

EEB Professional

May, 2010

How We Became
Nationally Certified

New Trends in the
Workplace

Power of Partnership

The Official Magazine
of the National Environmental Balancing Bureau



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NEBB is now a U.S. Green Building Council (USGBC) Education provider. The NEBB Building Systems Commissioning Seminar has been added to the USGBC course catalog on www.GreenBuild365.org. Education Providers offer the highest-quality education that has been peer-reviewed and approved by the USGBC. Courses provide professionals seeking to enrich their knowledge of green building theories and techniques with advanced education needed to stay competitive and receive credit toward LEED® Professional Credentialing Maintenance.

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The NEBB Professional

Executive Vice President, NEBB
Michael P. Dolim

Publications Manager
Karen D. Groppe, PCM

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From the NEBB President

Another month has past and this year is flying by! I guess that this the way a number of our founding members feel, it seems just like last year when NEBB was founded.....

We spoke last month regarding the first decade of NEBB and this month I would like to spend a few sentences looking at the second decade. During the second decade chapters were started in Australia and Canada. Two new disciplines were started during this decade, Cleanroom Performance Testing and Building Systems Commissioning. Mike Dolim joined NEBB as the first fulltime employee and Dave Bevirt and Bill Abernathy continued to serve part-time. By the end of the second decade NEBB had 413 certified firms and 557 qualified Supervisors. Quick growth with consistent quality, what NEBB has always stood for! If I haven't mentioned it I have been using and will continue to use a book that Dave Bevirt put together to celebrate NEBB's 30th anniversary titled "30 YEARS OF ASSURED QUALITY". Dave included a story regarding Bill Abernathy and the program when Mr. Abernathy was awarded MCAA's Distinguished Service Award in 1991. General Colin Powell sent an audio tape to the proceedings due to him being in Kuwait for "Desert Storm". The following is a portion of that tape; General Powell regarding Bill Abernathy, "He taught me about the values of integrity, he taught me about hard work, he taught me about the importance of high standards. He taught me about compassion, he taught me about kindness, he taught me about perseverance in the face of obstacles and he taught me about toughness. He taught what it meant to be an officer and a gentleman." Bill Abernathy, this is what NEBB is about.

As hopefully you have been able to see NEBB has succeeded these 40 years because of volunteers that have given time to serve our organization and our industry. This is time that none of them had, they took time from their families and work to give back to the industry that supported them. This time was intended to better our industry and it laid the foundation that we continue to build upon today.

Eric Jenison, President of NEBB 2006, focused on volunteerism the entire year of his presidency because he saw that this is the foundational bedrock that NEBB is built upon. During 2006 many of our committees started corresponding subcommittees to get more member participation in the development and maintenance of NEBB's standards. These subcommittees are still active and a great way to get involved in the NEBB process.

Have you ever been frustrated with "the way things are" in our industry or even in NEBB? Have you ever thought that you could perform some aspect of NEBB's activities better than they are currently being performed? Have you ever been approached about service to this organization and responded that you don't have time? Have you ever volunteered and not been contacted back regarding participation? NEBB will continue to be the industry leader only if our best and brightest continue to give what they don't have. None of the current volunteers of NEBB have the "extra" time to serve as they do. As Hillel the Elder said, "If not you, then who. If not now, then when?" When will you begin to give back to the industry that has supported you and your family all these years? NEBB needs you now! Please send an e-mail to me at swiggins@newcomb-boyd.com or Mike Dolim at mike@nebb.org regarding your willingness to volunteer. Please let us know if you have a specific committee that you would like to work with. We will pass your name and contact information along to the appropriate committee chairman to follow up with you. I thank you in advance for your eagerness.

We will look at the third decade on NEBB in next month's letter.

In your service,

Stephen R. Wiggins

On The Chapter Front

Bonneville Chapter Conducts Successful Recertification Meeting

The Bonneville Chapter conducted a successful recertification meeting in Salt Lake City, Utah. Attendees were able to get a leg up on their LEED certification with industry expert David Hubka during his overview of the LEED process.

FEBB “Goes For The Gold”



In concert with celebrating NEBB’s 40th Anniversary this year, and the upcoming 30th Anniversary for the Florida Chapter, a special “FEBB Past President” lapel pin has been designed for presentation to all Chapter Past Presidents.

Those having earned the honor by serving with pride and distinction are the founding President Eddie Daniel, to be followed in succession by Don Dawson, Richard Flanders, William Brody, Wayne Cook, Ted Farrington, David Boree, Eric Jenison, Curtis Smart, Phil Ardis, Mike Stanimirovic, Paul Martin, Charles Kaupp and Don Eshelman. “Tradition is the hallmark of success,” stated the current President, Gary Cummings, “and we shall endeavor to continue upholding the honor of those past.”

FEBB Firms Turns 30: Congratulations to SITA

Southern Independent Testing Agency, located in Lutz, Florida, recently celebrated 30 years of providing honest, experienced independent testing services in the HVAC industry. SITA celebrated this accomplishment with a grand affair for friends, customers and clients at their office. Congratulations to Chuck Kaupp, President; Brian Kaupp, Vice President; and Linda Kaupp, CFO; plus their entire staff and field technicians for this accomplishment!



Why I Became NEBB Certified



NEBB Certified Firms and Certified Professionals have the skills necessary to measure the efficiency of building systems, but also the practical knowledge and communication skills to create practical solutions for business owners. The standards to become a NEBB Certified Firm are the most demanding and rigorous in the industry. NEBB Certified Firms offer highest quality credentials for owners seeking cost savings and efficient building systems.

Not every HVAC contractor can be a NEBB Certified Firm, but more than 600 firms around the globe are. This is the story of three newly certified firms and why they became NEBB Certified.

How I Built My Business with NEBB

Scott Coy, Indoor Environmental Testing

Competing for test and balance work in the state of Florida was hard to do without NEBB certification. For Scott Coy, after 5 years of struggling to get test and balance work, he contacted the Florida Chapter Coordinator for NEBB in 2005 to inquire of the process and the possibilities of becoming a NEBB Certified Firm. Completing the required application, Scott quickly purchased the TAB Home Study Course. Balancing studying college level academics at home in the evenings while continuing to operate a business during the day was a challenge for Scott but after two years of dedication he successfully passed the 33 Chapters of Home Study Course, 2 Proctored academic exams, 3 Proctored practical hands on exams, and was inaugurated as a NEBB Certified Professional in the disciplines of Air and Hydronic Test and Balance on April 11, 2007.



Scott explained his marketing approach as a newly certified firm, “As a newly NEBB Certified Professional, I contacted the Mechanical Engineers in my area to inform them of my certification and my interest in assisting them on any of their jobs. I also contacted most of the Mechanical Contractors in Sarasota to inform them of my accomplishment and newly earned credentials which marked the turning point for my one man company, Indoor Environmental Testing.”

Business began to grow as a NEBB Certified Firm, as Scott explained, “Within only a few short months after receiving my NEBB Certification, business began to boom. I hired three full time employees and within a year of receiving my NEBB certification, my company branched out into commissioning services and our firm became certified in Building System Commissioning in HVAC and Fire Protection.”

And how successful was Scott Coy and IET as a NEBB Certified Firm? As a result of their NEBB certifications in both disciplines of Test and Balance and Building Systems Commissioning, annual sales have increased 206% first year and 574% the second year since becoming a NEBB Certified Firm. Also in this short period of time, IET had grown from a one man operation to a 5 person operation.

For Scott Coy and IET, a contributing factor to a successful business starts with NEBB Certification. Integrity, quality and a profitable business starts with NEBB.

Training Programs & Proven Knowledge

Robin Winton, Winton Test & Balance



Winton Test & Balance, located in Tallahassee, Florida is a full service test and balance company. The firm provides a number of services including building investigations, commissioning, design review and total system balance. Their customers range from the Federal Government to mechanical contractors based in the

Big Bend area (Florida).

The standards to become a NEBB Certified Firm are the most demanding and rigorous in the industry. NEBB Certified Firms offer highest quality credentials for owners seeking cost savings and efficient building systems. For those reasons, that is why Robin decided to pursue his NEBB Certification in Building System Commissioning (HVAC, Plumbing and Fire Protection). As Robin stated, "We decided to become a NEBB Certified Firm because we felt the organization was the most professional and organized test and balance agency."

There are many benefits to becoming NEBB certified. Robin realized one of the benefits of NEBB when it came time to training his new employees, he noted: "NEBB has made training of new employees more efficient and detailed oriented."

Whereas being a NEBB Certified Firm benefited Winton Test & Balance employees, their customers also benefited from the NEBB certification. Ron said "I do not know that my customers understand the importance or extensive work that goes into becoming a NEBB Certified Professional. But they do understand that a NEBB Certified Professional bring a wealth of knowledge to a project, trustworthiness and reliability that a system ~~is~~ performing to the standards that are expected from building owners and designers."

Earning Prestige, Quality Assurance for Customers

Ron Jenkins, Quality Control Systems



For Ron Jenkins, the decision to become NEBB Certified was customer driven; they wanted their customers to know that as a NEBB Certified Firm will deliver a system that is operating at the

most efficient manner. Quality Control Systems, along with being TAB Certified, is a mechanical, electrical and temperature control contractor. QCS primarily serves schools, hospitals and military installations.

According to Ron," Most specifications list either AABC or NEBB, even though we have been TABB certified for many years, TABB just does not carry the same prestige as NEBB."

One of the biggest benefits of becoming a NEBB Certified Firm is providing customers with assurances and integrity. As Ron stated, "The NEBB Quality Assurance Program goes a long way to give our customers the peace of mind that the work performed on their projects is backed by the integrity of NEBB. In addition, with ever increasing energy costs, our customers know that a NEBB Certified Professional will deliver a system that is operating at the most efficient it possibly can."

Building owners, engineers, architects and facility operators know that NEBB stands for rigorous training programs and demonstrated knowledge by firms who are NEBB Certified.

For Ron Jenkins and Quality Control Systems, becoming a NEBB Certified Firm promised quality assurance to their customers and earned their firm greater prestige. That's the NEBB difference.

There are many reasons why firms decide to become NEBB Certified. Whether it is because of training programs, proven knowledge, commitment to quality and integrity, NEBB Certified Firms are the leaders in their marketplace and leading solutions providers for their customers.



Fabric Duct Popularity Driven by Building Performance & Sustainability

By Nick Kaufmann, LEED AP



The innovation of fabric ductwork has steadily captured market share from its metal ductwork counterparts over the past 15 years in nearly every commercial building category from schools and recreation centers to office buildings and other facilities with open architecture ceilings.

As market share now surpasses five percent and steadily heads for 10 percent of the HVAC air distribution business, it's inevitable that a National Environmental Balancing Bureau (NEBB) member without previous experience will be confronted with fabric duct specification for an existing or future building project.

Fabric duct blossomed decades ago in the industrial food processing market where its ability for easy disassembly and multiple launderings made it a sanitary choice over stationary metal counterparts.

In the 1990's fabric duct took a turn toward aesthetics as premium fabrics and streamlined air dispersion designs appealed to the architectural market versus the less aesthetic protrusion of ribs and registers on spiral round metal ductwork.

Milestone Fabric Duct Project

While it has been a solid staple in Europe for decades, a milestone project at the turn of the century, the \$354 million David L. Lawrence Convention Center, Pittsburgh, helped the HVAC industry realize fabric duct had truly arrived as a bona fide commercial building player in ventilation design. Over 300,000 square-feet of "column-less" exhibit space is supplied with conditioned air via 115 foot-long runs of 32 inch-diameter white fabric duct that adds minimum weight to the convention center's unique cable supported sloping roof. Fabric duct's light weight and aesthetics attracted the center's architect team, Rafael Vinoly Architects PC, New York, and architectural partner, HNTB, Kansas City, Mo. Another advantage was a \$250,000 in labor savings versus metal duct for building owner, Pittsburgh's Sports & Exposition Authority.

New Designs Surpass Metal Duct Capabilities

The last five years have seen tremendous vision, innovation and execution of fabric duct designs. The industry is making inroads with different applications such as:

- under floor air distribution that's emerging in office and other occupied building types in both new construction and retrofit applications.
- Laboratory applications where fabric duct diffusers are seen as invaluable in curbing turbulence and balancing air flow between supply outlets and fume hoods.

- New 55-percent recycled fabric (80-percent post industrial/20-percent post consumer) is attracting attention of green commercial buildings with sustainable materials goals.
- Fabric duct can now sport any custom color imaginable and also offers patterns such as galvanized, camo, cork or harvest, not to mention the silk screening of advertising messages or corporate logos and slogans.

LEED Leads to the Future

The green revolution is particularly promising for fabric duct, because some brands now can earn LEED credit on Materials & Resources on MR Credit 4, Recycled Content. Other contributions to a project's LEED credits can come as:

- Improved indoor air quality.
- Reduced material waste from less packaging.
- Less jobsite waste because fabric duct is typically a custom product not requiring the on-site trimming or cutting that's associated with metal ductwork.
- Reduced energy consumption during shipping.
- Lowered construction costs from reduced installation costs and less building structural strength requirements due to the fact fabric duct is 90-percent lighter than metal duct.
- Increased mechanical equipment efficiencies due to better air dispersion.
- Eliminated off-gassing that's associated with metal duct coatings.

Many of these green advantages helped an IGA supermarket in St. Pascal, Quebec, become Canada's first LEED supermarket last year. Owned by Sobey's Inc., a wholly-owned subsidiary of Stellarton, a Nova Scotia based Empire Company Limited, the IGA features solar heating, fabric ductwork, heat recovery, high efficiency compressor rack refrigeration, secondary glycol

loop heat reclamation, and a host of other green technologies. LEED credits were partially attributable because the fabric ductwork is a recycled material, contains no volatile organic compounds (VOC), requires 40 to 60 percent less labor, is 90 percent lighter than metal, and provides the ultimate in indoor air quality (IAQ). Its linear vents, which run the entire length of the duct, disperses air more evenly than conventional metal duct/register systems, thus the air handler run times are shorter. There are no drafts or cold/hot spots associated with conventional metal duct/register systems and generally the IAQ and air comfort is better with fabric ductwork.

Dispelling Fabric Duct Myths

There are several misconceptions about fabric duct: 1) it doesn't need testing and balancing (TAB); 2) it sags when mechanical equipment is idle; and 3) it produces a noisy "pop" when inflating during equipment start-up.

TAB is as critical to fabric duct success as it is with metal duct, however adjustments typically aren't made inside the duct, but rather at the source, i.e. the equipment, plenum or metal connecting duct. The majority of fabric ductwork is factory-engineered specifically for a project in terms of fabric porosity (many designs include 10 to 15 percent of supply air to flow through the fabric for additional evenness), cfm, static pressure and subsequently the sizes and the volume of orifices. It's the TAB contractor's job to assure the proper cfm and static pressure is supplied to the duct.

The aforementioned David L. Lawrence Convention Center air distribution was CAD-designed and factory-engineered with hundreds of patterned perforations running the entire lengths of the ductwork. The perforations range from ½ inch to 1-1/4 inch in diameter with placements depending upon the height of the duct. At the 46-foot level, the holes are largest and are arranged mostly at the bottom of each duct run to maximize air throw in the draft-free air distribution design. The design's success however, depended on the consulting engineer and mechanical contractor providing the specified cfm's to each duct run. Although most air distribution features are built in at the factory level, there can be some adjustments made inside the fabric duct to throttle airflow via an Adjustable Flow Device (AFD), which is zippered into a fabric run and is factory or field adjustable.



It's true that fabric duct does sag when the supply equipment is idle. However, technology improvements such as 3x1 and 4x2 hangers, which employ metal brackets that connect to the duct at the 10, 12 and 2 o'clock or 10, 11, 1 and 2 o'clock positions give any duct run a perpetual near-inflated appearance.

It's also true that ductwork sometimes makes a popping sound at equipment start-up, however the emergence of variable speed drives (VFD) on air handling equipment can slowly ramp up airflow to eliminate this minor issue.

Fabric Duct Innovation in Labs

At the University of Chicago, a researcher, architect and consulting engineer collaborated on fabric duct specifications for three labs in the \$200 million Gordon Center for Integrative Research. The researcher's request for eliminating airflow noise and uneven temperatures throughout the rooms was answered by architect Peter Pogorski, principal, Ellenzweig, Cambridge, Mass., and consulting engineer, Steve Levin, principal, Bard, Rao + Athanas Consulting Engineers (BR+A), Watertown, Mass. Fabric air dispersion was specified for the three labs where the laser-based physics research is conducted such as "Bose Einstein Condensation Reaction"

experimentation. The labs use several runs of 18 inch-diameter cylindrical fabric duct suspended from H-Track suspension systems to minimize sway. The ducts incorporate a factory engineered porosity that allows the supply air to flow through the fabric at an even 25 feet/minute (fpm) velocity compared to intermittent drafts of metal diffusers. The lab also maintains a strict 70°F (±1°F) temperature, because the air is dispersed so evenly and slowly that it mixes with the entire volume of the room. In contrast, the higher velocities and metal duct diffusers generally create down-flow drafts that tend to drop to the floor without mixing well with the surrounding room air.

Aiding Fume Hood Validation and Room Pressurization

While the University of Chicago used the traditional cylindrical approach, the fabric duct industry has since innovated a fabric diffuser designed to replace 2 x 4 foot, 2 x 8 foot or custom sized ceiling diffusers/panels. The design calls for air supply to flow through the fabric, that can be factory engineered for various porosities, feet/minute, and air direction. Besides delivering a high tolerance temperature and airflow, the even air distribution supplied by fabric duct diffusers actually helps to ensure consistent fume hood capture rates—a common challenge facing TAB contractors. Because commonly applied radial flow metal diffusers tend to discharge air with higher discharge velocities, the resulting turbulence may disturb the natural air draw into the sash of nearby fume hoods. This very situation confronted the Lutz Hall lab at the University of Louisville, Louisville, Kentucky. A critical fume hood did

not pass inspections for ANSI/ASHRAE (American National Standards Institute /American Society of Heating Refrigerating, and Air Conditioning Engineers) Standard 110 *Method of Testing for Laboratory Fume Hoods*. The vertical and horizontal turbulent airflow disrupted the uniform draw allowing leakage from the sash of the fume hoods.

To remedy the situation, engineers retained the same 700 cfm per diffuser, but distributed it more evenly with less discharge velocity using a fabric faced diffuser that replaced the metal radial flow. Now instead of turbulence and divergence, the airflows are uniformly based on the shape and porosity of the factory-engineered fabric dispersion panel and is easily drawn into the fume hood. An additional benefit to University of Louisville lab researchers is the fact the airflow is now approximately 10 NC (noise criteria) less with the fabric diffusers, thus providing a quieter working environment.

A general rule of thumb for fume hoods is to minimize turbulent supply airflow and balance the supply to provide good air movement to the bottom and the top of the sash location. This not only generates poor mixing with existing air and circulation dead spots, but also affects the performance of a fume hood, which typically needs a stable room pressurization and airflow into its area. As observed in smoke testing, conventional laminar flow metal diffusers disperse airflow vertically downward. Radial flow provides an airflow that traverses outward across the ceiling until it hits a wall and then travels down a wall. Flat

faced radial flow provides a non-uniform, diverging airflow that when positioned end-to-end, can produce significant turbulent airflow patterns.

The *Labs21 Program*—sponsored by the EPA and the U.S. Department of Energy (DOE)—encourages laboratories to reduce energy consumption. Consequently, labs are reducing linking outdoor air by including a variable-air-volume system to better match supply and exhaust air. As airflow decreases or increases, fabric dispersion provides consistent dispersion characteristics.

A second means of savings is being initiated by fume hood manufacturers to reduce energy consumption with equipment that draws less than the current 100 fpm standard; reducing to 75 and even 50 fpm levels. As velocities decrease, turbulent-causing radial metal diffusers will create more challenges for laboratories seeking ANSI/ASHRAE Standard 110 certification.

Restaurant and Foodservice Applications

Since lab fume hoods and foodservice exhaust hoods share similar air balancing challenges, foodservice operations are looking to fabric diffusers as possible air flow solutions. Case in point is Elk Grove High School, Elk Grove Village, Illinois., which gradually added additional dishwashers, stove/draft

hoods and other exhaust-requiring appliances over several years. This increased the kitchen area's exhaust to approximately 20,000 cfm, without adding to the 12,000 cfm make-up supply air, resulting in a negative air pressure. Without enough supply air to draw from, the added exhaust systems began drawing air from nearby rooms, which unfortunately in EGHS's case, included the shop department's automobile repair learning center. Consequently, the exhaust systems were drawing vehicle emissions through the nearby hallways and into the kitchen while limiting the auto shop area's use of garage doors and other activities.

The school hired CS2 Design Group, an Elk Grove Village based consulting engineering firm that specializes in mechanical and electrical engineering design for educational institutions. CS2's Principal, Steven Schafer, P.E., LEED® AP and Peter Kaczor, mechanical engineer, discovered the negative pressure during a study that also revealed little retrofit flexibility in the cramped space above the 1,500 square-foot kitchen's ceiling. Even with proper air balance in the space, the existing conventional 2x4-foot metal ceiling diffusers presented too much draft and turbulence for proper exhaust hood performance. Typically, engineers would have specified critical environment metal diffusers to provide an acceptable turbulence and velocity of make-up air that is slow enough for the cooking draft hoods and other exhaust vents to draw air properly. Unfortunately the metal diffuser profiles available to the HVAC industry surpassed the available four-inch space between the ceiling and

joists. CS2 specified all-fabric surround flow diffusers with a flat fabric back panel and a flexible fabric connection that eased connections within the restricted space between the joists and suspended ceiling. The solution provided the very low 70 to 95 fpm specifications and satisfied very narrow temperature tolerances. Testing and balancing of the system was performed by subcontractor, Independent Test & Balance, Warrenville, Ill. CS2's fabric diffuser specification, along with a 100 percent make-up air rooftop unit packaged with a 92 percent efficient modulating gas valve and variable frequency drive (VFD), greatly improved efficiency over the aged and undersized original unit it replaced.

Fabric duct is no longer a trend, but a bona fide product strategy within the HVAC industry that offers air distribution designers an option that many times offers value-engineering while simultaneously improving aesthetics, performance and function. NEBB firms will undoubtedly have contact with a fabric duct project sometime in the near future and when they do, the newly learned fundamentals laid out in this article should help them in the design, installation and TAB.

Nick Kaufmann, LEED AP, is manager of sales and product engineering for the DuctSox Corp. (www.ductsox.com), a Dubuque, Iowa-based manufacturer of fabric ductwork/accessories that markets its products globally. Kaufmann is an 18-year veteran of the HVAC industry. He can be reached at nkaufmann@ductsox.com or 1-866-DUCTSOX.



The Power of Partnership

By John Iwanski

The start of the second decade of the 21st Century has most certainly been an interesting one for the HVACR trade. Talk of climate-change and cap-and-trade legislation; regional efficiency standards for equipment; rumors of stimulus funding revolving around the construction and retrofit industries; and greater customer awareness about energy efficiency and all things “green” are changing the way the industry is perceived by others—and itself.

Our industry supplies a vital need to society, providing comfort and critical needs to almost every person and service. From hospitals, high-rises and supermarkets to community centers and our own homes, the principles of refrigeration—the conditioning of air, if you will—are crucial to society’s operation and advancement. That is why this industry, its associations, and the members that drive those organizations, are so important for its continued growth and success. As political analyst and commentator Mark Shields has said on more than one occasion, “There is always strength in numbers. The more individuals or organizations you can rally to your cause, the better.”

Focused on education

Since 1933, the Refrigeration Service Engineers Society (RSES) has been a leader in training and education for professional HVACR technicians and contractors. As the development of the trade—and the need for skilled professionals to service a constantly evolving array of equipment—grew, it became paramount to collect, distribute, and exchange ideas and information. It was on this premise that RSES was founded.

And while the scope and range of the industry has grown exponentially since then, RSES remains dedicated to delivering technical information to HVACR professionals under a

single vision and mission: To be the definitive industry leader in all segments of the HVACR industry by providing superior educational training. In that vein, the organization seeks to provide opportunities for enhanced technical competence by offering comprehensive, cutting-edge education and certification to its 15,000 Members in more than 50 countries, as well as the HVACR industry at large.

A significant portion of that effort revolves around advancing the professionalism and proficiency of the industry through alliances with other HVACR associations. From technicians involved in the installation and servicing of equipment; contractors that range from independent local operators to large-scale multi-state entities; engineers; educators; and students; to industry professionals passionate about the trade, RSES Members are embedded in every facet of HVACR.

And that focus on professional advancement is not solely aimed at RSES membership. Indeed, RSES constantly seeks to engage other organizations, industry partners and practitioners in dialogue on how to advance the industry. The Society is always looking for other like-minded individuals to share knowledge, experiences and information with, whether through seminars, educational workshops, facility tours or other types of programming.

Growth opportunities

Never has there been a more opportune time to develop stronger bonds between the TAB and HVACR service professional than the present. As more states develop codes requiring energy-efficient equipment that operates at its *design specifications*, it is imperative that these two professional groups team to ensure that systems are operating at their peak efficiency.

As an example, in a direct-expansion dedicated outdoor air system (DX-DOAS), excessive air flow can create improper building pressurization. During startup, balancing airflow is crucial. However, in many instances, a TAB professional may not be available, and an HVACR technician may use a Magnehelic gauge or inclined manometer to measure coil pressure differentials. This can help make sure the system is operating *near* its optimum design parameters. However, a contractor or technician who is educated and certified in TAB will need to make those final adjustments.

By combining the expertise of both professions, both

the end-user and society at large benefit. In ensuring that a system is both properly installed *and* balanced, the customer achieves the stated efficiency promised; they are able to work/live in a comfortable environment; and as a result less energy is used to achieve that end—putting more power back into the grid. The question becomes, *how* can this type of efficiency be attained?

While there is no simple answer, partnership offers tremendous opportunities to solve these types of issues. Associations that partner together can use their collective strengths to find solutions that, individually, might take much longer—if at all—to attain. That is one of the core reasons why RSES and NEBB have taken a much more collaborative approach in recent months. Maximizing the use of each group's resources allows for faster resolutions to problems, helps speed the development of guidelines useful to each group's membership (and the trade as a whole) and provides new avenues of business/educational development.

Why NEBB needs RSES

NEBB-certified professionals are involved in the commissioning and retrocommissioning of buildings, measuring sound and vibration, fume-hood testing, cleanroom testing—the list could go on, and the number of applications is

nearly limitless. But in addition to understanding how to measure the efficiency of building systems and having the knowledge to suggest/generate intelligent solutions for customers, those professionals must also have the assurance that once a suggestion is made, the installation *and* maintenance of the system and equipment will be carried out per their recommendations. It is only then that system owners will truly achieve the cost-savings and efficiency that they have paid for.

For those goals to be realized, competent, well-trained HVACR service technicians and contractors must understand the design parameters of the system—and the proper procedures required to attain them. That is why educated, well-trained and updated service professionals are vital to the industry—their knowledge base and commitment to being the best will ensure that end-users get the utmost from their systems.

Equally important is the need for information to be exchanged between those commissioning a system and those servicing it. If HVACR technicians and contractors can share some of the problems they encounter when servicing a system with TAB professionals, that knowledge may lead to improved system design or retrocommissioning/retrofit recommendations.

Why RSES needs NEBB

As stated earlier, HVACR techs and contractors can only properly install equipment and provide maximum comfort if they know the design parameters of the system. A well-trained technician who understands those requirements can then supply a quality

installation—which in turn minimizes callbacks, maximizes system efficiency and raises customer satisfaction. It's a win-win across the board for the industry.

As in the aforementioned DX-DOAS example, while a technician can certainly perform efficiency tests to see that equipment is moving air properly, having a system certified by a TAB professional *in addition* to the installation work provided by a qualified technician will ensure the customer gets the system they paid for.

Contractors and technicians today also find themselves faced with projects that incorporate building automation; complex controls; integrated systems; remote monitoring; and much more. These increasingly advanced systems require careful calibration. Understanding how these systems are designed and certified will ensure that they in turn are installed and serviced properly.

Power in Partnering

For these reasons (among others), RSES and NEBB have reached an agreement to jointly develop a publication, the "Refrigeration System Commissioning Guideline."

As RSES Executive Vice President Mark Lowry has stated, "The results of this joint venture are a more defined process for the commissioning provider, and a more efficient refrigeration system that contributes to the sustainability of the building it serves. RSES is proud to work



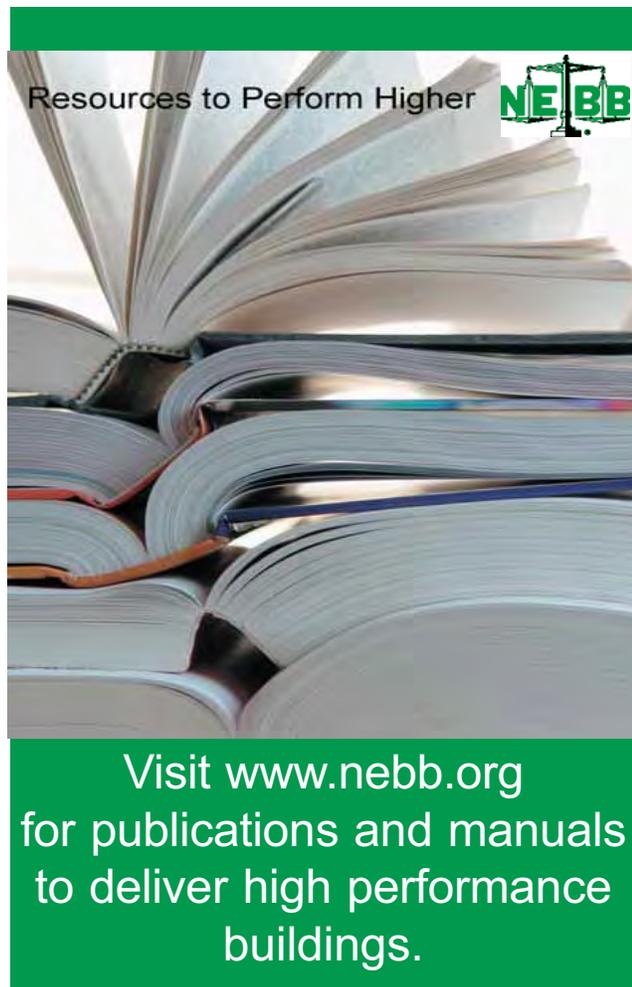
with NEBB in this effort to raise the bar for HVACR system performance.”

Having such a co-branded guideline will define the commissioning process for HVAC refrigeration systems, such as package units, split DX systems, and low- and medium-temperature refrigeration systems. It also will include an overview of the commissioning process, required technical data, testing protocols, and commissioning check sheets and forms. Such a guideline will help guide a commissioning provider through the correct commissioning process for a refrigeration system. More importantly, it will also allow them to see exactly what areas of importance must be explained, noted and highlighted to the HVACR service professional to ensure both a proper installation of the system and what steps are need to maintain that system at peak operating efficiency.

Other partnership opportunities, such as exchanging ideas through seminars, conferences and training materials, also offer tremendous potential to expand knowledge and exchange information. By sharing ideas and lessons learned, we can better understand the technical and professional focuses of our respective professional groups—and raise the collective “quality bar” for the industry at large in the process.

For a long time, much of the HVACR industry has operated in “silos,” with each group focused primarily on its own area of expertise. But as system integration and technology bring the trade more closely together than ever before—and new tax-break-related financial incentives and legislative decisions drive that process at an accelerating pace—finding synergies among association partners will be critical. Those partnerships will allow groups to bring the best they have to offer to one another, complementing each groups’ strengths and developing a stronger, more cohesive trade that provides comfort and value to the end user.

John Iwanski is the Director of Publishing for the Refrigeration Service Engineers Society. Involved in trade publishing for more than 10 years, he is focused on helping RSES and the HVACR industry develop new content and delivery vehicles that allow industry professionals to do their jobs safely, efficiently and effectively. He can be reached via e-mail at jiwanski@rses.org.



Resources to Perform Higher 

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Duty to Defend by Insurance Companies

Insurance companies are not exactly your friend as a small business owner. All of you reading this are facing rising health care costs for employees and increasing premiums for both your general liability (GL) coverage and workers compensation coverage for your business.

Unfortunately, the ongoing battle between you the small business owner and the insurance company does not end with rising costs to you as the business owner. In fact, when embroiled in a construction defect lawsuit, the battle with your insurer has only just begun.

As we all know, construction defect litigation has exploded over the past decade and has cost insurance companies billions of dollars over that period in jury verdicts, settlements and defense costs. So what do the insurance companies do to help them avoid that risk?

One effective way that insurance carriers deal with these costs is to rewrite the insurance policy or contract to better serve the insurance company.

The insurance policy is a contract. It is no different than the contracts you sign with the building owner or general contractor when you are awarded a contract to balance the HVAC in a new building. For those of you who have read the terms and conditions on your latest and greatest insurance policy, I applaud you and sympathize with you. Without going through all

the exclusions imbedded in the voluminous policy, we will focus on just one—the “known loss” exclusion.



Let's say your GL carrier increased your premiums by 25% last year and you decide to switch from Insurer A to Insurer B on June 30, 2009. So your coverage is with Insurer A from June 30, 2008 to June 30, 2009 and with Insurer B from July 1, 2009 to the present time. On April 1, 2010, you are sued in a construction defect lawsuit related to a building with a faulty HVAC system. Mold and high humidity have plagued the building since the certificate of substantial completion was issued on May 15, 2009. In fact, you as the TAB contractor, were called out numerous times before substantial completion and afterward by the mechanical contractor, owner, general contractor in a vain attempt to balance the ill fated HVAC system. In other words, you were on notice of the defect when Insurer B started to cover you.

Will your insurance companies pay to settle this case?

In order to answer that question, let us look at the first case that dealt with this issue. More than a decade ago, the California Supreme Court decided a case entitled *Montrose Chemical Corporation of California vs. Admiral Insurance Company*. Montrose had manufactured the pesticide commonly called DDT at one of its sites in California. Montrose had manufactured this chemical from 1947 until the time it went out of business in 1982. It was determined that seven insurance companies provided policies for Montrose during the period of time DDT was manufactured, ending with Admiral Insurance



Company. Admiral's policies provided coverage between 1982 and 1986. Law suits were filed against Montrose for damage and injury from the disposal of hazardous or toxic wastes at a number of sites in California. Although the other six carriers provided defense under reservation of rights, Admiral denied coverage and defense contending that its policy did not have to respond—because the coverage trigger resulting in loss and injury did not occur during its policy periods—and that the actions were uninsurable as losses-in-progress existing prior to the inception of Admiral's policies. The California appeals court declared that the property damage was a continuous, progressive deterioration that was still in progress throughout the period covered by Admiral's policies, thus triggering coverage. It further decided that the wording in the CGL policy was not strong enough to preclude such losses. It also decided that the loss-in-progress rule did not preclude coverage in this case. Finally, it ruled that the expected or intended exclusion did not bar coverage in a progressive damage situation. Over the last few years, the consequences of this decision have been debated. Decisions in other states have supported or complemented the California decision. So while it may not have been the intent of the original drafters of the CGL verbiage in use to provide coverage for known loss resulting from the occurrence of progressive or continuous exposure, courts have ruled that such coverage exists in the modern CGL.

So in our example, if there was humidity and mold damage to the building due to something the air balancer failed to do in balancing the HVAC system during the 2008-09 policy period, an argument might be made by your insurance carrier who placed coverage for you in 2010 that it was a "known loss". Based on the *Montrose* decision, however, carriers typically take a soft approach to a known loss exclusion except when dealing with multi million dollar damages for situations dealing with ongoing losses that the insured knew about, tried to correct and did not.

David Funderburk has been a trial lawyer since 1992, with extensive experience in construction litigation, insurance issues, personal injury and toxic tort defense. He has extensive experience in trial and arbitration experience in construction and property damage cases.



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HVAC/R contractors embrace low-cost video inspection systems

John Javetski, Contributing Technical Writer

Typically, problems with heating, ventilation, air-conditioning and refrigeration (HVAC/R) systems defy diagnosis. Because the key components (compressors, heat exchangers, fans, etc.) and interconnecting pipes and ducts of most HVAC/R systems are hidden from view—behind walls, or in hard-to-access crawl spaces. Consequently, it's difficult or impossible for a contractor or technician to quickly determine why a system failed or is performing poorly.

In many cases, disassembling some or all of the system—often, requiring the destruction of walls or ceilings to do so—is a necessary step of a diagnostic or preventive maintenance inspection. But even when it's a last resort, disassembling and reassembling a system and repairing or replacing drywall takes considerable time. Time is money, both to contractors and their customers.

Fortunately, there's a new, elegant way to reduce the traditionally high cost of pinpointing hidden problems, in the form of a new breed of inexpensive (starting at less than \$200) yet powerful video inspection systems that enable HVAC/R contractors and techs to “see through” walls, floors, or ceilings, thus eliminating the need

to always disassemble systems to isolate the cause of their failure or poor performance.

The heart of any video inspection system suitable for HVAC/R maintenance is the camera scope. The camera scope utilizes a probe that is thin enough to fit through a small aperture in the equipment or in a wall, long enough (optionally, up to 98 feet) to reach otherwise inaccessible locations, and flexible enough to allow a technician to repeatedly reposition its “business end” and hold it in place.

At the business end there is a tiny color video camera with multiple LED lights (insulated from water, oil and dust) to illuminate the area of interest; at the other end of the probe is the camera scope with a color LCD monitor like that found on digital cameras and camcorders.



The features on the camera scope systems progress in sophistication as the price of the system increases. The least expensive camera scopes have a color monitor and are for real-time imaging. More advanced models have larger LCD screens and internal memory cards. They can record and store still images, video and sound. And, they have the ability to download the files to

a MAC or PC or view them on an external monitor. There are even wireless systems which allow a technician to operate the probe remotely, from a distance of up to 100 feet—making inspections of inaccessible areas a lot easier.

The range of HVAC/R maintenance tasks that a video inspection system can help contractors perform more quickly and safely seems to be limited only by imagination. They include:

- Checking heat exchanger/condenser tubes and fan belts and blades for breaks and cracks.
- Inspecting the interior of ducts and pipes. Among the common duct and pipe problems that can be pinpointed are leaks, areas of corrosion or dust buildup, dry rot, plugged drainage holes, and the presence of pests (termites) and foreign objects. Leaky ducts are particularly insidious because they show





no symptoms but nonetheless force HVACR systems to work harder than necessary, raising their end users' energy costs.

- Checking for mold, which is increasingly problematic in newer buildings that are so airtight they are excellent moisture traps. Moisture, whether from rain or condensate from a poorly insulated pipe, trapped beneath or between surfaces provides an ideal environment for the growth of mold. Pipe chases and utility tunnels are especially susceptible to hidden mold growth, as are condensate drain pans inside air-handling units, porous thermal or acoustic liners inside ductwork, and roofing materials above ceiling tiles.
- Detecting corrosion on the bottom of LP gas tanks.
- Reading the part numbers, serial numbers and last inspection dates stamped on the hard-to-reach bottoms of components such as oil burners.
- Inspecting furnaces and heater burners and injectors.
- Locating existing electrical wiring, water pipes, and

structures before an installation begins.

These are but a few examples, and again, applications are limitless.

In addition, according to Mike Buscemi, Johnstone Supply in Farmingdale, N.Y., several of his contractor customers now routinely use a Seeker system to document their installations from start to finish. Videos and images not only prove to customers (and regulators) that a job was done right; they can also serve as evidence of the need for further work. The idea is similar to a dentist using x-rays to show their patients tooth decay and other problems that need addressing.

Problems with HVACR systems can be diagnosed and remedies can be determined with video inspection systems.

For more information, please contact Peter Harper, VP Strategic Marketing & Brand Development, General Tools & Instruments, 80 White St., New York, NY 10013, Tel. 800-697-8665 ext 267 or p.harper@generaltools.com





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