be able to discuss the results with your customer -- within 30 days. Think about chopping up your long term goals into more manageable plans in the months ahead.

Be sure to document your progress as you move on to each next step. You will be amazed at how much you'll accomplish with this approach.

3 INDIVIDUAL KNOWLEDGE, SKILLS, AND ABILITIES

Training is not a one-size-fits-all process. Each employee should receive training based on where they are in their career path.

A great first step is to create a process by which you interview each team member to assess his or her work experience, formal training, and education. Be sure to also ask them about their *perceived* skill-sets.

- What do they think they are good at?
- Where do they think they need to improve?

An open, *non-judgmental* conversation will go a long way towards a fair and accurate evaluation.

Technical employees will also benefit from a *formal knowledge assessment test*. There are some online tests specific to our industry.

HVACRedu.net, for example, offers a low cost “Technical Core Assessment Exam,” that can help you determine knowledge levels, and whether the individual needs significant training, or just a brushing up on core knowledge.

For non-technical personnel there are many great web-based assessment services that can help you assess KSAs (knowledge, skills, and abilities) for each type of role.

A Personality Profile assessment can also be a valuable tool to help you understand a person's strengths and weaknesses as well as whether they are in the right type of role. You can find good online services that use methods such as *DISC* and *Meyers Briggs* for this task. It's worthwhile to do this testing with both technical and non-technical personnel.

4 ASSIGN TRAINING BY ROLES AND NEEDS

Once you have assessed each team member's KSAs, you can initiate the training required for each role to move the company towards your short and long-term goals.

Following are descriptions of training needs by role for a typical mid-sized HVAC contracting business on the path to High Performance. Of course, you need to make adjustments based on your company's size, structure, and type of work you do.

You and some of your team may wear more than one hat. The list below is based primarily on technical training needs. You also need to add non-technical and soft-skills training based on roles and responsibilities.

Ideally, your management team should be on board with the overall training direction first, then make sure they train with your field and office personnel. This helps assure they have a thorough understanding of what their team is learning, so they can integrate this knowledge into the company's culture.

Maintenance Technicians: If this is an entry-level position in your company, your maintenance techs should learn how to measure static pressure and interpret airflow at the equipment. They should also be trained on how to inform your customer on how their system is performing based on those readings.

In addition to good internal reinforcement training, you may want to consider a **Duct System Optimization** class for these individuals. They should also take **Combustion and CO Safety** training to make sure they know how to perform proper CO safety testing.

While they may learn more than they need right away, it will give them room to grow as they move up the path to becoming service technicians.

Service Technicians: From an airflow and performance perspective, your service techs will benefit most from **Duct System Optimization** training, followed by a **Residential System Performance** certification class between three-six months later.

Typically, it's best to space these classes apart to allow them to apply their newly learned skills in the field before progressing to the next step.

For those companies that do commercial work, there is a similar track that covers **Commercial System Performance**.

Be sure to get all of your Service Techs **Combustion and CO Safety** certified as soon as possible. Not only will this reduce your liability, they will quickly uncover and correct many long-standing issues.

This knowledge will help keep your customers safe, while generating opportunities for profitable venting and

combustion air repairs – even equipment replacement. And don't forget to equip your techs with Low-Level CO Monitors!

Service Manager and Lead Technicians: In addition to Performance-Based implementation training and coaching, your Service Manager should take the same training as your service techs. Even if he or she is not a field person, it's important they understand and support what your techs are doing differently.

Your lead technicians, who may or may not be your Service Manager, should take as many of these classes as possible.

If this person also handles the final

commissioning of installations and/or duct renovations, he or she should become **Air Balancing** certified. This helps ensure they can seamlessly go from dialing in airflow for each room, to tuning the refrigerant side for optimum system performance.

Installers: To deliver High-Performance installations, it's essential that your installers take **Duct System Optimization** training.

This helps them to significantly improve installations right off the bat. It's also good for them to undergo **Combustion and CO Safety** training.

Lead Installers: In addition to previously mentioned training, if your lead installers also “commission” the

system, both from the air side and refrigerant side, they would greatly benefit from an **Air Balancing Certification**. Over time consider getting them trained in **HVAC System Performance** as well.

Installation Manager: As with your Service Manager, your Installation leader should receive training and coaching to help integrate airflow improvements into your current processes and procedures. This helps to ensure a seamless and profitable transition.

Salespeople (Comfort Advisors) and Sales Manager: Your salespeople and sales manager should know how to measure static pressures. Preferably they will also carry an airflow hood so at the minimum they can spot check the registers and grilles of trouble rooms.

Duct System Optimization should be their go-to training to get started right away with integrating testing into your sales process.

While **Combustion and CO Safety** training could certainly be helpful, they should at the minimum carry a portable CO safety device or Low-Level Monitor with them into every home they enter.

The Duct System Optimization class will also help them a great deal with offering **Air Upgrades** on installations, and, in some cases, more involved duct renovations.

This knowledge helps to keep them out of trouble when replacing equipment on poorly performing air distribution systems.

Non-Technical Personnel – CSRS/Dispatchers: Your office personnel will benefit greatly from going through all, or at least the first days of **Duct System Optimization** and **Com-**



bustion and CO Safety training. This will help them better understand how it all fits into the company culture you are working to create.

Just as important, they will be able to share what your company does differently with customers. Even a little knowledge about these two areas will go a very long way in terms of helping customers understand why they should do business with your company.

Owner/General Manager: As an owner or general manager,

you should try to take all of the training mentioned above, pacing yourself of course, so you don't get overwhelmed. Beside the technical knowledge, doing this helps you see how the whole approach fits together. This is key.

As your organization's leader, it's critical you formulate how High Performance will integrate with your company's Vision and Mission. In each class you will see opportunities to monetize the different services your company will be able to offer.

Your role is to put the picture together from a 30,000 foot view, both from a short-term and long-term perspective.

Over the years we've seen hundreds of owners attend classes much after they sent a tech to training, wishing they'd paid closer attention to the business opportunity sooner. Many tell us they could kick themselves for not attending with their people.

When you sit through the training with your team, you will have dozens of "AHA!" moments. You'll see

tremendous opportunities normally missed by relying on the troops alone to give you feedback on how to make everything work for your organization.

Some important advice: If you



participate in the training – get fully immersed. It will be tempting to constantly be pulled out of the room to solve problems and jump on immediate pressing business. Unless your building is on fire, wait for breaks and lunch to respond to phone calls and texts.

5 FORMAL VERSUS ONGOING INTERNAL TRAINING

While attending two or three-day classes is essential to getting a solid start, few people have the ability to retain everything they've learned in such a short time. In education circles, they say a 20% retention rate is very good.

So it's important to establish ongoing internal training to reinforce your team's knowledge and keep it fresh. Part of this ongoing program should be regular short training sessions on very specific topics.

Weekly training is ideal for reinforcing specific areas like interpreting static pressure, design basics, understand-

ing friction rates, duct installation, sealing techniques, and so forth. There are dozens of topics you could cover in 30-minute training sessions.

Nearly all NCI test procedures can be easily adapted as curriculum for reinforcement training. We also offer many on-line courses your team can take to refresh their knowledge and fill in areas that may have missed in the classroom training.

Online training is a great reinforcement tool, but it's no substitute for live training where your people are interacting with the instructor,

participating in class conversations, and performing hands-on testing. These three factors are key to cementing knowledge and skills.

One of the key tenets of training is it is never done. It needs to become part of your company's culture, and should be done on purpose, budgeted, and an integral part of your business plan.

Once trained, it's critical that your field people have the tools to apply their newly learned skills as soon as possible.

In the seventh part of this ongoing series we'll take a deep dive into the proper tools and instruments that will help your team succeed and progress on their path to delivering and maintaining High-Performance HVAC systems. 



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



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The Secrets of Customer Engagement

“SEEK FIRST TO UNDERSTAND, THEN BE UNDERSTOOD”

— STEPHEN COVEY

Wouldn't it be nice if your customers knew everything about what you do on an HVAC call, completed your in-home survey on their own, wrote the proposal, signed it, and handed you a check?

Don't bet on that ever happening.

Most homeowners know very little about HVAC, don't like sales people, don't trust contractors, and think that getting three bids keeps contractors “honest.”

When they invite you into their home, you will often find them guarded, suspicious, reluctant, and challenging. These challenges can seem overwhelming, but

they can also serve as a guide to lead you to an improved sales result.

CUSTOMER ENGAGEMENT CREATES VALUE

The actions you take that result in the customer becoming mentally, emotionally, or physically involved in your call are known as customer engagement. Asking questions, having her help you take measurements, showing her the dirt on a blower, explaining the consequence of inadequate return air — these are examples of engaging the customer.

You engage in these ways so the customer can learn and understand the importance of proper design, installation, craftsmanship, and more. Involving her in your call differentiates you and adds value that your competitors simply can't.

KNOWLEDGE ISN'T NECESSARILY POWER

My Dad used to send me a weekly newsletter called Boardroom Reports. Four pages in total, it was packed with key points and quotes that were meant to inspire and provoke thought. One memorable and impactful quote was, “Knowledge is proud that it knows so much; wisdom is humble that it knows no more.”

Credit for that is given to William Cowper, an 18th century English lord who must have been

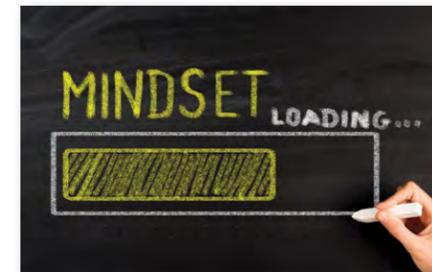
in sales. In a sales context, to me, this suggests that our technical knowledge has little relevance unless it is useful in helping customers solve a problem and meet a need. The primary source for that information IS the customer.

CHANGE YOUR MINDSET FIRST

You have worked very hard at learning all you can about HVAC. You know far more than your customers and it's very tempting to let them know that. You may be wasting your time.

Your customers assume you are the expert, or they wouldn't have invited you in the first place. If you find yourself doing most or all of the talking, you're impressing yourself more than your customers.

If you ever thought, or were trained, to “control” the customer by talking, consider changing your mindset. Instead of telling them what you know and what you think they need, invest your time into building rapport, turn-



ing that into trust, engaging them with questions, and showing them solutions to their problems. Changing your thinking, and then changing your behaviors, will change your results.

IT'S NOT A QUESTION OF WHEN

Engagement isn't something you plan to do, it's what you do. When you change your mindset from telling them what they need to discovering

what they want, everything about your call is different. When your CSR sets the appointment, she will set the expectation for the customer's involvement in the call.

At your meet-and-greet you'll confirm this and then invite your customer to begin the call at the thermostat with questions about comfort.

You'll follow that with a room-by-room survey. You'll inspect grills and registers and look for clues to problems. You'll take appropriate airflow measurements, infrared images to determine duct leakage, static pressure readings, or duct measurements.

You'll do all of this and more, with the customer present, answering their questions about the relevance and importance of each one.

EXAMPLE ENGAGEMENT AT THE THERMOSTAT

“Can you show me how you operate your thermostat?”

“I'm sure this (thermostat) keeps you comfortable right here. Are there any rooms farther from here that are too hard to heat in the winter or cool in the summer?”

“May I turn on the fan switch? Is that amount of noise typical? If we could quiet the noise down, would that be of interest to you? How about the outdoor unit in the summer, does that noise bother you?”

EXAMPLE ENGAGEMENT AT THE SUPPLY REGISTERS

“I see you have this register closed off. Is there a particular reason why you've chosen to do that?”

(Removing the registers.) “You'll notice that the sheet metal (boot) isn't sealed around the edges and you'll



also notice this dirt streaking on your carpet. This is an indication that your duct system has restrictions.

“That can cause air to be pulled from unconditioned, dirty areas like wall cavities, the attic, or basement. When we take a measurement later, I'll bet we'll find that you've been bringing air into the house that's too hot, too cold, too dirty, too dry, or too humid for years.

“If this is the case, is it something you'll like to take care of?”

EXAMPLE ENGAGEMENT AT THE EQUIPMENT

When you can easily access the furnace or air conditioning equipment, invite the customer to join you. If she has walked with you to the thermostat, and then to each room, she'll continue with you to the equipment. If she does not, for any reason, put your phone or tablet's video camera to good use and record any findings.

(Standing in front of the equipment, looking and listening for any obvious issues.)

“Can you hear that whistling noise? Remember we saw dirt streaking on the carpet around the registers? That indicates the ductwork is somehow restricted causing a number of problems. That whistling noise is another indication of the same thing. We'll take a measurement to determine what's going on.”

(After opening the furnace cabinet doors.)

“It appears that there is a fair



amount of dirt and debris here. May I ask when was the last time you had your system cleaned or maintained?"

(Use your phone to take a photo of the inside of the blower.)

"This amount of dirt is to be expected on a system of this age. The problem with dirt is that it restricts airflow, making it harder to get warm and cool air to the rooms farthest from here.

"It stresses equipment, causing more frequent failures and repairs, and it makes your utility bills higher. Does it make sense that we make sure this doesn't happen in your new system?"

TAKING NOTES

Throughout this engagement and discovery process, you should take notes and write down the customer's

responses. This affirms that you are listening and that what she says is important. Later, when you create your proposal choices, the choices will include varying degrees of solutions that reflect her specific needs and wants. Engaging the customer by asking questions, listening, and taking notes is a very powerful sales tactic, one that should never be skipped.

SELLING YOURSELF

Everything we do as sales professionals impacts customer thoughts and feelings about us. You may be the most thorough and expert HVAC person to have come to her home, but if she doesn't know that she can trust you, then you will not make the sale.

Consciously invest your time and

effort into creating the best possible connection with your customer. Let her know that she and her family's needs are the most important consideration and you will help her by answering questions. Engage your customers, offer solutions to problems, ask for the sale in a professional manner, and you will sell more jobs, at higher prices. 



Tom Piscitelli has over 40 years' experience in HVAC sales, sales management, marketing and consulting.

His articles have been published in trade magazines, he often speaks at industry events, he has produced three HVAC sales training DVD's and he particularly enjoys bringing cutting edge training approaches to our industry. Visit www.sellingtrust.com.

Build Your Business with Static Pressure Diagnostics

At Thomas E. Clark, we are true believers in the benefits of static pressure measurements. It's an important HVAC system vital sign that uncovers hidden airflow issues we would otherwise miss.

For example, one job we diagnosed had a furnace that was tripping the high limit. Others blamed this problem on a zone system issue. We tested system static pressures and found a restrictive air filter leading to high static pressure and low fan airflow. Testing helped us to find the true cause for overheating and prevented further misdiagnosis.

In this article, I want to give you a peek at how Thomas E. Clark uses static pressure testing to solve airflow problems, generate leads, and build trust with our customers.

THE RIGHT STUFF

To measure static pressure, each of your technicians will need the following test instruments and accessories.

- Digital Manometer or Magnehelic
- 3/16" i.d. neoprene or rubber tubing
- One static pressure tip
- 3/8" bullet tip drill bit with sheath
- 3/8" plastic test port plugs
- Carrying case.

Without these essentials, and knowing how to use them, you will miss a lot of airflow problems.

TOTAL EXTERNAL STATIC PRESSURE – THE FOUNDATION

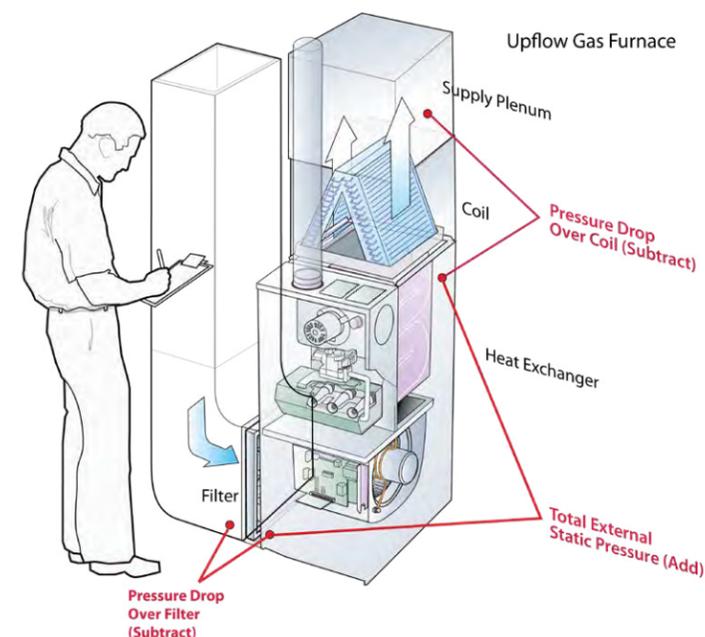
Total external static pressure (TESP) is the first measurement we take to determine an airflow problem. This test provides an overall picture of what's happening with the system. If our measured TESP exceeds the air handling equipment's maximum rated TESP, we know an airflow problem probably exists.

To measure TESP, you'll need to install 3/8-inch test ports (drill holes) where air enters and leaves the equipment. You'll need to drill into areas that could cause refrigerant or water leaks, so be careful. We make sure our guys use a drill bit sheath, so the drill bit only penetrates the cabinet a little.

Once they install their test ports, our technicians measure pressure entering and leaving the air handling equipment. They add the two pressures together to determine TESP. If they measure high TESP, then they should measure static pressure across other system components to determine what is causing it. High TESP tells us we have a problem, it doesn't tell us where that problem is located.

FILTER PRESSURE DROP

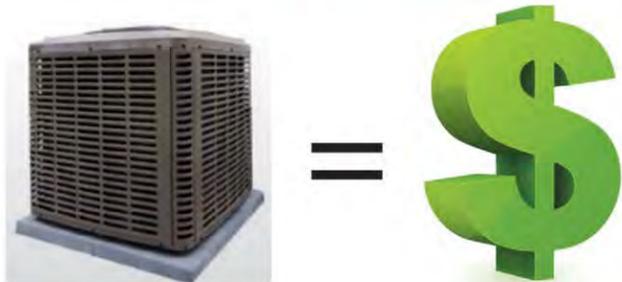
The air filter is a leading airflow restriction, so we measure its pressure drop next. It's common



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for a clean filter made of a restrictive material, or a filter that is too small, to choke down system airflow.

To measure filter pressure drop, install a 3/8" test port before and after the air filter. Measure pressure entering and leaving the filter, then subtract them to determine filter pressure drop. According to NCI's static pressure budgets, a properly sized air filter should have a .10-inch water column (WC) filter pressure drop.

To measure a system with a return air filter grille, our guys measure filter pressure drop by following NCI's training: They pierce the static pressure tip through the return air grille and filter. They then read pressure drop directly on the manometer.

If the filter pressure drop is .10-in. WC or less, the technicians know they haven't yet found the airflow problem. If it's higher, they know the filter can't handle the proper airflow. This test

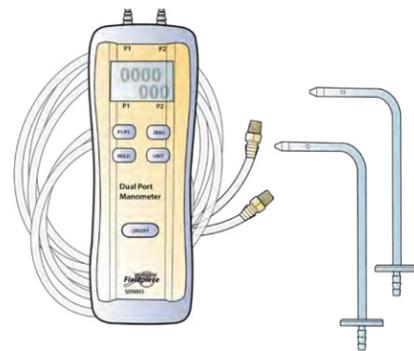
shows whether the filter will work in the system even if it's clean.

COIL PRESSURE DROP

Indoor coils are another common airflow restriction that can be a challenge to measure because no one wants to drill into a coil and cause a leak. Unless my guys can remove the coil panels before drilling, they will use a drill bit sheath to prevent coil damage.

To measure coil pressure drop, install 3/8" test ports before and after the coil. Measure pressure entering and exiting the coil, then subtract them to determine coil pressure drop. It's important to know the coil condition. A wet coil often has a higher pressure drop than a dry one.

According to NCI static pressure budgets, a properly sized and clean coil should have a .20 to .30-in. WC pressure drop. If the pressure drop is higher than .20 to .30-in. WC it can in-



Dual Port Manometer Fieldpiece SDMNS5.

dicating the coil is plugged or too small for proper airflow. This test shows whether the coil is plugged or restrictive without taking all the panels off – it's a real time saver.

DUCT SYSTEM PRESSURES

If the air filter and coil pressure drops are good, the next step is to measure the supply and return duct system. On a standard installation, test ports are already installed.

Return duct pressure is a single pressure measurement taken where air enters the air handling equipment. If the air filter is at the equipment, return duct pressure has the same reading as the pressure entering the filter. If there is a return air filter grille, return duct pressure is measured in the return plenum, where air enters the air handling equipment.

Supply duct pressure is also a single pressure measurement taken where air enters the supply duct system from the air handling equipment. This is typically in the supply plenum. When my guys work on a gas furnace system, they take the pressure measurement above the coil in the supply plenum. If the job has a heat pump system with an air handler, they measure supply duct pressure in the supply plenum as air leaves the air handler. They are always careful about getting too close to any electric heat strips. You should be too.

Again, according to NCI static pressure budgets, the pressure on ei-

ther side of the duct system should not be higher than .10-in. WC. The duct system with the highest pressure is the one that is the most restrictive and where the technicians need to test further.

So, they measure down from the first duct system test port and install test ports every four feet or so. They look at pressure-drop down the duct system and across suspect duct fittings like sharp transitions and turns. They look for big pressure changes in the ducts. These two items indicate an airflow restriction in the duct system. Technicians can quickly tell if the ducts are undersized with this test.

TEST ADVANCED, EXPLAIN SIMPLY

When our guys discuss static pres-

sure readings with customers, they are trained to keep explanations as simple as possible. We use basic analogies our customers can tie to their problems. The NCI comparison of static pressure to blood pressure serves our team well.

At Thomas E. Clark, we base any questions to customers around the readings we've taken. For instance: If static pressure is high, we ask questions about comfort, hot and cold spots, or high utility bills. Consumers think we have a crystal ball when we pinpoint problems like this.

Seeing is believing and our test instruments and readings make customer problems visible. Once we discover the problem, our team focuses on finding a solution that fits customer needs and budgets.

DIG DEEPER

Keep in mind, correcting a static pressure issue doesn't mean we fixed an overall airflow issue. We can still have issues with leaky ducts or improperly sized branch ducts that prevent proper airflow from being delivered. We try to dig deeper to make sure any potential problems are headed off.

Measuring static pressure is the first step that leads us in that direction.



Mike Hartman was born and raised in Silver Spring, MD. He is the president of Thomas E. Clark Plumbing, Heating, and Air Conditioning. They are a Performance-Based company that offers CO/Combustion Analysis, Air Diagnostics/System Performance, and Home Performance services.

Meet Mike Hartman at NCI Summit 2019



Done right, a few simple tests will generate high quality leads with virtually no competition and very high conversion rates.

To hear more details on how Thomas E. Clark uses static pressure testing to diagnose problems, generate leads, and gain customer interest, come see Mike Hartman co-present with NCI's David Richardson at Summit 2019

(www.gotosummit.com) in Orlando, FL.

In this highly interactive hands-on session, both Mike and David will demonstrate proper testing techniques and how to explain test results, gain customer interest, and hand-off the lead. The session is titled "Lead Generation through Performance Testing".

NCI Members: Take advantage of early-bird pricing by registering today.

Early bird ends on January 19, 2019. Don't wait another minute! You can still save hundreds on your registration costs. And don't forget to book your hotel – we are expecting rooms to sell out early. Go to ncilink.com/wynd and reserve your rooms at the Wyndham Orlando Resort (you can also call them at 407/351-2420).

Questions? Call 800-633-7058 and talk to your customer care representative.



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“Installation Cost Control”

— Jason Nikkel, JN Electrical Temperature Control, Inc., Bowersville, GA

Why do we get so many headaches in here?

Jason Nikkel from JN Electrical is the December 2018 winner of our Photo-of-the-Month contest, as voted on by the subscribers to the [High Performance HVAC Today magazine](#) 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, go to ncilink.com/POMSubmit and fill out the information as requested.

THE JANUARY 2019 RUN-OFF CONTEST

The January 2019 contest is a run-off of all the past winners from 2018. The winner receives a free registration to NCI's Summit 2019. Learn more about the Summit at www.gotosummit.com.



2019 High-Performance Summit Week Registration is Open

Join your Performance-Based Contracting™ peer group in Orlando, FL on April 15-18, 2019 for the 2019 High-Performance Summit.

The 2019 focus is on the High-Performance sales and delivery cycle. Each workshop concentrates on a different key element of that process including:

- **Lead Generation** – Lead Turnover and Setting the Appointment
- **The Sales Process** – Handoff to Your Installation Team and Selling High-Performance Service Agreements.

This year, based on input from past attendees, we've extended our breakout sessions to an hour and a half so there is more time for attendees to interact with instructors and their fellow High-Performance Contractor peers. Some workshops even have hands-on learning with working equipment and test instruments.

THE SESSIONS: Here is a quick run-down of the sessions and instructors:

- **Generate High Quality Leads with Performance Testing** with Mike Hartman and David Richardson
- **Turn High-Performance Leads into Appointments** with Nancy Mc-Keraghan and David Holt
- **Performance-Based Selling in 12 Steps: From Test to Proposal** with Michael Hyde and Rob Falke
- **The Handoff Can Make All the**

Difference with Dawn Vickers-Mroczek and John Puryear

- **Sell High-Performance Maintenance Agreements** with Jim Ball and Tom Johnson.

In addition to breakouts, the 2019 Summit features three special events: NCI Partners Reception and Tradeshow, The Idea Meeting, and our Special Awards Banquet.

Plus, there are special partner events. First, on Monday, April 15th, there is a **Performance Planning Bootcamp** hosted by Goodman Manufacturing. Special pricing is available for Summit attendees, Goodman/Amana Dealers, as well as NCI and EGIA members.

Then on Thursday, April 18th, we will have a class titled, **Breakthrough**



Business Leadership: Developing a Process-Driven Company, presented by Gary Elekes. There is special pricing for NCI and EGIA members.

EARLY BIRD SAVINGS: Take advantage of the early-bird registration fee. NCI members can save \$200 off the full registration price as well as receive special pricing on the pre- and post-conference training events. Visit GoToSummit.com and get you and your team registered today.

Don't forget to make room reservations as well. Rooms will go fast.

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

Your Membership Benefits Just Got Better!

In other news, NCI's newest Vendor Partner is **Pearl Certification** of Vienna, VA. This national organization provides third-party certification of high-performing homes: homes with "performance assets" that make them healthy, safe, comfortable, energy and water efficient.

The Pearl Contractor Advantage Network (PCAN) is for high-quality residential contractors. Only the top 5% of contractors in a region are invited into the network. Pearl will invite NCI members to apply for network access. Once accepted, NCI members can use Pearl Certification Reports to help customers understand the value of quality work and performance testing.

This high-performing home certification can help customers recapture some of their investment in high-performing HVAC systems through increased sales value of their homes.

Pearl works closely with real estate agents and appraisers, so energy efficiency improvements are visible and add value to the home.

PLUS, members can earn NCI Training Bucks when they sign up to participate in the PCAN. You also earn NCI Bucks on the monthly PCAN fees, on asset certification fees, and on Pearl's Silver, Gold, and Platinum certification fees.

For more information, go to the Pearl Partner page on the NCI website (you must be signed in) at ncilink.com/Pearl.

Take the First Step Towards High Performance with Duct System Optimization & Residential Air Balancing Certification Training

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AD INDEX

Advertiser Index

Baker Distributing Company BakerDist.com	25
Dwyer Instruments, Inc. www.dwyer-inst.com	2
Goodman Manufacturing www.goodmanmfg.com	5
Jackson Systems www.JacksonSystems.com	28
Lazco Corp. www.lazcocorp.com	22
R.E. Michel Company www.REMichel.com	9
The New Flat Rate www.thenewflatrate.com	28
To Your Success ToYourSuccess.com	28
TSI, Inc. www.TSI.com/comfort	13
United Refrigeration Inc. www.uri.com	4

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Airflow Testing Accuracy in the Field

Advances in airflow instruments and technician certification have increased the accuracy of field airflow measurement in recent years. Test methods are now simplified through advancing instrument technology, and skills are improving because of a steady rise in field airflow testing throughout the HVAC industry.

Speakers: Rob Falke, President, National Comfort Institute; Ben Lipscomb, PE, Engineering Manager, NCI

Monday, Jan. 14, 1:00 PM - 2:00 PM
Location: B315

What it Takes to Get an Installed HVAC System to Operate at Equipment Rated Capacity

Most believe it's extremely difficult to optimize the performance of an installed HVAC system. Fortunately, developing your skill and ability to discover system defects may be easier than you think. Once the defects are identified, improving system efficiency may be more straightforward than you ever imagined.

Speakers: Rob Falke, President, National Comfort Institute; Ben Lipscomb, PE, Engineering Manager, NCI

Tuesday, Jan. 15, 1:00 PM - 3:30 PM
Location: B312

Quick Guide to Applying Fan and Pump Laws

Learn about this quick guide to remember and apply pump and fan (affinity) laws in your daily work. This seminar will provide more than a dozen examples of applications using fan & pump laws. Understanding these laws enables test & balance, commissioning, and facilities maintenance professionals to apply and solve problems on a daily basis.

Speaker: Scott Fielder, Director, National Balancing Council

Monday, Jan. 14, 2:30 PM - 3:30 PM
Location: B315

How Much Energy Can HVAC System Balancing Save?

Testing alone doesn't save any energy. However, when an HVAC system is balanced, some energy is saved by bringing the system closer to designer and equipment manufacturer specifications. When additional balancing testing is used to diagnose the system, hidden system shortcomings are exposed and custom repairs can be made. Custom repairs are where the greatest HVAC savings can be found.

Speakers: Ben Lipscomb, PE, Engineering Manager, NCI; Peter Jacobs, President, Building Metrics

Monday, Jan. 14, 4:00 PM - 5:30 PM
Location: B315

Register for FREE today at: AHRExpo.com

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