

HIGH-PERFORMANCE HVAC TODAY™

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



Coaching Your Team to Success!

IN THIS ISSUE:

A Fresh Overview: Static Pressure
Diagnostics and Solutions

How To Become a Servant Leader

You Can and Should Create More
Opportunities for Customer Connections





Discover an **easy way** to water balance

WIRELESS HYDRONIC BALANCING KIT



EASY TO USE

No more hoses or bleed buckets to carry around
Lightweight and easy to carry up and down a ladder



SAVES TIME

Built-in valve charts eliminate the need for multiple slide wheels
Wireless log readings



RELIABLE

Rugged carrying case
Handheld device included with protective OtterBox® case



ORDER ONLINE TODAY!
SERIES 490W | dwyer-inst.com/A/490W

HIGH-PERFORMANCE HVAC TODAY™



TECHNICAL:

Static Pressure Diagnostics and Solutions

Rob Falke provides a fresh look at how to forecast and eliminate high-pressure issues in HVAC systems.



DEPARTMENTS

| | |
|---|----|
| Today's Word | 5 |
| Summit Partner Showcase..... | 6 |
| Partner Spotlight: R.E. Michel Company..... | 10 |
| Photo of the Month | 23 |



LEADERSHIP:

How You Can Become a Servant Leader

Contractor Dave DeRose examines three types of leaders and explains how and why you should choose to be one.

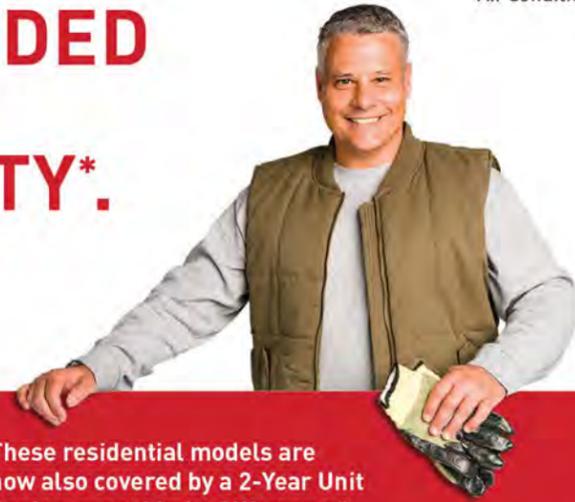
SALES:

How to Create More Opportunities for Customer Connections

Offering High-Performance Service Agreements is a key performance indicator for HVAC sales growth. Consultant Drew Cameron explains.

| | |
|----------------------|----|
| Member Update | 24 |
| HVAC Smart Mart..... | 25 |
| Ad Index..... | 25 |
| One More Thing | 26 |

GOODMAN HAS ADDED ANOTHER GREAT LIMITED WARRANTY*.



These residential models are now also covered by a 2-Year Unit Replacement Limited Warranty*

2 YEAR UNIT REPLACEMENT LIMITED WARRANTY*

| CONDENSING UNITS | GAS FURNACES | RESIDENTIAL PACKAGED UNITS | |
|------------------|--------------|----------------------------|--------|
| GSX16 | GMES92 | GPC15H | GPH14H |
| GSX14 | GMES80 | GPC14H | GPH14M |
| GSX13 | GMES80-U** | GPC14M | GPD14 |
| GSZ16 | GCE80 | GPH16H | GPG16M |
| GSZ14 | | GPH16M | GPG14M |

**California Only



IT FITS IN NICELY WITH OUR OTHER OUTSTANDING LIMITED WARRANTIES*.



* Complete warranty details available from your local dealer or at www.goodmanmfg.com. To receive the 2-Year Unit Replacement Limited Warranty, Lifetime Compressor Limited Warranty, Lifetime Heat Exchanger Limited Warranty (both good for as long as you own your home), 20-Year Heat Exchanger Limited Warranty, 10-Year Unit Replacement Limited Warranty, 10-Year Parts Limited Warranty, and 5-Year Parts Limited Warranty online registration must be completed within 60 days of installation. Online registration is not required in California or Quebec.



At Goodman, we believe in American dependability. Units are designed, engineered and assembled in the U.S.A.

www.goodmanmfg.com

How Are We Doing? What Our Readers Are Reading



Mike Weil is editor-in-chief and director of communications at National Comfort Institute. You can contact him at MikeW@ncihvac.com

Readership — the lifeblood of any magazine, newspaper, and blogger. In the trade press industry, it is of vital importance for the writers and reporters to know exactly who their audience is in order to find the best ways to serve them.

That is what I was taught as a young journalist. But it really wasn't until later in my career that I was introduced to a different way to think about this concept.

It was during *HVAC Comfortech 2014* in St. Louis, MO that I was exposed to the idea of Servant Leadership from my friends at the Service Roundtable. They presented their first Servant Leader Award to the extraordinary Tom McCart (ncilink.com/McCart) posthumously.

You see Servant Leaders like McCart turn the entire idea of 'power leadership' on its head by putting co-workers and customers at the very top and the leader at the bottom. The leader is charged with serving employees and customers alike.

This concept really works and has been an important part of my professional and personal life ever since. So when I joined National Comfort Institute (NCI) in 2014 and truly came to understand the meaning of Performance-Based Contracting™, I saw immediate connections to the Servant Leadership philosophy.

In a nutshell, Performance-Based Contracting™ is focused on providing the very best service in HVAC and duct system performance based on proper testing, measuring, and diagnosing. It requires training and understanding the best tools to use. Ultimately, this service delivery method puts the co-worker first.

So when NCI launched this publication, my mission was to provide the best editorial serving the unique needs of the High-Performance segment of the HVAC Industry.

Obviously I have a lot of help from the real pros — Dominick Guarino, Rob Falke, and our entire team of trainers.

So what is our audience reading? In this fourth year of publication, statistics show they read this magazine for technical tips and how to implement the necessary processes to serve their markets best.

For example, in 2019 our top four most-read articles were:

1. *Avoid Four Common Mistakes When Measuring Static Pressure*, written by NCI's David Richardson (ncilink.com/FourSPMistakes)
2. *Three Ways to Solve HVAC Return Duct Obstacles*, by Vince DiFilippo of DiFilippo's Service, Paoli, PA (ncilink.com/obstacles)
3. *Combustion Efficiency Calculations: Are They Misleading?* by NCI's Jim Davis (ncilink.com/Calcs)
4. *Driven to Revolutionize the HVAC Industry* by Mike Weil (ncilink.com/GoodmanProfile).

Interestingly, the last one was written and posted in 2016, but still made it into the 2019 most read column!!!

The other articles in the top 10 all focused on how to measure, test, and diagnose HVAC and duct system performance issues.

What does this mean? It means that **High-Performance HVAC Today** magazine is serving the growing Performance-Based Contracting Industry and fulfilling our Servant Leader role in this industry. It also means that we want your continued input. So the question is, how can we best serve you? We are always open to ideas, suggestions, and contractor authors who want to help serve their peers.

So what are you reading? Tell us what topics press your hot button, then let us serve it up to you.

Summit Partner Showcase

Following are just a few of the products and services that are being exhibited during the **High-Performance HVAC Summit** in April in Scottsdale, AZ. Be sure to register and attend the NCI Summit event. Learn more at gotosummit.com.

DUCT SADDLE FLEXIBLE STRAPPING SYSTEM

Duct Saddle Strapping System (DS3) is a concave, rigid support that works with any type of strapping to quickly and easily install flexible HVAC ducting.



The saddle measures 12 x 14 x 2.5 and is installed on the existing strapping to straighten flexible ducts and improve airflow.

DS3 will reduce wear and tear on the blower motor, compressor, and increase comfort in all rooms. Through reduced electric bills caused by the increase in airflow efficiency, the upgrade will pay for itself right away.

The concave shape allows 930% more surface contact area

with round, flexible HVAC ducting compared to strapping alone. No more "strap strangle."

For more information, visit the **Duct Saddles** NCI Partner page at ncilink.com/ductsaddles, or call the Customer Care Line at 800-633-7058. You can also visit them during the show.

BAKER DISTRIBUTING TO FEATURE HOUSECALL PRO

Housecall Pro is mobile software for use by home service professionals to run their entire business on the go. Through a native mobile application and complementary web portal, Housecall Pro offers users the opportunity to streamline processes and forego paperwork in favor of digital automation.

The platform is equipped with features such as online booking, job scheduling, dispatching, estimating, automated receipts and invoices, payment processing, reviews and reputation management, customer database and communication, automated



postcard and email marketing capabilities, and more.

To learn more, visit the **Baker Distributing** booth at the show.

DWYER WIRELESS HYDRONIC BALANCING KIT

Discover an easier way to water balance with the Series 490 Wireless Hydronic Balancing Kit. Known as the 490W, it uses wireless transducers and is a versatile handheld, single-operator device that can monitor and balance a hydronic system in less time than traditional hydronic balancers.



The Series 490W uses mobile technology to communicate via a Bluetooth connection with the transducers to monitor differential pressure and flow on up to three different valves.

Being wireless means there are no hoses to carry, snagging on equipment, or needing to be drained. The 490W includes the Dwyer Hydronic Application Software that contains valve charts for numerous manufacturers, which converts differential pressure to flow directly on the screen.

Typical applications you can use this device for include:

- Refrigerant pressure testing
- Hydronic valve balancing
- Measuring pressure drop across pumps
- Measuring pressure drop across chiller/coils for freeze protection.

For more information, visit **Dwyer** on the NCI store at <http://ncilink.com/490w> or call the Customer Care Line at 800-633-7058. Or you can visit them during the show.

TRUST ME, I'M A PROFESSIONAL

#1 LEAK DETECTOR

www.mybacharach.com

DURING OUR 1ST WEEK WITH TNFR, WE ONLY USED IT ON **34 CALLS** AND CLOSED

AN ADDITIONAL \$56,800!



Jeremy Dunitz
A-Star Heating & Air

THE **NEW** **FLAT RATE**
WWW.MENUPRICING.COM
 (706) 259-8892
info@menupricing.com

Introducing NCI's First High Performance Mobile App:



AirMaxx™ a ComfortMax app LITE

NCI's new AirMaxx Lite™ app features easy-to-use data entry and easy-to-display reports.

Get started on the path to High-Performance HVAC™ today!

Download this free app (available for both Android and iOS phones) onto your phone or tablet, and immediately start using it to display an airflow 'grade' for your customers.



Apple App Store
ncilink.com/AML1A



Google Play
ncilink.com/AML1D



TO YOUR **Success**
 Fresh cookies after every install



Because delighted customers are your greatest asset

Fully automated & customized gifts
www.ToYourSuccess.com

COMFORTBRIDGE™ AND COOLCLOUD™ TECH HELPS HVAC CONTRACTORS IMPROVE THEIR BUSINESS

ComfortBridge™ communicating technology and companion CoolCloud™ smartphone/tablet app are powerful tools designed to help HVAC contractors grow and improve their business.

Providing intelligent control and peerless performance benefits, ComfortBridge allows dealers to install high-efficiency HVAC systems about as easily as installing a standard efficiency system. That's because the ComfortBridge circuit board is securely mounted in the indoor unit of select Goodman® and Amana® brand high-efficiency heating and cooling systems – not inside a wall thermostat.



This approach allows ComfortBridge to work with any

single-stage, 24-volt thermostat, or by upgrading to smart home automation. Using ComfortBridge and its companion CoolCloud app, dealers can use more technicians for installing high-efficiency, higher-margin HVAC systems.

After installation, service and maintenance can take less time using the convenient CoolCloud app, available for free in the



Apple and Google app stores. ComfortBridge gathers data constantly, making automatic adjustments for peak performance – using the minimum energy required to create consistent, customized indoor comfort.

CoolCloud reduces manual effort to diagnose HVAC units; saves time by quickly identifying potential issues; provides historical system data, including interactions with the homeowner; and allows customizable select system settings.

For more information go to Comfortbridge.com and Cool-Cloudhvac.com. Or visit the **Goodman** booth during the show.

CI WEB GROUP SHOWCASING 12-STEP CONTRACTOR MARKETING ROADMAP

The 12-Step Roadmap is a system designed to create accelerated results for service contractors who want to market their business on and off the Internet. Their digital marketing strate-

gies revolve around one main premise: Doing the right things, in the right order, at the right time!

Stop by their booth and learn about their performance-driven marketing strategies that can improve your business.



For more information on **CI Web Group** visit the NCI Partner page at ncilink.com/CIWeb. Or visit them at the show.

BACHARACH SHOWCASING COMBUSTION MOBILE APP FOR IOS & ANDROID

Bacharach, an industry expert in gas detection and analysis instrumentation for the HVACR Industry will highlight its mobile app for its hand-held combustion and emissions analyzer portfolio, including the PCA® 400, Fyrite Insight® Plus, and Fyrite InTech®.

The app allows technicians to easily generate and send customizable combustion reports from their Apple and Android devices. It's ideal for when you're conducting combustion tests on furnaces and boilers in residential, commercial, and industrial combustion systems.

Users should find that combustion testing and reporting is easier and more efficient with the new app.

For the InTech® and Insight® Plus combustion analyzers, the app features a QR code scanner that obtains combustion data from a QR code that appears on the analyzer display screen and generates a report. The user simply scans the QR code with a mobile device and all the data is available for reporting and data sharing.



For more information visit the **Bacharach** booth during the show. You can also go to ncilink.com/BacharachMobileApp.

TURN YOUR SURPLUS & USED HVACR EQUIPMENT INTO WORKING CAPITAL!

Lazco Corp. BUYS & SELLS Surplus ... HVACR EQUIPMENT

- Compressors
- Cooling Towers
- Generators
- Controls
- Roof Tops
- Liebert A/C Units
- Chillers
- Boilers

Save 25% - 50% on the Manufacturer Brands That You Are Currently Selling. We Will Quote Any Project Worldwide.

HVAC EQUIPMENT SPECIALS:

- Carrier 800 ton New Water Cooled Chiller 460 volt \$77,000 - FOB Ohio
- 12,000 BTU Heat Pump Mini Split Systems (50) units
- \$475 per system includes installation kit - FOB Miami FL
- 50 ton Trane Gas Roof Top \$18,000 - FOB Las Vegas NV



Tel: 480-265-9980 • Fax: 866-437-3531
Lazcocorp@gmail.com
www.lazcocorp.com

Arzel Zoning Technology, Inc.
TRAINING OPPORTUNITIES

Regional Comfort College
 at your location!

WEBINAR WEDNESDAYS

located in Cleveland, OH

Comfort College
 March 27th, April 23rd & 24th

REGISTER TODAY!

www.arzelzoning.com sales@arzelzoning.com 800-611-8312 Follow us! f in

Baker Distributing Company **GREE**

THE GREE DIFFERENCE
 7 REASONS YOU SHOULD BE BUYING GREE

1. 1 of every 3 air conditioners in the WORLD is made by Gree
2. Gree heat pumps provide the same heating capacity as electric heat, using as little as 1/3 the electricity
3. Gree uses G10 inverter technology in its outdoor unit to reduce up to 65% of energy consumption
4. From 16.0 to 38 SEER, Gree's world class efficiency will lower utility bills without sacrificing comfort
5. High efficiency units with built in WiFi technology allow direct local control from smart phones or tablets with the Gree Smart application
6. 5 year parts / compressor warranty
7. Energy Star qualified, AHRI certified and ETL listed

Stop by your local Baker or visit www.bakerdist.com today!

live vireo sapphire

R.E. Michel Celebrates 85 Years of Excellence and Service

Despite popular belief, the American economic engine truly runs on the back of small, family-owned businesses. According to the Small Business Administration (SBA), there are 30.2 million small businesses in America that account for 99.9% of all business conducted. Also, small businesses employ nearly half (48%) of the country's workforce.

Case in point: R.E. Michel Company, headquartered in Glen Burnie, MD. This national HVAC wholesale distribution company, which celebrates its 85th anniversary this year, was born in 1935 in the throes of the Great Depression as a supplier to the residential home heating oil burner industry.

Despite the odds being against this new venture, R.E. Michel has grown

and expanded to where it has more than 2,100 employees nationwide.

R.E. Michel founder, Robert Emory Michel, started his new business and established the mission for the company to provide business-quality products at a fair price with a devotion to customer service. Today the company is led by Robert's son, John W.H. "Doc" Michel, with grandson, Bobby.

According to Doc, his father began the business during the transitional time when coal heating was being converted to fuel oil. His father saw an opportunity and began manufacturing and selling oil burners.

"My father branded the oil burner the REMCO," he explains. "He traveled around the Baltimore area with people from the oil companies basically showing them how to convert coal-burners to oil burners."

EXPANSION INTO BRANCH OPERATIONS

In 1942, R.E. Michel opened its first branch operation in the nation's capital. That was followed up by opening branches in both Richmond and Norfolk, VA. Gradual growth continued over the years with branches opening in other cities.

When Doc's older brother, Butch, came into the business full time in 1960, the focus of the company began to change, to modernize. R.E. Michel had left the manufacturing side of its business in the late 1950s and the next decade saw the introduction of affordable residential air conditioning and natural gas heating.

R.E. Michel began adding that equipment to its line card. Those products included unitary equipment lines and other parts and supplies – ductwork, grilles, and registers. According to Doc, it was in 1960 that they became Heil Quaker distributors.

He adds that Butch embraced technology, especially computer tech, and had the first one installed in the company in 1972. Two years later, in need of more space, R.E. Michel moved from its original location in downtown Baltimore to Patapsco Avenue. All their offices were moved there. This was the first step to the growth spurt that led to the company being where it is today.

That growth was through acquisition of smaller wholesale operations around the country to where they now have 294 stores in 33 states, plus eight

or nine regional warehouses.

According to Doc, they are still making acquisitions today, but nowhere near the level they were in the 70s and 80s.

In 1996, Doc had been employed at the company for around 30 years and was running the purchasing department. He took over as president after the death of his brother, Butch.

THE TSA PROGRAM

"Over the years," Doc says, "the industry became so much more complicated as opposed to when I was growing up and everything was mechanical. Now everything is electronic. Just to adjust an oil burner you need special tools that weren't required before. I always considered myself pretty mechanically adept, but today, you need to understand computers, electronics, and so much more.

"As a result, it became obvious to us that we needed to train our customers better. To do that we needed our own highly-skilled trainer personnel."

That group of people came to be known as R.E. Michel's Technical Service Advisors (TSAs). They are mostly focused on training the company's contractor customers as well as helping them troubleshoot issues in the field.

According to Chad McAllister, director of sales for the company, TSAs must know everything about HVAC including oil, gas, Hydronics, air conditioning, geothermal, heat pumps, mini-splits. "They need to understand those technologies because that is what our contractor customers run into in the field every single day," he adds.

This is a huge investment on behalf of their contractor customers. Besides investing in training TSAs with many manufacturers, they also invest in

Exclusive Supply Partner

Part of the R.E. Michel performance and service credo is getting product to the customer whenever and wherever they need it. To provide the service their customers need, R.E. Michel developed their own inventory control technology that has evolved to the point that the company can track any product through any store or warehouse, to the second, at all times.

Doc says, "We evolved this process so we can bring our distribution model to our contractor customers. We call this our **Exclusive Supply Partnership (ESP)** and it allows us to enable contractors to manage their truck inventories the way we manage our warehouse inventory (learn more at ncilink.com/ESP)."

According to Tracy Johnson, who is in charge of the ESP program, they work with contractors to set up a base inventory level and then replenish it as needed. That could be daily, every other day, twice a week, whatever.

She explains, "The ESP program works no matter how big the contractor is. It is very scalable. The cool thing is that the contractors manage their ESP on their own. We give them access to our web-based software, we train them on how to use the software, and they manage their truck and warehouse inventory this way.

For the record, ESP has been a long time under development. It originally started back in 1990 by Doc's brother. It was a paper-based system back then.

Says McAllister, "We look for contractors who value partnering with their distributor. Then we deliver on our commitment to whatever parts the contractor wants on their truck, whenever they want it, and how ever they want it. We will do whatever is necessary to come through for them."

Alex Beecher, R.E. Michel's director of marketing, adds that the ESP program is a "game-changer." He adds, "It is a perfect fit for NCI contractors because they are the type of people who are looking to improve, streamline, and offer better services in their market area. ESP helps them do that. Plus, they seem to value this level of relationship and service in a partnership."

"NCI-trained and certified contractors aren't low-priced. They understand the value of being able to provide homeowners a full assessment of their equipment, their air system, and the impact of balancing those things. We feel we operate at their level and can offer them higher-level options to help them in their quest to High-Performance Contracting™," concludes Tracy Johnson.

sending them to wherever the customer needs them. "Not many other distributors do anything like this," McAllister says.

Today R.E. Michel employs 19 TSAs who travel around the country helping contractors. According to Doc, they are like superheroes – besides being highly technically qualified, they also must be very customer-oriented.

He likens them to the Swiss Army knives of HVAC. They will bring contractors into Glen Burnie's training room, as well as other company facilities around the country, where contractors can physically work on a va-

riety of functioning boilers, furnaces, and condensing units.

McAllister adds that TSAs have one of the toughest jobs in the company.

Bobby Michel, Doc's son and president of the company, says that it's important to remember that TSAs are not there to do the work for contractors. "They are advisors. They troubleshoot only. They do not work on equipment," he says.

THE PERFORMANCE CONNECTION

When it comes to the concepts behind High-Performance Contracting, the team at R.E. Michel are believers.



Eighty-five years of family ownership. Left to right: Doc Michel, his brother Butch Michel, and Doc's son Bobby Michel.

R.E. Michel's Glen Burnie Training Center includes hands-on training on boilers, condensing units, mini-splits, and more.

After all, it fits into their overarching philosophy of putting the customer first in all things.

"We will not lose a customer over an issue," Doc explains. "We do everything possible to resolve customer problems and keep them happy."

He says the idea is to find ways to serve the best interest of the customer at the level closest to the customer.

Which is another reason why R.E. Michel is a strong supporter and proponent of training. Through their mission to train contractor customers, R.E. Michel management became aware of the National Comfort Institute (NCI). Many of their customers were already members of NCI.

"Today, as we've learned from

NCI, performance goes well beyond just making sure the equipment is installed and operating correctly. You have to consider the air system, the ductwork," Doc says.

"This is a growing partnership that means a lot to us. The goals we've set as an R.E. Michel/NCI Team are very exciting. We are committed to not only taking care of the customer we have today, but also to finding the customer of tomorrow, together. That's

where we will see growth with the NCI group of the contractors," he says.



Beau Michel

R.E. MICHEL TODAY

J.V. "Beau" Michel III is the director of purchasing and distribution for the company.



He is also Doc's nephew and has been in the business since 1987.

"This industry has changed so much from the day when a distributor salesman walked into the back of a contractor's shop with pencil and paper in hand.

"Today many contractors are connected directly to our inventory system so they can find the products and equipment they need, even if their local branch doesn't have it available

when they need it," Beau explains.

"We buy well, track inventory returns, and translate that into providing our contractor customers what they want, when they want it, at a price they can afford. We have the right inventory at the right time and at the right price," Beau says.

INDUSTRY PERSPECTIVES

Like every business in the HVAC Industry, R.E. Michel faces many challenges, from government regulations to a major shortage of people coming into the trades. Doc Michel says the latter is the biggest hurdle today.

"The next biggest challenge is the upcoming refrigerant phaseout. I worry about the 2023 deadline.

"The question really is whether man-



Left to right: Chad McAllister, Alex Beecher, and Tracy Johnson

ufacturers can be ready with product. And we really haven't settled into a standardized replacement refrigerant which can cause even more problems."

He adds that he knows that industry associations like HARDI and AHRI are on top of all this, but it is an uphill battle with grave ramifications for the entire industry.

"No matter what happens," he continues, "success in today's world depends completely on having a well-trained workforce. Contractors need

to spend more time than ever training their technicians.

"The technology and requirements for installing and maintaining HVAC equipment are becoming ever more complicated and the ramifications of poorly designed and installed systems can be dire in terms of consumer health, comfort, and safety.

"And we (the distributors) need better sales and branch personnel to help our contractor customers."

It is these things that help tie together the relationship between the distributor and contractor.

Congratulations to R.E. Michel on its 85th Anniversary of service and for being this month's **High-Performance HVAC Today** magazine's *Partner Spotlight*.

Family Owned & Operated Since 1935

INVENTORY SOLUTIONS TO FIT YOUR BUSINESS

Contact your local branch or email sales@remichel.com

When it Comes to DUCT SUPPORT It's Time to REINVENT the WHEEL

Work Smarter NOT Harder
It Doesn't Just Look Better ~ It Performs Better

DSB
DUCT SADDLE STRAPPING SYSTEM
www.NCILink.com/DuctSaddles
800 633 7058

Old Way of Hanging Flex

Increases Efficiency Complies with UL2043 Reduce Labor Costs

It Doesn't Just Look Better ~ It Performs Better

One SKU Fits ALL Jobs
RNC & Retrofit Applications

Free Shipping for Packs of 100 or more!

A Fresh Overview - Static Pressure Diagnostics and Solutions

When a blower circulates air, it faces two expected obstacles on its journey through the duct system – the coil and filter. The cooling coil is usually the airflow's takeoff from the fan and the air filter is the landing near the end of its journey through the system. These two parts of the trip are expected to be bumpy. Ideally during the rest of the trip, airflow should enjoy "great weather and smooth sailing."

Let's take a look at how you can forecast and eliminate high-pressure issues in HVAC systems using static pressure diagnostics. In the U.S., we use inches of water column (w.c.) as our pressure unit of measurement. This is the distance, measured in hundredths of an inch, that pressure will push or pull water in a U-shaped tube.

EFFECTS OF PRESSURE ON AIRFLOW

Resistance to airflow often negatively affects static pressure in a forced-air HVAC system.

Each fan has a maximum-rated total external static pressure (TESP). If it exceeds the maximum-rated pressure when measured, airflow decreases, system performance takes a nosedive, comfort suffers, and utility bills skyrocket.

Your job is to find and eliminate the causes of excessive airflow resistance to increase efficiency and comfort. Unfortunately, most systems suffer from measured TESP's that are more than 150% of maximum-rated pressure. This problem usually goes undetected.

TOTAL EXTERNAL STATIC PRESSURE

Total external static pressure is the first air pressure you'll measure and calculate when you diagnose an HVAC system. It only takes a few minutes to measure pressure before and after the air-handling equipment. Then you simply add these two pressures together and compare it to the maximum-rated TESP.

If measured TESP is 20% higher than maximum-rated fan pressure, your job is to continue static pressure diagnostics to find and eliminate the cause(s).

NCI publishes various static pressure budgets for several system types. Find NCI static pressure budgets in your training manuals, NCI's online training modules, or on the NCI website at ncilink.com/PSIBudgetTable.

THE COOLING COIL

The highest airflow restriction in many systems is often the cooling coil. It is usually located at the fan discharge, at the beginning of the duct system. Many higher efficiency cooling coils have resistance to airflow greater than the fan can afford.

Our studies show coil resistance to airflow in well-performing systems does not exceed 40% of fan-rated pressure. So, a fan rated at .50" w.c. should not exceed .20" of static pressure (.50" x 40% = .20").

Pressure drop over a coil is found by installing **test ports** (ncilink.com/TestPortInstall) into the air stream before and after the coil. The



Technician demonstrates where to take coil pressure drop readings.

pressures are taken and recorded, then subtracted from each other to find coil pressure drop. Compare measured coil pressure drop to 40% of fan-rated pressure.

If coil pressure drop is excessive, you should do an additional diagnostic. Inspect the coil to see if it is loaded with dust, cellulose insulation, pet dander, or other airborne pollutants. If you do find these issues, clean, repair, or in extreme circumstances, replace the coil.

You may be surprised to find a clean or new coil that is overly restrictive to airflow. This is a tough one to explain to your customers because it reveals a design problem when the system was built and it may still be quite new. Check your measured coil pressure drop against the coil manufacturer's pressure drop data to verify the coil is not internally packed with debris.

AIR FILTER PRESSURE DROP

The duct system terminates or lands at the air filter. Some air filter efficiency is made possible by increasing the den-



Measuring air filter pressure drop.

sity of the filters without consideration to its increased airflow resistance.

Measure filter pressure drop to verify if it is in or out of acceptable ranges. Install test ports before and after the air filter. Measure and record the two pressures, then subtract to find the filter's airflow resistance.

NCI has established static pressure budgets for air filters calling for no more than 20% of the fan's rated pressure to be consumed by the system's air filter. If a system's fan is rated at .80" w.c. filter pressure drop should not exceed .16" of static pressure (.80" x 20% = .16")

When air filters excessively obstruct airflow on its way back to the fan, filter modifications are required.

Options to reduce filter static pressure include:

- Replacing the restrictive filter with a lower pressure drop filter.
- Installing additional filters in the system to increase filter surface area. The greater the square feet of filter, the lower the amount of airflow moving through each square foot of filter, lowering its restriction to airflow.
- Installing "V" or "N" configuration filter racks.
- Using several return air filter grilles to increase filter surface area.

MEASURE DUCT SYSTEM PRESSURES

NCI's static pressure budgets recommend no more than 20% of the fan-rated pressure from the supply duct system. And no more than 20% of fan-rated pressure from the return duct system. If a system's fan is rated at .30" w.c., the supply or return duct pressure should not exceed .06" of static pressure (.30" x 20% = .06").

Duct system pressures are not measured in pressure drop as with other system components. Since pressure,



Technician demonstrating where to take supply duct pressure measurement.



This time, the technician demonstrates taking the return duct pressure.

Taking the total external static pressure.



management degree, or just a high-school diploma — you are now a leader. It is up to you to become the type of leader you desire to be. Many times you have to try each of the three types of leadership before you decide which fits you best.



in an inventory that will help guide you towards servant leadership. When you are willing to make this assessment and work to strengthen your weaknesses, then I believe you can begin a journey toward becoming a servant leader.

MY JOURNEY

In 1988 I decided to start my own HVAC and plumbing company. At first, I operated as one man in a truck to repair systems and plumb houses. I really had no plans to grow the business. I was just trying to make a living.

When it came time to hire employees, I thought about all the employers I had worked for. I decided I wanted to be better than they were.

Having witnessed how other contractors and businesses operated and treated both customers and employees made me want to

have a company that people could depend on and one that made their lives better because we were there. That is what influenced me to learn about servant leadership.

We are all influenced by our surroundings and while I was trained as a union plumber and pipefitter with all the benefits that came with that, I was in an area where many employers provided no benefits for their employees. Most contractors paid as little as possible. Their work and production reflected that.

It was difficult to break out of that thought process. Since I was employed with health insurance and a retirement plan, I wanted to do the same for my employees. So, I took the time to learn how to do this and though it took several years to establish health

insurance and 401K plans, I did make that happen. I also wanted to provide customer service that did not leave the door open for contractors from other towns to compete in my small area.

Both goals took long-term planning and commitment to put into operation. But the reward was great. We could hire employees who needed health insurance and who desired to work for a company that had their interests at heart. I believe they will return the favor. If they don't, then it is time to exercise leadership and remove their bad attitude from your company.

This desire to provide exemplary service has led to market expansion beyond our area. We now operate as far as 200 miles away. That built our reputation and eventually led to me being called in as a local expert for customers trying to get a handle on their mechanical systems.

FIRST STEPS

When you look at the servant leader trait inventory list, I urge you to pay particular attention to items 1 and 2. I have found organization to be the greatest shortfall of so many business operations. I am continually confronted by people who are frustrated with the performance of contractors and other service businesses.

The service norm, unfortunately, seems to revolve around the comment: "I will get to that tomorrow." Without organization, tomorrow never comes. It is a human trait to delay anything we really do not want to deal with. Those items get relegated to out-of-sight, and out-of-mind. Hiring more people will only expand the problem.

If you face this problem, it must be fixed right away. It starts with you —

the leader who is not as organized as you should be. You need to change this. You need to under-promise and over-deliver and hold yourself to a much higher standard than you expect of your followers.

The unorganized leader is the weakest link in the chain toward servant leadership.

Item 2 talks about passion for excellence and truth. Without that as a driving force in your life as a leader you will fall prey to under delivery of your mission. Without passion, you won't demand excellence and will be easily swayed from the consistent profitable operation of your mission.

In the immortal words of Clint Eastwood "A man has to know his limitations."

Over the years, I've been asked to perform many jobs that I knew were not what we were built to do. While I knew we had the talent to do those jobs, I worried that taking them on could lead to the demise of the whole operation and the loss of our effectiveness in our community.

One big job is only profitable if you have the skills and resources to handle it. So be honest with yourself and with potential customers. Passion for excellence and the truth must always be at the center of every servant leader's decision.

In conclusion I challenge you to take a serious look at where you are as a leader and determine how you could improve. There are infinite resources to help you make the change in your

leadership skills. This can be learned without a huge investment of money but will require a commitment to learn, an open mind to step out of the box you may have been placed in by your background, training; and a willingness to change and evolve.

I know it has been a great experience for me and I believe it will be for you. 



Dave DeRose founded Masterworks Mechanical in Craig, CO in 1988. At the time, he was a master plumber with experience in plumbing, heating, air conditioning, and refrigeration. He grew the company over the years and eventually sold it to employees Victor and Amy Updike in 2015. Dave remains active in and is a servant leader for the HVAC Industry, particularly the High-Performance Contracting segment.

SKILLS INVENTORY LIST

To become a servant leader, the first step is to take a serious inventory of your current leadership skills. Be honest when you evaluate what you are good at and what needs work. Think about the following:

1. Are you organized?
2. Do you have a passion for excellence and a desire to learn truth?
3. Do you have the skills needed to lead in all areas of the business?
4. Are you willing to listen to others who may have more experience?
5. Are you willing to change paths if you find you are wrong?
6. Do you ask others to do something you would not do?
7. Are you willing to be mentored either in person or with study?

These seven questions are just a few



R.E. MICHEL COMPANY

WHOLESALE DISTRIBUTORS • AIR CONDITIONING • HEATING • REFRIGERATION
PROPANE • EQUIPMENT • PARTS • SUPPLIES

— Since 1935 —

INVENTORY SOLUTIONS TO FIT YOUR BUSINESS





Stop by our booth
to learn how the
ESP Program
can benefit *you!*

remichel.com

OFFER SERVICE AT THE CUSTOMERS' CONVENIENCE. BE SURE ALL CUSTOMERS GET A WORLD-CLASS SERVICE AND CUSTOMER-CARE EXPERIENCE.

of agreement, the odds of locking in the maximum amount of people are less than if you offered various options to become agreement customers.

ICE CREAM ISN'T THE ONLY THING THAT SELLS BETTER WITH CHOICE

Offering multiple levels of service lets customers choose the access, service, engagement, benefits, protection, etc. that makes sense to them. It also offers things to which they can say 'no.'

Now more than ever, people will consider paying for greater levels of access, service, and value-added benefits. They will pay a premium for avoiding or solving pain and problems, life impacts, extraordinary and exclusive experiences, status, identity, and more.

Think of it this way, ice cream parlors always offer a variety of flavors even though vanilla may be favored by many. They do so because they will attract more people to their store who will buy more as a result. Service companies become more alluring and compelling to more consumers when they do the same thing.

A TACTICAL APPROACH TO CONSIDER

My recommendation is to vary the level of service access you offer. Offer service at the customers' convenience. Be sure all customers get a world-class service and customer-care experience.

Figure 1 shows examples of tiered benefit and access agreement programs (dollar amounts and percentages are for demonstration purposes only).

MULTI-TIER SERVICE AGREEMENT BENEFITS

Here is how a multi-tier service agreement offering is mutually beneficial:

Customer Benefits

1. Reduces hassle
2. Restores lost capacity
3. Increases equipment life
4. Priority service
5. Scheduled preventative maintenance with precision tune-ups and professional cleanings
6. Avoid or reduced trip/diagnostic charges
7. Discounted service
8. Discounted maintenance
9. Saves money on energy and repairs - pays for itself
10. Peace of mind
11. Expense predictability
12. Prevents unnecessary breakdowns
13. Avoid downtime
14. Increased safety
15. Improved health
16. Enhanced comfort
17. Loyalty credits
18. Company newsletter
19. Special offers and events
20. Safety, service and helpful tips, bulletins
21. Happier homeowners
22. Remove holiday lights
23. Remove bulk trash

24. Change light bulbs and smoke/fire/ carbon monoxide detector batteries
25. Change air filter, UV bulbs, humidifier pads, water filter, etc. as needed.

Company Benefits

- More revenue
- More profit
- Steady cash flow
- Reduce revenue dips in shoulder seasons
- More ancillary product sales
- Customer loyalty and repeat sales
- More referrals
- More opportunities to build customer relationships
- Guaranteed and balanced workload for company
- Year-round full-time employment for co-workers
- Job security
- Happier co-workers
- Reduced marketing costs
- Ability to cross-market services
- Healthier more valuable business for potential sale of company.

Creating more opportunities for connection to your company is more sustainable with less of a marketing expense to create future purchase opportunities for other services.

A multi-tier service agreement program will make your company stickier to more customers and help you build your ecosystem of customers and ensure your business longevity. 



Drew Cameron is president of both HVAC Sellutions and Energy Design Systems, LLC. The latter is an alliance providing industry-leading marketing and sales consultative support as well as sales recruiting, training, coaching, and more for Home Services Contractors. In addition, Drew serves as a trainer for Electric and Gas industries Association (EGIA). Contact him at 610-745-7020 or by email at dcameron@egia.org.



“Dead Wasps in the Middle of the Pipe”

— Aaron Courier, A.A. Courier & Sons, Roebuck, SC

While performing the combustion test during routine maintenance a rattling noise was observed. Our technician shut down the furnace, disconnected the flue, and found this pile of dead wasps.

Aaron Courier from A.A. Courier & Sons is the MARCH 2020 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 APRIL CONTEST OPENS ON MARCH 9, 2020.

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

High-Performance HVAC Today

magazine highlights news, commentary, and technologies that impact performance-based HVAC contractors and their customers.

Visit our website to sign up for a FREE digital subscription or to order a printed subscription for one year (12 issues).

\$72 USA, \$92 CANADA

SUBSCRIBE TODAY!

Go to <http://ncilink.com/subscribe> or scan this QR code to sign up online




1-800-633-7058 • www.HVACToday.com



One-stop shopping for all of your HVAC/R needs.



Making Sense Of EPA Refrigerant Use Restrictions.

We carry all brand name products by top manufacturers and with over 400 locations across the country, we can focus on the customer's individual HVAC/R needs.

www.uri.com



Consider Moving to Premiere Membership

Thank you for being an NCI member and for being part of the Performance-Based Contracting™ movement. That is the first step. But are you making the most of your membership and all that comes with it?

Think about this: if you upgrade to a **Learning Excellence Premium** subscription, the first huge benefit you receive is one **FREE High-Performance HVAC Summit registration** (ncilink.com/Summit2020Reg)!!

Summit is really the only place for advanced contractors like you to network, learn, and share. It also is the best place to get to know your fellow members in-person.

One of the best benefits of membership is the camaraderie and support you get from your peers. You really owe it to your High-Performance Contracting™ journey to attend.

Make it even easier — add the Learning Excellence Premium option to your membership and get a free seat — along with all the other **Premium benefits** (ncilink.com/Premium)!

It's really simple to upgrade to Premium — simply give us a call at **800-633-**



7058 and we'll get you set up, along with your free Summit registration!

If you have any questions about your membership, we're happy to help, just give us a call.

We look forward to seeing you at Summit this April in Scottsdale!



Get Your MARCH 2020 PowerPack Online Now

One of the great things about your PowerPack is that each one includes items that are curated to help you as you grow your High-Performance HVAC business.

Let's drill down on what's included in the MARCH 2020 PowerPack!

- **Balancing Hood Basics** (Online Training)
- **Traverse Grilles and Registers** (Webinar)
- **Generic Fan Performance Data** (Download)
- **How Air Balancing Saves Money** (Article).

Be sure to share your March PowerPack with your entire team! So get started today. Access it by going to: ncilink.com/PwrPak.

If you have any questions, or if you are unable to access any of the tools in this program, please contact your Customer Care team at 800-633-7058.



Bill Ritchie

Bill covers the west coast up to NM, CO, WY and MT.



Michael Pae

Mike covers the central states: ND, SD, NE, KS, OK, TX, MN, IA, MO, AR, LA, IL, WI, MI, IN, and OH.



Andrew Weidman, Jr.

Andrew covers the east coast: PA, WV, KY, TN, MS and all states east of the above.

Connect with NCI Customer Care Reps

Do you realize that NCI provides access to Experts who can answer your questions, whether they revolve around membership and its benefits, or the availability of classes and so much more.

Set up some time with your dedicated NCI Customer Care Representative, they're here to help!

To make an appointment with **Bill Ritchie**, go to ncilink.com/BillRitchie

To make an appointment with **Michael Pae**, go to ncilink.com/MikePae

To make an appointment with **Andrew Weidman, Jr.**, go to ncilink.com/AndyWeidman.

Interested in NCI Membership?
Click here or go to www.NCIMembership.com

Simplify Your Pricing!



THE **NEW FLAT RATE**
info@menupricing.com

TO YOUR Success



Delight
Every Customer

ToYourSuccess.com

For information on advertising in High-Performance HVAC Today

please email:
advertising@hvactoday.com



AD INDEX

Advertiser Index

| | |
|--|-----------|
| Arzel Zoning Technology, Inc. www.arzelzoning.com | 9 |
| Bacharach, Inc. www.MyBacharach.com | 7 |
| Baker Distributing Company www.BakerDist.com | 9 |
| Duct Saddles www.DuctSaddles.com | 13 |
| Dwyer Instruments, Inc. www.dwyer-inst.com | 2, 21 |
| Goodman Manufacturing www.GoodmanMfg.com | 4, 16, 27 |
| Lazco Corp. www.LazcoCorp.com | 8 |
| R.E. Michel Company www.REMichel.com | 12, 19 |
| The New Flat Rate www.TheNewFlatRate.com | 7, 25 |
| To Your Success ToYourSuccess.com | 7, 25 |
| United Refrigeration Inc. www.uri.com | 23 |

To Subscribe to High-Performance HVAC Today:

ONLINE: Visit HVACToday.com/subscribe for a FREE digital subscription.

PRINT: 1 year/\$72; single copy \$7. Canada: 1 year/\$92; single copy \$9. Payable in advance with U.S. funds. Prepaid subscriptions may be sent to: High-Performance HVAC Today, PO Box 147, Avon Lake, OH 44012. Phone: 440-949-1850; toll free 800-633-7058; Fax: 440-949-1851, or visit HVACToday.com/subscribe to order online.



HIGH-PERFORMANCE HVAC TODAY

Publisher
Dominick Guarino

Editor-in-Chief and Associate Publisher
Mike Weil

Art Director
Connie Conklin

Online Development Director
Brian Roseman

Circulation Manager
Andrea Begany- Garsed

Editorial Assistant
Marge Smith

Email us at contactus@hvactoday.com with your comments and questions.

How Will the New Electrification Movement Affect You?



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

Electrification is expected to have a huge impact on the transportation and HVAC industries in the very near future. So, it's probably a good idea to learn more about it and look for ways to benefit from it.

What is Electrification? Essentially it means fully or partially switching from technologies that directly use fossil fuel to those that use electricity. The industries most impacted by this are the electric vehicle market, indoor heating, and water heating.

In the transportation industry, there are currently more than one million electric vehicles (EVs) on the road today. According to the Edison Electric Institute (EEI), there will be a 700% increase (seven million EVs) by 2025. That's just five years from now! This includes both passenger vehicles as well as commercial/industrial transportation.

Imagine that kind of increase for the HVAC industry? Over the past year, we've seen a big push for Electrification by utilities and Public Utility Commissions (PUCs) in numerous states. And it's only going to intensify over the months and years ahead.

GOOD OR BAD?

Will Electrification be good or bad for the HVAC industry? The short answer is, it depends. If it's done in a practical, thoughtful way, as opposed to a sweeping "single-solution" approach to energy efficiency, it could be very good for our industry. It can present significant opportunities for early retirement of older, inefficient furnaces and air conditioners, as well as improvements in both new and existing HVAC systems.

One of the challenges to Electrification, both in new construction and in existing homes, is the air distribution system. If corners are cut and the same poorly designed ductwork and inferior components including fittings, grilles, and registers are installed, all-electric HVAC systems will perform poorly, particularly in heating mode.

Many of us remember heat pump conversions of the eighties and early nineties when customers complained about cold and drafty homes. This was caused

by both low equipment discharge temperatures compared to gas furnaces, and poor air distribution systems blowing cold drafty air onto building occupants.

Equipment manufacturers have stepped up and raised Delta Ts significantly on heat pumps. Unfortunately, air distribution design and installation, both in residential and light commercial buildings is still significantly lagging compared to equipment improvements.

THE BIGGEST HURDLES

In new construction, much of this lag is caused by the typical low-bid mentality that is still pervasive with builders and HVAC contractors.

Duct systems in new homes, particularly in the south, still consist of octopus-like flex duct systems with impossibly long runs, inferior splitter boxes, and too many restrictive bends and elbows. Coupled with cheap registers and grilles, insufficient number of returns, and poor design and installation, we have the perfect storm for poorly performing all-electric HVAC systems.

But it's not just new construction. Most of the existing home stock currently operates at 57% of heating and cooling capacity delivered into a home or building. Not only does this negate most of the equipment efficiency gains, it also impacts comfort – especially in heating mode.

As utilities continue to roll out electrification programs, they would be wise to focus on this insidious problem with delivered efficiency, and build their incentive and training programs around measured, delivered capacity, not just the equipment's efficiency ratings.

With thoughtful attention by those driving electrification to look beyond SEER and HSPFs, to total system performance, there's great potential for responsibly shifting energy use.

While Electrification got a big black eye 30-plus years ago, we now have better technology, tools, and verification methods to ensure it doesn't happen again. Now it's up to us to get it right! **NCI**

**GOODMAN
BUSINESS
TOOLBOX**

ARE YOU
LOOKING FOR
MORE TIME, MONEY OR FREEDOM?

**WE HAVE
THE TRAINING TOOLS
FOR THAT.**



The business toolbox programs are presented by Goodman® and administered by third-party training organizations. All training programs are designed to support independent HVAC contractors who sell Goodman brand products. Any costs for the training programs are determined and charged directly by the third-party training organizations.

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

© 2020 Goodman Manufacturing Company, L.P. Houston, Texas • USA www.goodmanmfg.com

Goodman
Air Conditioning & Heating



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.

Upcoming 2020 NCI Training Schedule

Airflow Testing & Diagnostics and Refrigerant-Side Performance Bundle

Mar 24-26: Los Alamitos, CA*
Apr 28-30: Irwindale, CA*

Airflow Testing & Diagnostics

Mar 24: Los Alamitos, CA*
Apr 21: Concord, NC
Apr 22: Monroe, NC
Apr 28: Irwindale, CA*

Refrigerant-Side Performance Certification Program

Mar 25-26: Los Alamitos, CA*
Apr 29-30: Irwindale, CA*

Residential HVAC System Performance & Air Balancing Certification Program

Mar 10-12: Newark/Whippany, NJ
Mar 17-19: Atlanta/Union City, GA
Mar 17-19: Phoenix, AZ
Mar 24-26: Tampa, FL
Mar 24-26: Cincinnati, OH/Florence, KY
Apr 14-16: Milwaukee/West Allis, WI
Apr 28-30: Chicago/Arlington Hts., IL

Duct System Optimization & Residential Air Balancing Certification Program

Apr 14-16: Mobile, AL
Apr 21-23: Sacramento, CA
Apr 21-23: Denver/Centennial, CO
Apr 28-30: Tulare, CA*
May 5-7: Los Alamitos, CA*
May 12-14: Chantilly, VA

Commercial Air Balancing Certification Program

Mar 31-Apr 2: Newark/South Plainfield, NJ
Mar 31-Apr 2: Detroit/New Hudson, MI
Apr 21-23: Richmond, VA
May 12-14: Minneapolis/Golden Valley, MN
May 19-21: Los Alamitos, CA*
May 19-21: Boston/Somerville, MA

Commercial HVAC System Performance Certification Program

Mar 31-Apr 1: Baltimore/Halethorpe, MD
Apr 14-15: Los Alamitos, CA*

Performance-Based Selling Bootcamp

Apr 21-23: Los Alamitos, CA*
May 5-7: Cleveland/Sheffield Lake, OH

Combustion Performance & Carbon Monoxide Safety Certification Program

Mar 10-12: Philadelphia/King of Prussia, PA
Mar 17-19: Minneapolis/Golden Valley, MN

Introduction to Hydronic Testing, Adjusting, & Balancing

Apr 14-15: Cleveland/Sheffield Lake, OH
May 12-13: Los Alamitos, CA*

Optimize Economizer Performance with Certification

Apr 16: Los Alamitos, CA*

National Balancing Council Commercial Balancing with Certification

Mar 23-27: Cleveland/Sheffield Lake, OH

* NCI training subsidized by Southern California Edison for local contractors



Visit [NCIlink.com/ClassSchedule](https://www.nciinc.com/ClassSchedule) to view the latest schedule of NCI Training events