National Comfort Institute, Inc.

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HIGH-PERFORMANCE HVAC TODAY™

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2021 HIGH-PERFORMANCE HVAC INDUSTRY INFLUENCERS

ALSO IN THIS ISSUE:

INDOOR HUMIDITY: PROBLEMS AND SOLUTIONS

RENOVATION AND REDESIGN: THE CORE OF PERFORMANCE

TRINITY WARRANTY SOLUTIONS: PERSONAL PARTNERSHIPS PROVIDE VALUE

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National Comfort Institute, Inc.

JUNE 2021 VOLUME 5 NUMBER 6

HIGH-PERFORMANCE HVAC TODAY™

LEADERSHIP:

2021 High-Performance HVAC Influencers

Welcome to the Class of 2021. This year's group represents some of the top people working toward the betterment of the High-Performance Contracting™ community.

TECHNICAL:

Indoor Humidity: Problems and Solutions

Ben Lipscomb, P.E. and Dennis Mondul discuss the importance of humidity for indoor comfort, air quality, and health.

MANAGEMENT:

Renovation and Redesign: The Core of Performance

Duct system renovations and redesign are the foundation of business for Punbar Ltd. of Houston, TX. Ronald Amaya explains.

DEPARTMENTS

By Mike Weil

Do You Understand Just How Much *Influence You Wield?*

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

Sometimes it's important to talk about the vital role the HVACR Industry plays in the success, productivity, and profitability of the U.S. economy and our society. There is no doubt that without our technology, products, and services, large swaths of the U.S. simply wouldn't be as inhabitable as they are today.

Many industries wouldn't even exist without HVACR systems. Some of these include the pharmaceutical industry, food production and delivery, medical industry, and others. HVAC even contributes greatly to the gross domestic product of the United States!

That is a lot of influence. The Merriam-Webster dictionary defines influence as having the power or capacity of causing an effect in indirect or intangible ways. They also define it as having authority, sway, even clout.

When you add in the High-Performance Contracting skillset many of you are mastering or have mastered, the impact of your influence goes even further.

For example, as a High-Performance HVAC contractor, **you impact the operation of your company.** Such impacts run the gamut from the technical and business processes you build to support your team, to creating a culture that rewards your people and holds them accountable for completing measurements and testing on every job.

The other impact on your company is you become more data-driven when it comes to system design, diagnostics, and problem solving.

In other words, you focus more on the overall system, not just the equipment. This approach puts the "V" back into HVAC. The fact is, ventilation may be the most important part of any HVAC system. Your focus on that enables you to find, what NCI's David Richardson calls, "invisible defects" that competitors don't even know exist.

For many in the HVAC Industry, ventilation is often overlooked. It is certainly misunderstood. You wield your influence as a High-Performance Contractor by addressing airflow issues first.

The impact on your customers is they actually receive the comfort and energy efficiency you promise them. And you can prove it via your "before and after" testing and airflow measurements.

Finally, as a group, **High-Performance Contractors impact and influence the entire HVAC Industry**. You demonstrate how testing and measuring provides HVAC service in the way it was always intended.

Back in the 1980s there was a phrase that was kicked around in the quality circles of American Industry: It was called DIRTFT (pronounced as 'dirt foot') or "Do It Right the First Time." High-Performance Contracting enables you to do just that and is a delivery method that provides provable results.

When you consider all these factors, you can see how your career influences much more than just your company. And you should be able to see all the opportunities that are available to you.

According to statistics gathered by NCI, more than half the residential systems installed in the U.S. today operate well below their rated performance levels. In addition, the retrofit market continues to grow, especially now as we near the end of the global pandemic and demand for better Indoor Air Quality continues to rise.

By providing duct renovation services as a standard part of your company offering, you set yourself apart from nearly every other HVAC contractor out there. You have a unique sales proposition and have more influence than you even know.

As a High-Performance HVAC contractor, you are on a path to help influence change, even to evolve the overall industry as it exists today.

Fieldpiece VP 85 Vacuum Pump

The release of the Fieldpiece VP 85 Vacuum pump made me jealous of all you field guys. I'm very familiar with the quality and craftmanship of Fieldpiece instruments and how they focus on developing their instruments for the technician.

I never thought I'd get the opportunity to use the VP 85, but I was wrong.

I often help friends with installation jobs. Recently, I was doing just that when I realized I needed to get several tools. So I chose to get the VP 85 vacuum pump from Fieldpiece.

I was shocked when I unboxed the pump because it came with two filled oil bottles. Why was this shocking? The VP 85 oil can be changed *as the pump is still running* and the old oil gets dumped back into the oil container. This is called the Fieldpiece **RunQuick Oil Change System**.

If you want to minimize evacuation times, pick up the VP 85. It lets you quickly and properly perform system evacuations. It even has a large oil reservoir window providing a clear view of your pump oil. You'll instantly know the condition of the oil and the system.

The eight-cfm pump is equipped with ¼-in., 3/8-in., and ½-in. ports, so any size hose will work. Of course, using the largest hose will pull a vacuum much faster. Three-port and four-port gauges are acceptable along with direct evacuation using a portable micron gauge.

There are also two different settings for evacuation. Flip the gas ballast on and this helps pull down to 3000 microns quicker. Switch it off and the pump will go into a deep vacuum for the final run time.

The pump is very rugged feeling. You know it's been built with durable materials, which is a must. If anyone is in the market for a new vacuum pump, don't hesitate, make the investment in the Fieldpiece VP 85.

For more information, visit the Fieldpiece website at ncilink.com/VP85.

— by Casey Contreras, NCI Field Coach and Instructor

By Mike Weil

Trinity Warranty Solutions:
Personal Partnerships Provide Value

In nearly every business segment in the U.S., product and service providers often "back up" those products and services with extended warranty programs. But what does that mean?

Extended warranties are more like insurance policies, a safeguard against expensive, unforeseen repairs. They cover repairs for an agreed-upon period and can include parts and labor coverage.

In the HVAC Industry, over the years, most extended warranty providers operate with the backing of a single top-rated insurance underwriting company.

Then there is Trinity Warranty Solutions (**ncilink.com/Trinity**). Trinity is a third-party vendor supporting and partnering with the High-Performance Contracting™ industry through its National Comfort Institute (NCI) relationship.

A LITTLE HISTORY

Trinity began in 2009. It was started by Peter Dikeos, who is the firm's president. He looked at warranty companies that previously served the HVAC marketplace and studied some of the challenges they faced. Based on what he learned, Dikeos designed a different extended warranty company that he named Trinity Warranty Solutions.

Peter Dikeos

The most significant difference is that Trinity works with *several* A-rated insurance companies.

According to Rich Jurek, Trinity's strategic account manager, warranty companies are typically backed by one insurance underwriter. If that company decides to stop underwriting HVAC policies, the warranty company is no longer able to fulfill its obligations to the contractor and the homeowner.

Having several A-rated insurance underwriters backing them is Trinity's unique proposition, according to Jurek. In addition, he says that Trinity is a subsidiary of a larger, publically traded company called Kingsway Financial (**kingsway-financial.com**).

"As part of a publicly traded company," Jurek says, "we are regularly audited on our business practices to make sure we meet industry standards, which provides a high level of accountability on transactions."

A TOTAL HVAC INDUSTRY FOCUS

Rich Jurek has a storied background that began during summer breaks from college when he worked for the Sears HVAC group as a helper. He has been in sales in both the commercial and residential HVAC arena, and more. He brings that experience and industy focus to Trinity.

Today, Trinity is a leading extended warranty provider for residential and commercial HVACR and plumbing contractors. Their primary goal is to help contractors increase sales and improve customer satisfaction.

"We accomplish this by giving contractors the ability to provide the best new installation guarantee in their market, which also gives them a superior value proposition," Jurek says.

Rich Jurek

"This is done by giving contractors the ability to provide a first-class installation promise to their customers, which also protects the contractor. The result is that they can offer better home comfort solutions than their competitors."

The company is organized into two divisions. **The Trinity Warranty Division** focuses on providing Extended Service Agreements to protect expensive HVACR and plumbing equipment and complement manufacturer's warranties.

Trinity National Accounts specializes in facilities management, specifically designed to handle HVACR and Plumbing assets for retail, commercial, and restaurant locations across the country.

HOW TRINITY GOES TO MARKET

Jurek says the company works with the three main channels in the HVAC Industry: OEMs, distributors, and directly with HVAC contractors.

The company employs co-workers spread across the country. Most work from home because of the restrictions imposed by the pandemic. According to Jurek, once the restrictions are lifted, most will operate from Trinity's headquarters in Lombard, IL.

However, several factory representatives work from other parts of the country.

"We also go to market through distributors and we sell directly to HVAC contractors," he adds.

CONTRACTOR DIRECT PROGRAMS

Believe it or not, Jurek says there was a pandemic benefit for Trinity. He says it forced them to transition a lot of their business to online portals.

"We have a very developed website that contains not only informational content, but it also has tools available that provide a high level of contractor assistance."

Through that portal, Trinity can help create a landing page for the contractor's website that explains the extended warranty product, talks about what it covers, and why it benefits the homeowner or end-user.

Trinity's Contractor Center also addresses the differences between their warranties and home warranty products. It also provides contractors access to other services like personalized marketing materials on several different levels. These materials include information aimed directly at a homeowner, such as a homeowner brochure.

"So, contractors can take some of our marketing material and incorporate their contact information into it. They can then use this material in THEIR presentations to homeowners. In other words, they can brand it to their own company," Jurek says.

RELATIONSHIPS ARE THE FOCUS

In many ways, Trinity's approach to relationship building is old school. Jurek says their success can be attributed to talking with and getting to know contractor customers personally.

He says, "By that, I mean that we talk to and listen to our customers. I will call my customers and touch base with them to see what's happening in their world."

He says one aspect of their reputation is how willing they are to customize their standard programs to meet customer needs.

CUSTOMIZING PROGRAMS

One example Jurek shares involves a commercial new construction project where a contractor is servicing a 500-unit multi-family residential complex. The HVAC contractor installs the HVAC system, but with the onset of winter, the general contractors and other subs begin using it to keep warm while they complete their work.

"That eats into the one-year factory warranty provided by the OEM," Jurek explains. "If the building isn't done until eight months later, when it is turned over to the occupant or owner, the warranty has only four months left on it.

"We'll work with these groups to put together an additional year of parts coverage. So, when that building owner takes possession at month eight, he doesn't only have four months of coverage left. He has one year and four months left.

"We can do this because we listen to the contractor and try to come up with creative solutions."

Another creative solution is Trinity's policy of providing both residential and commercial Extended Service Agreements that are transferrable.

If a homeowner sells his or her home, that warranty can now be transferred to the new homeowner. This transfer provides value to the homeowner and is a sellable feature for the contractor.

THE NEED FOR GOOD TECHNICIANS

Rich Jurek's background covers the gamut from working as an air conditioning helper to helping found an HVAC training school.

The school was known as HVAC Tech, and it did something very different than most technical schools serving the HVAC Industry. Its focus was on hands-on training, not only book learning.

"We'd take our classes out of the school and into the field. Every class

did at least one system installation. Not in a lab, but on a job site," says Jurek.

Throughout his career, he saw a need for attracting young techs and savvy contractor owners. The savvy part comes from owners recognizing that students of HVAC schools have made a financial commitment and investment to get educated and trained.

"These young people are greater assets than the person simply looking for work," he says. "If we don't address the need for quality technicians in our field, this issue becomes the Achilles heel of the industry."

PREFERRED NCI PARTNER

Maybe it's Jurek's educational background. Perhaps it's his career climb through various HVAC industry channels, but he says he and the team at Trinity want to help contractors become more educated and savvy businesspeople. The training provided by National Comfort Institute was a draw. A big part of that was NCI's Training Incentive Partnership Program (TIPP). If contractors buy warranty programs through TIPP, they earn credit – in NCI Bucks – toward more training and certification.

"This is very important to me, personally, and to Trinity overall," Jurek says. "We not only want to support NCI through this preferred partner program, but we will fully support High-Performance HVAC contractors and become preferred partners with them as well."

He explains that a solid, well-backed extended warranty program offered to contractors' customers is a powerful sales tool. "It says that you, the contractor, are professional and that you completely back up your work.

"Trinity's thought process is that we're offering contractors a product that will help lock them into their end-user for the life of the agreement. It also enables them to build their relationship with the customer. If they don't already have such a relationship, they will hopefully have a customer for life when the warranty expires.

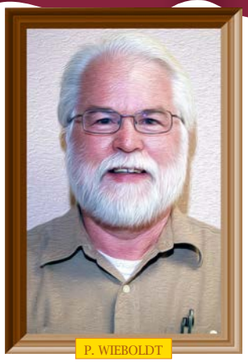
"We also believe that NCI-trained and certified contractors seek to differentiate themselves as quality organizations with quality technicians. In that way, we are kindred spirits."

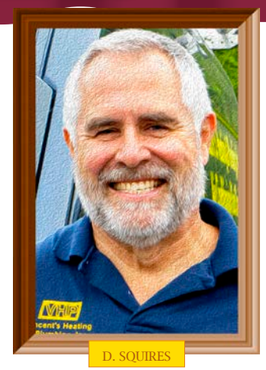
By Mike Weil

2021 HIGH-PERFORMANCE HVAC INDUSTRY INFLUENCERS


D. GUARINO


M. GREANY


P. WIEBOLDT


D. SQUIRES

Every industry is served by people who significantly impact it — whether from the invention of technology or process development, from sales and/or marketing techniques, to training and cultural evolution.

Because of their experience, knowledge, position in the industry, and relationship to others, these people impact its advancement. The High-Performance Contracting segment of the HVAC industry is no different.

These influential people are not only members of the High-Performance Contracting™ community, but they work to help others succeed. In fact, by their actions, they contribute to the High-Performance Industry's growth and acceptance throughout the greater HVAC Industry and among consumers.

They believe in education and training and continually seek better ways of doing things. They lead by example. They take what they learn and implement it successfully into their businesses, then take the time to share what they learn during that process with others.

The following "influencers" join our past inductees in our quest to recognize movers and shakers in the High-Performance HVAC Industry.

We don't consider the time or era in which they served. We looked at what they have done or are doing and the impact of those efforts on the industry.

Our past inductees include:

- Steve Clinton of Southern California Edison
- Jim Davis of National Comfort Institute
- David Debien of Central City Air Conditioning
- Dave DeRose of Masterworks Mechanical
- Rob Falke of National Comfort Institute
- Tom Johnson of T.M. Johnson Brothers
- Don Langston of Aire Rite Air Conditioning
- Tom Turner of Austin Energy.

So, without further ado, here are four influencers who directly impact the High-Performance HVAC Industry. Welcome to the Class of 2021:

DOMINICK GUARINO, CEO, NATIONAL COMFORT INSTITUTE, CLEVELAND, OH

When you think of National Comfort Institute, Dominick Guarino and Rob Falke immediately come to mind. Both are the founders of the only independent High-Performance HVAC training and certification organization in the in-

dustry. In 1994 they co-founded NCI. Throughout its 27-year history, Dominick worked hard to grow it into a premier membership organization focused on every aspect of helping HVAC contractors.

But that is not all. Before the era of NCI, Dominick began shaping the overall HVAC Industry when he joined the team at ***Contracting Business*** magazine and became that publication's Editor-in-Chief.

From that platform, he used his skills as a writer and speaker to begin re-energizing an industry. Along with Publisher Jeff Forker, Dominick sought to help solve industry problems, advocate for HVAC contractors and technicians, and promote best practices, especially in service and installation.

One outcome of those efforts was the birth of ***HVAC Comfortech***, once the only residential conference and tradeshow focused on the greater residential HVAC Industry.

During these years, Dominick met Rob Falke, and they began exploring the tenets of airflow, static pressure, and temperature, and how these often-overlooked aspects of HVAC service and installation impacted customer comfort and energy efficiency.

They wrote about their discoveries. They worked with contractors across the United States to prove (and disprove) their theories on the importance of airflow and the ductwork through which it travels.

Through testing and measuring systems in homes and buildings across the country, they began making a strong case for the need to teach contractors more about how to measure airflow and why.

That led to the birth of National Comfort Institute and the establishment of what is known today as the High-Performance HVAC Industry.

His influence remains in managing the only organization that trains and certifies HVAC technicians and contractors in the science and art of High-Performance Contracting.

He also works with distributors, manufacturers, public utility organizations, and HVAC trade associations to further the need for testing, diagnosing, and resolving airflow issues throughout the HVAC system.

MIKE GREANY, SERVICE MANAGER, ALL PRO HEATING AND PLUMBING, ONTARIO, CA

Every industry needs its cheerleaders. Every company needs its cheerleaders. When it comes to Mike Greany of **All Pro Plumbing, Heating, and Air Conditioning**, you get both. Greany, who joined All Pro in 2012, convinced the owner that they needed an HVAC division. Through Greany's commitment and perseverance, he helped grow that division significantly.

From early on, Greany wanted to find better ways to solve customer comfort and energy issues. He believed in education and training. Then he discovered National Comfort Institute and in 2013 began taking their training and certification classes.

He became a believer. The High-Performance HVAC approach answered so many questions. Not only did he implement it into the All Pro HVAC Division, but he became an outspoken supporter of the entire performance approach.

He sends nearly his entire team to NCI training, many now hold NCI certifications, and he even began a program of cross-training his plumbers by sending them to NCI classes as well.

Greany rarely misses a chance to attend the High-Performance HVAC Summit each year and often participates as a panelist, session speaker, and leader in fun and learning.

He is the ringleader of a growing group of High-Performance Contractors that attend Summit each year. He creates ad hoc discussion groups to talk about significant trends and changes that impact HVAC contractors and how to meet them head-on.

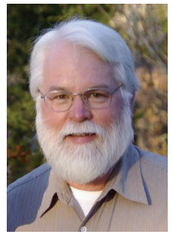
Greany may be one of the most outspoken contractor cheerleaders the High-Performance HVAC industry has! He proudly says that his membership in NCI has paid off in many ways. Besides the training, he believes greatly in networking with some of the industry's brightest and most successful contractors.

He always says that High-Performance Contracting is the future of the overall HVAC industry. He believes in, and practices, testing and measuring airflow and system performance on every job. And he spreads the word through his many connections to other contractors across the nation.

Mike Greany is a believer, a teacher, and a cheerleader. He supports helping others as they walk the path to High Performance.

PAUL WIEBOLDT, OWNER, TRADEWINDS APPROPRIATE TECHNOLOGIES, WACO, TX

Paul has been part of the High-Performance Contracting™ community from the beginning. In fact, he and his



HVAC company at the time, Tradesman Heating and Air Conditioning Services in Waco, Texas, helped Dominick Guarino and Rob Falke test their theories on airflow and its impact on HVAC system performance.

Wieboldt invested the time and energy to test and measure airflow in ductwork in homes which was foundational in creating High-Performance HVAC Contracting methodology.

He founded Tradesman in 1993, along with another company that same year: Tradewinds Appropriate Technologies (**tradewinds-at.com**). Tradewinds provides home energy analysis, residential and commercial testing and balancing, as well as diagnostic services.

Wieboldt is a licensed HVAC contractor, NATE certified technician, and NCI certified residential and light commercial air balancing and diagnostic specialist. He also holds an NBC TAB supervisor commercial certification.

Since 2005, Wieboldt has trained hundreds of HVAC contractors on behalf of National Comfort Institute in all of its residential and commercial certification classes.

He has taught thousands of contractors and technicians the basics of Manual J heat loads, equipment selection, duct design, and system performance diagnostics.

His influence in the High-Performance HVAC Industry also includes providing third-party validation for testing duct leakage and system performance on more than 5,000 residential systems.

Tradewinds was involved in several energy efficiency programs. The company also worked with the EPA and ACCA to help develop a national Quality Installation Standard.

He remains one of the regional instructors for the National Comfort Institute of Cleveland, OH.

DANIEL SQUIRES, PRESIDENT, VINCENT'S HEATING AND PLUMBING, PORT HURON, MI

Daniel Squires is a licensed Michigan Master Plumber but considers himself an entrepreneur and marketer. Vincent's Heating and Plumbing (**ncilink.com/VHP**) is a family-owned business.

He and his brother David transformed VHP from a mom-and-pop business to a dominant residential heating, cooling, and plumbing company in Port Huron, MI. They did this through innovative marketing and business practices and by adhering to system performance principles.

In the world of High-Performance HVAC, Daniel and his team were early adopters, especially when it came to safety. He was one of the first to take NCI's carbon monoxide training and then adopted those protocols into his business.

He made it his mission to train his field service and installation teams and keep them trained over the years. One reason: VHP is focused on safety.

In fact, during the recent pandemic, he and his brother (Dave Squires) teamed up to help the community by creating superior face masks with MERV 13 filter inserts (**ncilink.com/Hero**).

Furthermore, Daniel led VHP to taking classes and becoming certified in air diagnostics and balancing. They practice that every day.

Over the years, he and brother Dave have collaborated on many products and services. They are partners in Online Access (**ncilink.com/OA**), and Daniel has always made VHP a testing ground for new products and services created there.

As a leader of his business, Daniel takes the time to look ahead, to think about where he wants the company and the HVAC industry to be in the future. Some would define that as being a visionary. But from his perspective, it is practical. He says you must look ahead to achieve goals, and one of his goals is to be the highest quality contractor in their marketplace.

To get there requires marketing, relationship building, good service, and developing a solid reputation. These are all things that Daniel pushes in his company and through his writing for the national trade media and his monthly customer newsletter.

But that messaging also needs to be told via national forums, and Daniel has never been shy about fulfilling that role. He was a speaker at the first several Summits, and because of his leadership qualities, he's been tagged several times to run the Idea Session at Summit in recent years.

Most importantly, Daniel is not afraid to share with other contractors through networking and events like Summit. He is very professional in everything he does.

By Ben Lipscomb, P.E. and Dennis Mondul

Indoor Humidity
Problems and Solutions (Part 1)

In this article we look at the importance of humidity for indoor comfort, air quality, and health. The authors, Dennis and Ben, hail from two drastically different locations in the U.S. Dennis lives in Florida, where it can be hot and very humid for much of the year. Ben is from northwestern Montana where the climate is cold and dry in the winter.

Here is a combination of their perspectives regarding challenges with humidity and the indoor environment in these wildly different climates, and what you can do to help your customers overcome these challenges.

Let's take a look at the impacts of high humidity during cooling season and low humidity during heating season, and how to manage humidity for the best comfort, health, and efficiency outcomes.

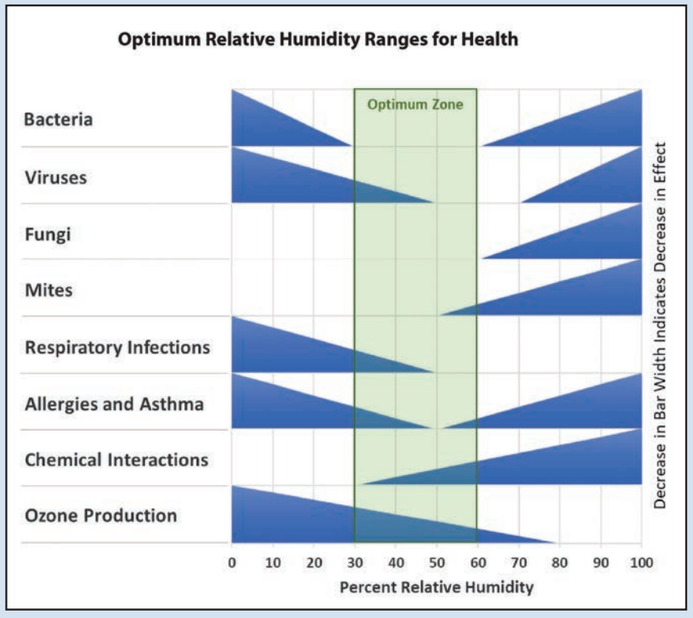


Figure 1. The Sterling Chart, Adapted from E.M. Sterling, 1985, Criteria for Human Exposure to Humidity in Occupied Buildings.

HUMIDITY IMPACTS AIR QUALITY, HEALTH, AND BUILDING INTEGRITY

In the humid Southeast, where Dennis lives, the biggest issues related to humidity occur during the cooling season when it's humid outside. If not controlled, indoor humidity levels can reach 80%, or even higher! Most experts agree that indoor humidity should be kept below 60%, and, ideally, below 50% (**ncilink.com/RH60**).

Studies show that when relative humidity (RH) is above 50%, dust mite populations increase, causing allergies to flare up in many people. Humidity at these levels can also trigger episodes of asthma. Above 60%, bacteria and mold grow more quickly. Both bacteria and mold can lead to increased illness. Mold also can lead to unsightly stains or even structural damage in a home.

In the Northern United States, Ben can attest firsthand that cold wintertime temperatures cause problems with low humidity.

Cold air holds less moisture, and when that cold air is heated, relative humidity can get extremely low. He's observed humidity as low as 15% inside his house! The same experts who recommend upper limits for indoor humidity put the lower limit at 30%.

Below 30% RH, bacteria, viruses, respiratory infections, allergies, and asthma increase. Dry air allows airborne germs to float (or fly) further and live longer, increasing the chance that illness will be transmitted from one person to another.

A study found that raising average humidity from 23% to 35% in 12 Canadian schools over 11 years reduced absences due to illness by 20% (**ncilink.com/RaiseRH**). Who knew that dry air is a serious issue beyond causing those annoying little shocks from static electricity?

In addition to increased illness, Ben says his experience is that dry air causes some serious discomfort. Before installing adequate humidifiers, Ben battled eczema every winter. He developed patches of dry, itchy, inflamed skin that wouldn't go away until the springtime.

His son also had issues with dry air causing nosebleeds daily, or even several times per day. Even though Ben says his family felt comfortable from a temperature perspective, the dry air caused serious discomfort in other forms.

To illustrate how both high and low humidity impacts different factors for human health, E.M. Sterling published a chart in 1985 that summarizes the relationships in an easy to understand format. We've adapted the chart in **Figure 1** to provide a graphical reference.

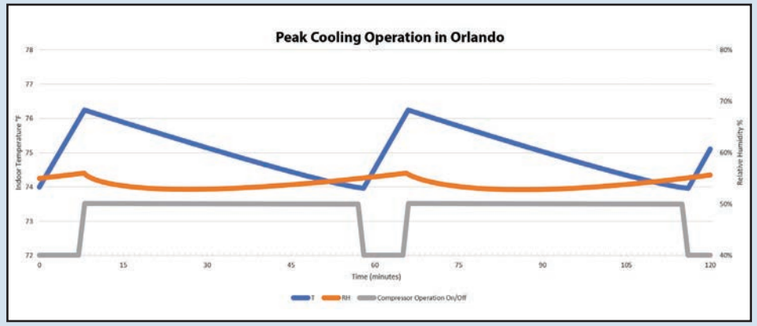


Figure 2. ***Peak Cooling Operation on a Design Day in Orlando, FL: 92°F, 51% RH Outside; 75°F Thermostat Setpoint.*** Indoor temperature and humidity, with compressor operation in peak cooling design conditions, for a three-ton system that is about 15% oversized (meeting code allowances for oversizing) at the design conditions. In this scenario, the air conditioning runs for about 50 minutes each hour, and the humidity is kept at a very comfortable 54% on average, without ever exceeding 60%.

MANAGING COOLING HUMIDITY

Have you ever heard this kind of story? Frank and Suzy tend to fight over the thermostat. Frank wants to keep it at 76 degrees, and Suzy sneaks over and turns it down to 70 degrees before they go to bed. It has been a running battle for 36

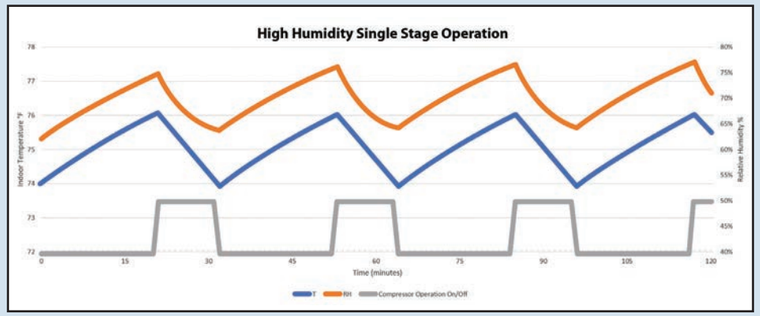


Figure 3. ***High Humidity Operation: 81°F, 88% RH Outside; 75°F Thermostat Setpoint, Single Stage Air conditioning.*** As soon as the air conditioning turns off at the end of a run-cycle, moisture re-evaporates from the coil back into the airstream and the humidity climbs, reaching progressively higher humidity levels and climbing to a maximum of 77%! Average humidity for the two hours is now 70%, and there's a full hour with levels over 70%.

years. Suzy hates the conflict with her husband, but it's too uncomfortable if the thermostat isn't set at 70 degrees.

Equipment Considerations: In the residential HVAC universe, if there is cooling at the coil, there is also dehumidification. During a normal air conditioning on-cycle with properly sized equipment, when the outside temperature is in the 90s the equipment will have long runtimes and will keep humidity nice and low.

NOTE: An air conditioning coil takes between 15 to 30 minutes to become saturated enough that water drips from the coil, flowing through the condensate drain. Any water left on the coil after the unit shuts off re-evaporates back into the duct system and eventually migrate inside the home.

This is known as latent degradation due to cycling effects.

We've developed a psychrometric model of a system that accounts for equipment performance under different operating conditions and latent capacity degradation due to shorter on-cycles.

BACK TO FRANK AND SUZY'S HOME

Now let's look at Frank and Suzy's home during high humidity conditions when the outside temperature is only 81°F and the relative humidity outside is the highest point of the day (typically dusk through dawn).

In **Figure 3,** now the on-cycle is much shorter to get the inside temperature to 75°F, but it has not run long enough to keep humidity low. This properly-sized system, with a single-speed compressor and blower, is now a severely oversized system based on the outside temperature.

Frank and Suzy's HVAC contractor failed to mention what's really going on, primarily because there is no perceived affordable solution. Suzy's discomfort may be caused by sensitivity to humidity, or episodes of humidity-induced asthma.

In Suzy's case, it may not be that she really needs the temperature at 70 degrees. It may be that the system just has to run that long to remove enough humidity so that she can breathe in her own home (**See Figure 1**).

So, what is the solution? In the past, higher efficiency system sales have focused on energy savings. Because of the higher up-front cost and the small amount of savings on the electric bill, these systems were often overlooked.

But as we are discovering, managing humidity may be an important part of our responsibilities as HVAC contractors. In fact, it may be just as important as managing the temperature.

Next month, in the second part of this two-part series, Ben Lipscomb and Dennis Mondul address how you can help your customer manage humidity. Watch for it in the July issue and on the website.

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

Dennis Mondul from HVAC Contractor Solutions (HCS), has been doing consulting and training for HVAC contractors in North America since 1992. For answers to any questions regarding this article, contact him at 561/202-4371. You can also reach him at **dennism@hvaccsllc.com** or submit a question at **hvaccsllc.com**.

By Ronald Amaya

Renovation and Redesign:
The Core of Performance

When it comes to working in the world of High-Performance HVAC Contracting, we all face major obstacles from competitors who hurt the marketplace with low-ball pricing, bad attitudes, and the way they deliver (or don't deliver) comfort to customers.

These companies have been doing things the same way for so long that the average consumer is trained to shop for the lowest prices they can find. Yet, consumers do want things done right. They just don't understand how much that costs. So, it is on the High-Performance Contracting™ community to educate them.

Author Ronald Amaya (left) and his business partner, Diego Guerrero

WHAT DOES THIS MEAN?

Helping customers understand means teaching them that their system is more than just equipment. It is also all the ductwork that moves air throughout their home, delivering comfort. Improving existing or fixing ductwork through renovations and redesign is a core focus and strength at Punbar LLC (ncilink.com/punbar).

PROCESS IS WHERE THE RUBBER MEETS THE ROAD

This approach requires a different set of processes to make it work. The good news is we started the company from zero and built everything around an engineering and design approach.

We typically measure static pressures on every job. It's the only way we can diagnose what is happening with customers' systems, and it is the only way we can start educating them and demonstrate our findings.

Each call begins with us talking to the customers, introducing ourselves, explaining what we're going to do and why we measure static pressures.

We then proceed to test and measure everything, from the return to supply. I'm talking about static pressure, temperature, airflow, and so on.

We use National Comfort Institute's (NCI) ComfortMaxx™ software to capture measurements and produce consumer-friendly reports. This digital approach helped us to share discovered airflow issues and set the stage for the duct renovations and upgrade work necessary to correct them.

We found that this software (in the early days) relied on a good Internet connection, we had some issues.

So, we designed our own mobile app or software that enables our people to input information offline. Now the techs don't have to. All they need to do is find the customer in our database and enter the measurements.

Our app creates similar graphic reports to ComfortMaxx. Since we equip all our techs with iPads, they can immediately show the reports and graphics to the customer.

SALES MEAN PROVIDING OPTIONS

Our technicians can immediately send an estimate to the customer. Every estimate provides four options for duct renovations or redesigns.

The options go from very basic repairs to a complete renovation, which means pulling everything out, replacing plenums and ductwork, and redoing everything up to the equipment. We change everything.

We provide four options because customers like choices. Sometimes the minimum or basic option will still help them big time.

Customers often have a limited budget allocated for home repairs and opt for the minimum work. But we find that when they see a considerable improvement by doing the minimum, they tend to do the rest of the work. Maybe all of it.

NEXT STEPS

Once the customer approves whichever option fits their budget or their needs, we schedule the date and time for the work. If the technician sells the job, he or she can immediately go back into the attic and take more measurements, especially on the plenums and on the equipment.

While one tech is in the attic, we'll typically send another tech to measure the room dimensions throughout the house and the total square footage of the house itself. We use these measurements for our load calculations. This tech makes a note of register and grill locations, window facing, and so on.

If we aren't replacing equipment, we still make sure the existing system is sized correctly. In the greater Houston area, we often find that existing HVAC equipment is oversized.

We talk with customers about the pros and cons of humidity control, air quality, and so on. Sometimes, when air quality issues are involved, the customer most likely goes for the complete duct renovation.

After taking all the measurements, we come back to the office and work on the design. By the way, we include our techs in the design stage. We use NCI methodology for sizing based on our measurements.

That methodology also includes any specific needs the customers may have based on what they told us during the interview. These include which rooms are typically hot, cold, and so on.

COMPLETE REDESIGNS AND RENOVATIONS

If we propose doing a complete redesign, we sit back down with the customer and go over everything we plan to do and why.

A complete duct renovation means doing all the steps mentioned above, plus taking into account window locations and house orientation. It's essential to know the location of the equipment and ductwork inside the home and attic.

Why? Because the direction the house faces and the location of equipment in the attic impacts how well air is delivered at the proper temperatures. So, we must compensate with the appropriate duct location and sizing.

Then comes the logistics process. Once we sell the job, design it, and bring the customer up to speed, we gather the equipment and assign an installation crew to perform the work.

At Punbar, we typically have the tech who sold the project supervise the installation to ensure the design is followed properly. By doing this, we help the customer to feel even better by having the same person who sold the job supervising what was proposed.

As part of the installation process, we typically print our designs. We use **Housecall Pro** (ncilink.com/HCPro) software for job estimating, scheduling, and management. We attach our design drawings to the app, so everybody on the job can see it on their cell phones or iPads.

GET MORE FROM THE DATA

Over time, we find that we have so much data collected that we want to find ways to do more with it.

For example, we can go through every maintenance job we've done and have access to all the measurements (as well as the notes we took on each home system). Then we can start seeing trends and use them for further lead generation and service follow-up. Using data in this way allows us to be more proactive.

Furthermore, because we provide four options on every job we quote, we can go back and see what they chose to do and then follow up with them about the next steps.

Doing this provides an excellent source for future lead generation.

We can also see the history of static pressure measurements and track improvements as we do service and maintenance work.

THE COMMUNICATIONS PART OF THE PUNBAR EQUATION

When it comes to explaining our measurements, our diagnostics, and the information that appears in our reports, it comes down to making real-world comparisons that most people understand and relate to. Like blood pressure. Like heart issues.

For Punbar, we operate in an area of Houston known as the energy corridor. Most of the people who live in this area are highly educated. Many are career engineers. They work in the oil and gas industry. They understand data and love it when we talk about static pressures, temperature rise, airflow, and such.

We have a scientific or engineering approach. I show customers what is happening based on measuring and testing. That is the best tool for selling. Facts. Data.

If the customer is a mechanical or chemical engineer, I can compare our measurements to the type of fluids they are familiar with. They get it right away.

When customers are not educated or knowledgeable about our technical terms, we use comparisons to the human body to explain things.

Such communication and customer education requires constant training for our field guys. That training includes formal classwork, hands-on training, and lessons learned from our techs as they deal with the customers.

We also capture customer comments, questions, and concerns during routine maintenance calls. These are relevant issues, and by flagging them, we can be sure to fix them and avoid callbacks.

This process requires having strong listening skills. We have to listen to the customer and pay attention to what they are saying. Let them speak. Then communicate to them clearly, and in a way that they can understand easily.

So, we provide customers with a quote for the whole package, but we also offer them other options. No matter what they choose, they will see significant improvements and benefits to how the system runs, their comfort, and their energy savings.

THE SECRET SAUCE

Though Punbar is different in that we started the company as a High-Performance Contracting™ business, our secret sauce applies to all HVAC companies – especially those on the performance path. The secret is training.

Training is not a one-and-done thing. It is continual technical training on how to measure, test, and diagnose system airflow issues. It also means putting processes and a culture in place to encourage and reward this approach. It also means finding creative ways to hold your team accountable. But it also means the team must understand why you do things the high-performance way and how that benefits the customers, the techs themselves, and the company overall.

Your team must understand high-performance concepts clearly. They should know what each measurement means, what to look for as they survey the house, and what clues to discover based on what the customers tell them.

Duct renovations are the core of our business. Our approach is to improve customers' lives. Even if we only work on one or two duct runs and replace a filter, we make customers happy. They become customers for life.

As a result, Punbar has the first opportunity to be called in for a quote when the customer suffers an equipment failure. That opens the door for maintenance, solving indoor air quality issues, for service. In other words, duct redesign and renovation work bring you everything else.

And that is the core of performance for Punbar. It could be for you too. NCI

Ronald Amaya and his friend and business partner Diego Guerrero emigrated from Venezuela and started Punbar LLC in 2015. Their mission was and remains to solve poor airflow delivery issues in Houston-area homes. They practice High-Performance HVAC contracting from top to bottom. Learn more at **ncilink.com/PunbarSL**. Ronald can be reached at **ncilink.com/ContactMe**.

EARLY BIRD REGISTRATION FOR NCI'S 2021 HIGH-PERFORMANCE HVAC SUMMIT IS OPEN

Ladies and gents – great news: You can save hundreds of dollars by registering for National Comfort Insitute's (NCI) High-Performance HVAC Summit today!

Reserve your spot in what promises to be one of the best Summits ever!

NCI members receive special Early Bird pricing that makes it easier for you to bring your entire team to Branson, MO, from August 30 to September 2. In fact, if you bring three or more people, you qualify for the biggest discounts available.

For example, **NCI Premium Members *can send one attendee free*** and **save $200** on their second attendee. Our Special three-pack offer saves you an additional $100 per attendee. This special pricing is available through June 30, 2021.

NCI Learning Excellence Members save $200 on their first and second attendees. If they send three or more people, they save an additional $100 per attendee. Again, this offer is good through June 30, 2021.

NCI Members save $100 on their first and second attendees. Non-members, and Goodman/Amana Dealers also have access to Summit registration discounts. These offers end on June 30, 2021.

There's 18 breakout sessions, you'll need to bring your whole team to make sure you can get to all of them. To help you out with bringing your team, if you bring three or more people from your company, you qualify for an even lower attendee rate - with discounts that scale based on your membership level.

Go to **ncilink.com/2021Early-Bird** to learn more. Be sure to take advantage of these special rates and register your team today.

We look forward to seeing you live and in-person in Branson!

DON'T FORGET TO GRAB YOUR JUNE POWERPACK TODAY!

Welcome to your June NCI Member PowerPack!

This month we provide you with content and training focused on preparing for the cooling season.

The June 2021 Power Pack consists of

the following:

- **Static Pressure Diagrams** (Download)
- **Measuring Total External Static Pressure** (Download)
- **Static Pressure - Why Does it Matter?** (Download)
- **How to Plot Fan Airflow** (Article).
- **Measuring Static Pressure** (Online Training)

Just go to **ncilink.com/PwrPak** to access it today.

If you have any questions or cannot access any of the tools in this program, please contact us at 800-633-7058.

SUMMER ONSITE TRAINING DISCOUNTS

During the heat of Summer, why not consider bringing training home to your

company? National Comfort Institute will bring its certification training directly to your facility for only your employees.

Private onsite training saves you money by nearly eliminating travel expenses and enabling your employees to spend more time training with NCI instructors. Plus, you'll save on productivity costs as fieldwork, and large projects won't be put on hold. NCI training can be delivered as our standard curriculum or completely customized to match the training goals for your team.

Other benefits include:

- One affordable price to train, certify, or recertify your entire team
- Actual hands-on training on live equipment
- Get trained on the instruments you use every day, right in class
- Earn NATE, BPI, and State CEUs (where applicable).

Plus, you can save even more – up to 20% – by taking advantage of our Summer Savings program.

Did you know you can use your NCI Bucks toward the cost of a class? Or that you can earn Bucks you can use towards future training? You can!

Why are you waiting? NCI's training schedule is filling up fast, so contact Nick Guarino today to reserve your dates.

Call him at 8002-633-7058 or send him an email at **NickG@ncihvac.com.** NCI

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Go to ncilink.com/ContactMe with your comments and questions.

By Dominick Guarino

Don't Just Promise Performance, Prove It!

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**

Many of our readers and National Comfort Institute (NCI) students are familiar with our motto, "If You Don't Measure, You're Just Guessing™." This phrase that we've been using for more than 20 years truly defines NCI's mission.

We recently developed a second phrase that dovetails nicely with the first one, **"We Don't Just Promise High Performance, We Prove It!™"**

This simple sentiment summarizes what NCI, and the High-Performance Contractors we serve are all about.

Anyone can promise high performance and all its benefits, including a safer, healthier, more comfortable, and energy efficient home. But without measuring and documenting, these are just empty promises with little or nothing to back them up.

Think for a minute about the difference between making a promise versus proving it. Many contractors have the best intentions to do a good job when they sell a retrofit installation. Unfortunately, most don't realize that without testing the system, preferably before and after the work is done, they're just guessing that it's doing what it's supposed to. They hope that since they did everything seemingly right, the HVAC system should work just fine.

Then there's reality. By using the proper instrumentation to verify that pressures, temperatures, and airflows throughout the system are where they should be, we usually get a rude awakening. Our "rules of thumb" and "gut feels" aren't even close.

When we install high-end equipment, for example using inverter technology, the impact of incorrect pressures, temperatures, and airflow due to an inferior air distribution system is huge. The only way to know this is by measuring.

As you let the idea of **proving versus just promising** sink in, think about how this simple concept can fit into your marketing messaging, your sales approach, and equally important, your company culture.

You have a unique opportunity to make disciples out of your employees by teaching them how you are different from your competitors.

Don't underestimate the power of being on a mission and getting everyone buying into your vision. NCI has been on this mission for nearly three decades, and we've attracted some of the brightest, most passionate people in the industry. We plan to attract many more to our team.

Think about how to integrate the concept of proving high performance into your business. Start with baby steps. The most difficult tasks are conquered one step at a time. When proven performance starts to work its way into your everyday thoughts and those of your employees, you will find it influences everything you do. This vision and ideal will drive innovation each and every day.

Do you want to know about a great place to get re-energized by hanging out with similar-minded contractors for several days?

NCI's High-Performance HVAC Summit 2021 is the perfect event to focus on proven performance!

Don't miss this year's Summit! It's a great opportunity to get together with your fellow contractors in an incredible setting – a lakefront resort just minutes away from downtown Branson, Missouri! It will be better than ever with an opportunity to bring your team and take advantage of 18 different workshops! There will be tons of time to get together with old friends and make great new friends through this incredible network.

So, don't wait. **Register for Summit** (**ncilink.com/summitreg**) today and secure your seats for this one-of-a-kind event August 30th to September 2nd. You won't regret it! NCI

AUGUST 30 -
SEPTEMBER 2, 2021

BRANSON, MO

Registration is NOW OPEN

This time it's personal! At Summit 2021 you will be able to personalize your breakout sessions so that you get the most out this game-changing event. Each breakout is offered at three different knowledge levels so you can choose which one fits you best. Bring your whole team so you don't miss a thing! Register today to lock in your Early Bird rates, and we're offering special discounts when you bring three or more people. Find out all about Summit on ***GoToSummit.com***

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