

The NEBB Professional

2017 – Quarter 1

BET
TAB
BSC

CPT

SM

RCx-EB

NEBB

FHT

VM

- **COVER STORY:**
Ensuring a Greener Tomorrow:
NEBB's Decades-Long Commitment
to Carbon Footprint Reduction
- NEBB's Young Professionals Network:
A Bold Group Forging into the Future
- 2017 Annual Conference
- 2017 Spring and Fall Seminar Schedule
- How to Attract Millennial Workers in
Two Simple Steps
- NEBB Certified Firms, Professionals
and Technicians
- Improved Efficiency in Laboratory
Ventilation Systems



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8575 Grovemont Circle, Gaithersburg, MD 20877

Tel: 301.977.3698 | Email: communications@nebb.org

Elinore Tibbetts, Editor

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President's Message: NEBB Training and Education Meets Changing Industry Needs

By: Jim Kelleher

NEBB has been busy working for you in the areas of standards development, certifications, and our ongoing schedule of training and education seminars. Staff and volunteers understand the need to provide a solid foundation with our existing programs. At the same time we maintain an outward looking perspective so important to the changing needs in our industry. NEBB has made improvements in its infrastructure through staffing and physical upgrades to the main office, a series of well overdue activities. Our technology support is improved through the roll out of Certelligence, the programs data base you now use to access certifications and other NEBB products. I hope this message of improvement is well received by our stake holders; NEBB is here to provide what you need in the building systems technology and testing industry.

We have great news to announce from our Standards Council – NEBB has an American National Standards Institute (ANSI) Standard, *NEBB S120-2016 Technical Retro-Commissioning of Existing Buildings Standard*. This represents the first NEBB standard developed and approved through ANSI's rigorous requirements. Our Standards Council and its sub-committee for this standard put forth an outstanding effort and should be applauded. Please look to the NEBB website in the near future for information on how to obtain your copy of this very useful resource.

NEBB has submitted public notice regarding developing two additional ANSI Standards projects commencing this year, one on compounding pharmacies, and the other on cleanroom performance testing. Standards developed in accordance with the ANSI administrative practices provide for industry-wide participation that offers a level of recognition unique and necessary for some of NEBB's programs. All of NEBB's standards are developed with the highest level of technical support and provide excellent supporting materials for the numerous certifications, industry practices, and training activities within the NEBB programs.

NEBB's Certification Board (CB) continues to run our certification programs at the high level demanded by specifiers and customers alike. They maintain an ongoing review cycle that ensures our examinations and certification programs are always meeting expectations. We want to make sure that when our Certificants present a NEBB certification in their credentials that those on the receiving end know and understand it represents an in-depth meaningful program. NEBB's best-practices model has dramatically improved the quality and content of all our certification programs. The development and review procedures utilized by the CB, whether on an ANSI-accredited program or not, ensure our highest standards are in place and recognized by all. As of this writing, CxPP is one step closer to being an ANSI accredited commissioning certification offered by NEBB; we will keep you posted on the progress.

A quick trip to the NEBB.org homepage will provide you with a listing of the training and education seminars we have in place for the remainder of the 2017 calendar year. Staff and volunteers work together to plan events and locations with emphasis on allowing as much notice as practical. Two events will be held at the annual conference in Orlando, they consist of a two-day BET seminar, and a one-day sound technician seminar. Make sure to keep these in mind when you book your travel and accommodations for the conference.

Speaking of Orlando, our conference programing has gone very well; we have a great list of speakers and topics lined up – sure to please. The preliminary program is available via the conference link on the website and the agenda is highlighted in this edition of *The NEBB Professional*. I hope this will remind those of you who have not already registered to do so now, and those who already have registered to start reviewing the agenda and plan which sessions to attend and activities to look forward to. As you have heard mentioned previously, plan on bringing help since you will find it hard to decide where to be with three full session tracks running concurrently.

In addition to the technical presentations we have a large contingent of exhibitors and sponsors who take this opportunity to meet with and work with NEBB Professionals to demonstrate and improve their products. I hope everyone uses this valuable opportunity to meet with each and every one of them; I know from first-hand experience this becomes a professional base to draw from when the need arises.

Now is the time to consider some of the many other activities to do while you are in Orlando. There is so much to do within easy walking distance at Disney Springs that you won't even need transportation. But for those who want to see attractions off-site the hotel will be more than accommodating to assist in this matter. Take the opportunity to spend a couple extra days, but book the hotel soon, you want to make sure you get the dates and room you need.

NEBB is in for another great year. Staff, volunteers, and our industry partners are working tirelessly to maintain this the great organization we all know it to be, and I am glad to have you as part of it.

Thank you for being a part of NEBB, and see you soon in Orlando!

Dwyer.

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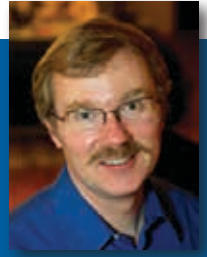


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Ensuring a Greener Tomorrow: NEBB's Decades-Long Commitment to Carbon Footprint Reduction



Todd Larson | ArchiText

Since its founding in 1971, NEBB has been committed wholeheartedly to reducing the carbon footprint in buildings old and new through its international certification standards for preparing heating, ventilating and air-conditioning (HVAC) systems to operate at their highest level of efficiency, hence at their lowest threshold for energy consumption and emission of carbon compounds such as CO₂.



Eric T. Jenison

"NEBB-Certified Firms help reduce the carbon footprint in buildings by providing TAB and Whole Building Commissioning services so they operate as designed and or required plus efficiently, because the less power a facility has to use, the less carbon it generates," said past NEBB president Eric T. Jenison. "They do this by manipulating airflows throughout HVAC systems and allow systems with chilled water plants to operate as designed and or required and ef-

ficiently. This is how NEBB-Certified Firms can help reduce a building's energy costs."

To support the more than 600 NEBB-Certified Firms worldwide in accomplishing this goal, the organization offers them certification in eight different disciplines:

1. Building Enclosure Testing (BET), which includes testing for air leakage and building air-tightness;
2. Building System Commissioning (BSC), the verification of the correct installation of a building's mechanical (HVAC) systems into a new construction project according to its contract document's specifications, as well as the operational efficiency of those systems according to the requirements of their design;
3. Cleanroom Performance Testing (CPT), the verification that the environmental state of a cleanroom facility meets established air-quality standards while maintaining the environment as specified by facility protocols;
4. Fume Hood Performance Testing (FHT), the verification of the effective operation of fume hoods in hospitals, laboratories and educational facilities;
5. Retro-Commissioning of Existing Buildings (RCx-EB), the correction and verification of the operational efficiency of existing mechanical (HVAC) systems in an existing building so they can meet its standards of energy and water performance as well as occupant comfort and productivity;
6. Sound Measurement (SM), the verification that sounds emitted from energy systems are at acceptable decibel levels to preclude noise pollution or other sound conditions injurious to hearing;
7. Vibration Measurement (VM), the use of vibration meters, testers and/or sensors to measure the frequencies of vibrations and oscillations in mechanical systems as possible signs of energy overuse; and



8. Testing, Adjusting & Balancing (TAB) of a building's mechanical utility systems so they operate at maximum efficiency without expanding the carbon footprint unnecessarily.



Jim Kelleher

costs are ultimately carbon footprint costs.”



Jim Whorton

“Often, especially on retro-commissioning projects, the requirements of the facilities have changed, but the building systems are still operating to meet the original operation. We use tools, such as the *NEBB Handbook for Energy & Water Calculations*, which allow us to show owners and building operators the savings associated with each type of conservation measure.”

For that purpose, the Handbook offers standardized formulas by which NEBB-Certified systems specialists can estimate current energy and water usage in existing systems and calculate the extent to which they can be reduced without compromising a building's utility requirements. The publication also includes a CD containing an energy-calculating Excel workbook that estimates savings on energy in more than 20 HVAC and lighting situations.

“Many times our findings lead to corrective actions which may increase energy usage to meet the facility requirements,” said Kelleher. “These measures also provide other savings related to employee comfort, reduced water and air infiltration due to building pressure, better lighting, and temperature control.”

Through the retro-commissioning process, a NEBB-Certified Firm identifies a facility's energy requirement changes and adjusts the system operation accordingly to meet those requirements while cutting energy waste. “Usually, these changes result in the reduction of the building's carbon

footprint,” said Whorton. His firm accomplishes this through such means as recommendation of variable frequency drive on pumping systems with closed discharge valves verifying ductwork is properly sealed to minimize leakage, and making sure pipe and duct sizes are appropriate for the volume of airflow required to pass through them. Adjustments can also include:

- reduction of static pressure set points on air systems;
- reduction of differential set points on hydronic systems;
- reduction of outside airflow;
- calibration of sensors;
- execution of sequence changes, e.g., supply temperature reset or duct static pressure reset; and
- implementation of occupancy schedules so a system's morning warm-up or cool-down is in sync with occupants' arrival for work, thereby meeting heating or air-conditioning needs without going “full blast” all day.

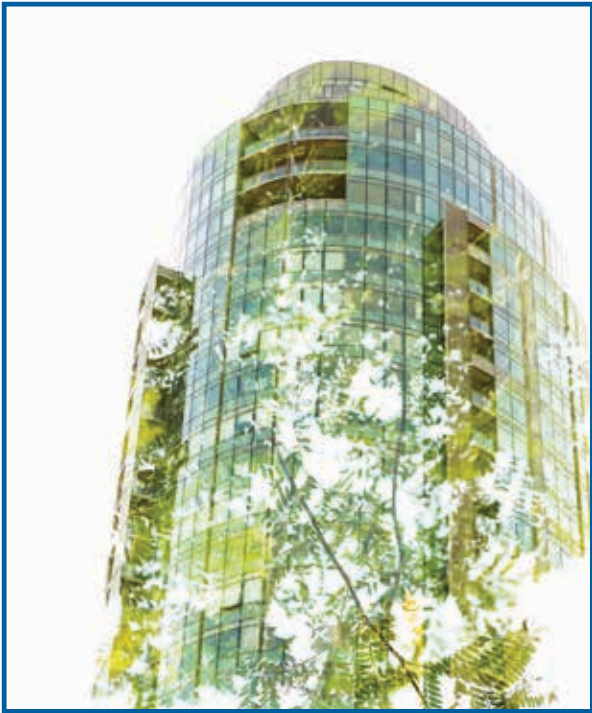


Jon Sheppard

Occupancy schedules can be especially strong energy savers. For example, a 6 a.m.-6 p.m. occupancy schedule that Atlantic Testing of Powhatan, Va., retrofit into a Fort Lee office building's HVAC system reduced its utility costs by 40 percent, according to firm president and NEBB board member Jon Sheppard.

Meanwhile, in Missouri, Whorton counts school kitchens among ViroCon's most significant successes at accomplishing the company's dual goals of improving energy efficiency and reducing the carbon footprint, in a win-win situation for both the client and the environment. “In a school district's central kitchen, where 20,000 meals are prepared daily, the gas heaters in the makeup air to the kitchen hoods were turned off,” he said. “This resulted in the staff not using the hoods to ventilate the kitchen for years. Because the heat, steam and grease were not exhausted from the facility, architectural damage occurred, and the employees were uncomfortable. Finding and correcting this was a major benefit for the facility whose system had not previously been operating to meet the facility's needs.”

Other beneficiaries of NEBB's system efficiency standards are hospitals and other healthcare facilities. “We routinely test, adjust and balance air systems in all critical rooms and areas in healthcare facilities such as hospitals and recertify them on an annual or semiannual basis to verify that their design requirements for patient protection are maintained at all times,” said Jenison, CEO of Total Dynamic Balance, Inc., a NEBB-Certified Firm based in Deerfield Beach, Fla. “It gives me a lot of comfort knowing that someone who goes into any critical room or area with specific pressurization require-



ments will be in an environment that provides the best case for reduced infection opportunities.”

Monitoring the entry of outdoor air into a hospital to ensure it does not overtax the HVAC system is another major component of Total Dynamic Balance’s standards, particularly when the humidity reaches 90 percent in South Florida’s torrid tropical climate. This is where the firm’s Air and Hydronic TAB discipline comes into play. “The HVAC industry uses water and glycol systems to provide cooling capabilities for operating the equipment that provides the air conditioning system, so we do balancing on those systems and adjust them so they work for optimum performance,” said Jenison. “We do it with the balancing devices installed within the system—pumps driven by motors, motors controlled by variable frequency drives—and we set those drives to operate the motors at the most efficient system set points.”

Also key to air and water quality management is building enclosure testing (BET), which goes beyond reduction of water and air leakage, hence carbon compound release, to optimize a structure’s overall energy performance by reducing the burden on its systems. “BET is a NEBB procedural standard for certification built around the concept of providing a tighter building so the controlled environment inside can be adequately maintained with minimal influence from the outside,” said Kelleher. “So BET ensures that the wall/roof construction, glazing, doors and other envelope variables are properly constructed so the HVAC and other support systems aren’t trying to compensate for poor construction to maintain a comfortable environment inside the building.”

Checking the integrity of the air barrier of a facility for the sake of a building envelope’s air-tightness and insulation effectiveness is essential to BET. “We explore where the envelope encompasses the building, where the systems tie together among the walls, ceiling and floor, and how tight the building envelope is, and we determine how much leakage is present per square footage there is of air barrier,” said Sheppard. To determine an air barrier’s level of leakage, “we install fans in windows and doorways, and we may pressurize the building to 75 pascals to monitor how much airflow is running through the building, so we can determine how much an air barrier leaks (X amount of cubic feet per minute).”

Another facet of BET NEBB-Certified Firms practice is thermography, or the examination of heat distribution in a building. Here, thermal cameras are used to take thermal images to determine how efficiently a building is holding heat so lost heat can be mitigated and the heat can be distributed more evenly throughout the space in a way that reduces heating costs. The latter is often achieved through the testing, adjusting and balancing of variable air volume (VAV) systems, which mechanical engineers design to zone designated areas of a room or workplace for fixed temperatures and pressures of heated or conditioned air, as a utility cost-reduction measure.

“We calibrate and balance individual VAVs and monitor where VAVs operate, and let systems slow down to the lowest possible speed at which it can still maintain design flows—say, 45 Hz rather than 60 Hz—so it’s not consuming more energy than it has to,” said Sheppard.

“Static pressure optimization is another method by which we determine the correct operating pressure for a VAV system, which can be correlated to a smaller carbon footprint,” added Kelleher. “Any way we can put a variable in a system so it responds to the demands of a built environment as it is operating makes it operate more efficiently. Systems are designed for full-load or maximum-load condition. By putting a variable drive in, you can operate systems most efficiently based on the demand. This is analogous to a dimmer switch: if you don’t need as much light in a room, you can turn your switch down to as much light as you need.”

Vibration measurement, though less directly related to carbon footprint reduction, can make a difference in that regard. “If equipment is not operating within an acceptable vibration level, it potentially could use more energy, hence emit a bigger carbon footprint,” said Jenison. “By validating that HVAC equipment is operating within tolerable vibration limits, it allows the equipment to run efficiently. The more efficient it is, the less electricity it needs to operate, hence a smaller footprint.”

Also integral to NEBB’s commitment to carbon footprint reduction is its review of the standards of each discipline every three years. In addition NEBB-Certified Firms, Professionals

and Technicians must recertify every two years so they can stay abreast of the latest advances in systems construction, upgrade, and maintenance.

Of course, concurrent with this is the commitment of NEBB-Certified Firms to revisiting their clients' systems every few years to make sure their energy efficiency remains up to par and that they are in sync with technological advancements that have occurred since their last checkup. "We routinely evaluate systems for modifications and either controls or equipment to enable them to operate more efficiently, and we provide a periodic review of building operations," said Kelleher. "Through these services we help our customers achieve better operating systems, lower energy costs, and smaller carbon footprints."

Much like the way NEBB conducts a triennial assessment of their standards to ensure they remain current and relevant, a building's entire environment and envelope should also receive regular assessments as ongoing innovations can help further improve an already well-performing building. This approach takes into account the ongoing integration of clean energy systems—photovoltaic solar panels, wind turbines, and triple-glazed thermal windows—into a building's energy infrastructure, a practice NEBB has supported from the beginning. "We do commissioning and minor tests and balances for renewable energy systems such as solar panels on the roof for generating hot water, and we verify the performance of equipment during the commissioning process," said Jenison. "In my company's headquarters we have light sensors and the most energy-efficient light bulbs available. We actually do what we talk about—we walk the walk."

Two ways NEBB has recently encouraged the mainstream commercial sector to adapt its energy-efficiency standards on a national level is to ally itself with the American National Standards Institute (ANSI) and the U.S. Department of Energy (DOE). These relationships aid NEBB in upgrading its certification programs so they tie into the standards set by those institutions and broaden carbon footprint reduction options for NEBB-Certified Firms' clients.



"We have most recently become an ANSI Developer, which sets a high bar for writing a standard," said Kelleher. "The first standard we chose for that process is technical retro-commissioning. It provides a systematic set of procedures for NEBB-Certified Firms to follow to guide the customer through retro-commissioning a building for improved operability, comfort, etc. This differs from our new building systems commission procedural standard, which primarily revolves around new construction and renovation and the latter stages of performance verification for renovations and new building projects.

By NEBB having two commissioning standards, we give our firm affiliates opportunities to present two options to their customers, ensuring the most appropriate procedural standard is utilized for their specific situation. One is building systems commissioning, a new building construction and renovation standard. The other is technical retro-commissioning, which allows a direct relationship with the customer on renovation revolving around commissioning their existing systems to make them more energy efficient, reduce energy and maintenance costs, and reduce the carbon footprint in some cases."

In 2015, NEBB launched its Commissioning Process Certified Professional Program (Cx-PC) to align itself with the latest version of the Better Buildings Workforce Guidelines (BBWG), the DOE's criteria for the accreditation of energy efficiency training and certification programs for the construction and maintenance of energy systems in commercial buildings. Cx-PC has thus achieved official recognition from the DOE. This advanced certification enables NEBB-Certified Firms to use new BBWG-backed energy technologies and strategies in their efforts to bring commercial buildings closer to zero carbon footprint emissions.

Despite the marked expansion of NEBB's environmental influence into commercial sectors throughout the nation and the world within the last ten years, NEBB is no enviro-cop.

It seeks to engage building owners in the process of carbon footprint reduction on a voluntary basis by explaining the benefits of reduced energy consumption for the well-being of the building's occupants and the savings on utility bills.

"Our goal is to meet our customers' energy efficiency needs, so we are not a pusher of an issue. We are a facilitator to those ends," said Kelleher. "So when a customer wants to reduce their carbon footprint by engaging with a NEBB-Certified Firm, they have a means to facilitate their goals. Once they choose to hire us, we can help them get their goals met." ■



MY MOST VALUABLE PROFESSIONAL RESOURCE

I relocated to Dallas in 1986 in search of new opportunities, and having been in commercial real estate for 30 years now, I've seen a lot of changes. In the past, we had larger staffs and a lot of support—now, it's do more with less. That's why the **BOMA International Annual Conference** is so important for my work. It's the one place where I learn about all the latest trends and issues, and it's where I hear about all of the industry's innovative, exciting breakthroughs. There's absolutely no way I'd miss it. My advice for all CRE professionals:

Find a way to go.

*Mike Pugh, RPA
General Manager, CBRE | Asset Services*

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NEBB's Young Professionals Network: A Bold Group Forging into the Future

Cynthia Hereth | NEBB Director of Certification



A group of five intrepid guys answered the call issued forth in October 2016 for interested Certificants and Candidates to help form a group within the NEBB culture that would cater to its up-and-coming “young professionals.”

The respondents were Jonathen Lloyd, TAB CP; Dane Richards, BET CP, CxPP; Jacob Altland, TAB CT Candidate; Tyler Hall, BET CP, CxPP; and Nick Muscolino, TAB CP and they comprise the Young Professionals Network (YPN) Core Group, working with NEBB past president Jean-Paul Leblanc to form the foundation for NEBB's YPN.

“NEBB's history and heritage is extremely rich, and as we move forward, building off the decades of success of our forefathers, I'm convinced that our growth and development, making changes in the way we look at our business and our association, will be in the hands of our young professionals,” stated Jean-Paul Leblanc. “I'm thrilled and honored these five men stepped forward to volunteer, working with me to create a place for others within the same age group to learn, share and grow.”

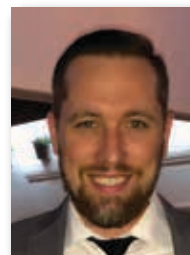
The YPN Core Group held its first meeting this past December, facilitated by Leblanc, and discussed a variety of ways it could begin to reach out to other young professionals within NEBB. Some ideas included the creation of a separate NEBB YPN LinkedIn page for NEBB Certificants to use, and another LinkedIn Open Forum section for outside industry sources. A YPN-dedicated Web page on www.nebb.org, along with activities at the local chapter level were also tossed into the idea hopper.

The YPN Core Group made its first official decision: the age range for NEBB YPN participants will be from 20 to 39, representing all facets of those involved in NEBB, being Certified Professionals, Certified Technicians, or approved Certification Candidates.

The second call to action was to assist Leblanc in creating a special YPN Open Forum session which is scheduled at the 2017 Annual Conference on Saturday, April 1. The group, along with Leblanc, are looking for young profes-

sionals between the age of 20 and 39 to participate in the Open Forum session and help frame up future endeavors.

YPN Core Group Overview



Jonathen Lloyd

Certified as a TAB CP, **Jonathen Lloyd**, 34, has been the owner and director of Lloyd's T.A.B PTY Ltd, located in Australia, for the past four years. According to Lloyd, the industry in his country has become increasingly fast paced, so the ability to pick up a project on the run and complete it within a tight dead-

line while maintaining a high standard is his company's strength.

On becoming involved in the YPN: “NEBB has given so much to the industry through our more senior representatives. With the industry changing so quickly, there is a real risk of the legacy, carried on since NEBB's inception, being lost to an ever-evolving industry. I want to be a part of re-educating the industry and helping to bring NEBB and our procedural standards into the limelight.”



Dane Richards

For the past four years, **Dane Richards**, 33, has been the Cx and business operations manager at Air Analysis of Atlanta, Inc. (AAI). NEBB Certified in Building Enclosure Testing and CxPP, he earned his engineering degree and interned at a major university in the facilities group of the housing de-

partment, cementing a solid foundation for understanding what it takes to construct, own, operate, and maintain all types of systems (electrical, mechanical, building enclosure, plumbing, security/access controls, etc.) in facilities ranging from 10 to 100 years old. Through a webinar, he learned about Commissioning and knew that specialty could play a huge role in preventing issues during the design and construction of facilities as well as identifying and

resolving issues with existing buildings. A Commissioning role opened at AAI, and the rest is history.

On becoming involved in the YPN: “Many Certificants who participated on NEBB committees and chapter leadership roles told me the value they personally and professionally received from participating was worth the time spent volunteering. I see the YPN as a way to contribute to, and benefit from NEBB. I’ve seen NEBB leaders in our industry and there is a general respect and appreciation for one another. Being involved in YPN is a great opportunity to get involved at a relatively early stage in my career so that I may find myself among these industry leaders one day.”



Jacob Altland

On becoming involved in the YPN: “I am proud to know that we are going to be considered the YPN Core Group of NEBB. We need to always consider the next generation of working adults. One of my goals is to intrigue students of 20 years and up to participate in NEBB and instill and promote the NEBB principles we all abide by, while making it interesting, affordable, and elevate professionalism. Inherently NEBB’s YPN will be a place for all to see, learn and contribute. The goal is for us to be a window of communication that is fruitful and positive.”



Tyler Hall

in the mechanical industry.

On becoming involved in the YPN: “I don’t meet many professionals who meet the definition of a ‘young professional’ in our industry. When I heard about NEBB’s YPN forming, it was an easy decision to get involved. Having a platform where young people can share their ideas and encourage others who classify as young professionals will be critical to NEBB’s growth and will help sculpt the future leaders of the organization.”

Hailing from Pittsburgh, Penn., **Jacob (Jake) Altland**, 26, has worked in the HVAC industry for eight years, specifically in testing, adjusting and balancing for the past 1-½ years. He’ll be taking his TAB CT exam in June 2017 and is employed by Climatch, Inc.

As the director of commissioning at Atlantic Testing for the past three years, **Tyler Hall**, 28, holds the BET CP, CxPP and TAB CT, BSC CxCT. In the industry for seven years, specializing in Building Systems Commissioning, Building Enclosure Testing, as well as Testing, Adjusting and Balancing, Hall also spent two years



Nick Muscolino

On becoming involved in the YPN: “I believe that forming the Young Professionals Network is an important stepping stone in the evolution of NEBB. This group will allow us to share ideas, provide a support network, and drive NEBB into the future. I am excited to be able to contribute in this new endeavor.”

In the words of John P. Kotter, “Leaders establish the vision for the future and set the strategy for getting there.”

If that’s the case, it looks like NEBB’s Young Professionals Network is in good hands. ■

Interested in learning more about NEBB’s YPN? Contact cindi@nebb.org.

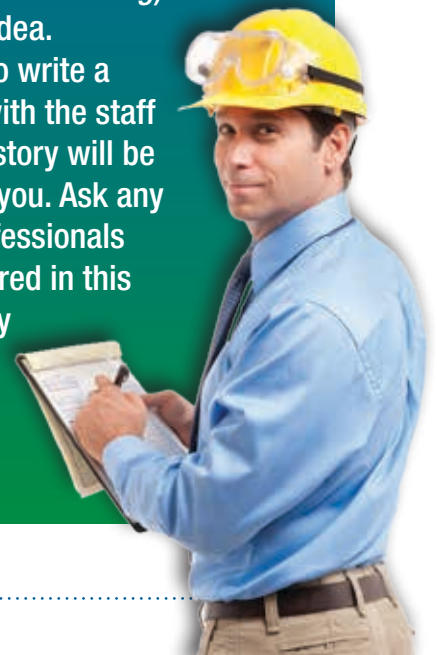
Interested in learning more about NEBB’s YPN?

Contact cindi@nebb.org.

Got an Article Idea?

Contact the NEBB Professional Magazine (communications@nebb.org) with your story idea.

You don’t have to write a word; just talk with the staff writer and your story will be put together for you. Ask any of the NEBB professionals who have appeared in this section how easy their story was to write.





You can't miss it!

Thursday, March 30 – Saturday, April 1, 2017

HILTON LAKE BUENA VISTA @ WALT DISNEY WORLD RESORT

nebb.cvent.com

Schedule at a Glance (as of 1/26/2017)

Monday, March 27

8:00 am – 5:00 pm	NEBB Building Enclosure Testing Seminar (BET) for Certified Professionals
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Tuesday, March 28

8:00 am – 5:00 pm	NEBB Building Enclosure Testing Seminar (BET) for Certified Professionals Day 2
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8:00 am – 5:00 pm	Sound Measurement Technician Seminar
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12:00 pm – 5:00 pm	Annual Conference Pre-Registration Open
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Wednesday, March 29

7:00 am – 5:00 pm	Annual Conference Registration Open
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8:00 am – 5:00 pm	NEBB Exam Day
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8:00 am – 5:00 pm	Closed Committee Meetings
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3:30 pm – 5:00 pm	TAB Practical Teach-the-Examiner Session
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6:00 pm – 10:00 pm	NEBB Volunteer Appreciation Dinner (15-minute walk from Buena Vista)
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(continued on next page)

Thursday, March 30

7:00 am – 5:00 pm	Annual Conference Registration Open
8:00 am – 3:00 pm	NEBB 20th Annual Golf Tournament
9:00 am – 10:30 am	Guest - Morning Breakfast Session (for registered guests; pre-registration required)
1:00 pm – 5:00 pm	Exhibit Hall Open
4:00 pm – 5:00 pm	NEBB Past Presidents Meeting
5:30 pm – 6:45 pm	Opening Session: Welcome and Keynote Presentation
7:00 pm – 10:00 pm	Get Acquainted Reception (for registered attendees and registered guests)

Friday, March 31

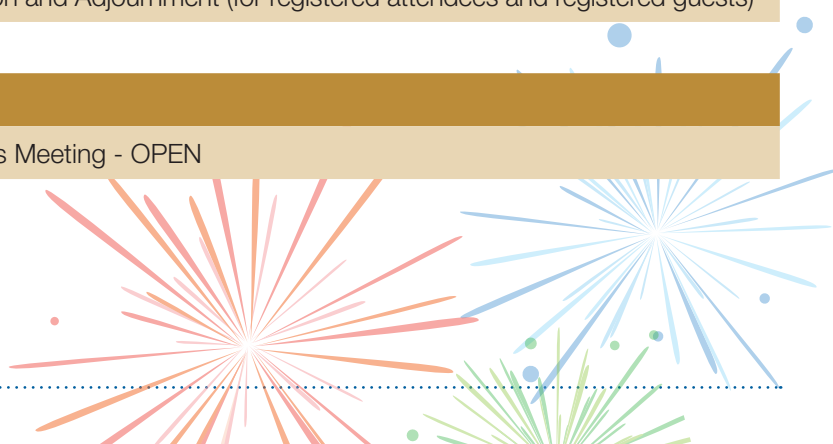
6:30 am – 8:00 am	Continental Breakfast (for registered attendees only)
7:00 am – 5:00 pm	Annual Conference Registration Open
7:00 am – 5:30 pm	Exhibit Hall Open
8:00 am – 4:30 pm	Chapter Coordinators Meeting
8:00 am – 3:45 pm	Technical Sessions
11:15 am – 12:30 pm	Networking Luncheon (for registered attendees only)
3:45 pm – 5:30 pm	Vendor Hosted Reception (for registered attendees only)

Saturday, April 1

6:30 am – 8:00 am	Continental Breakfast (for registered attendees only)
7:00 am – 2:00 pm	Annual Conference Registration Open
7:00 am – 1:00 pm	Exhibit Hall Open
8:00 am – 9:30 am	NEBB Business and Town Hall Meeting
9:30 am – 1:00 pm	Chapter Presidents and continued Chapter Coordinators Meeting
2:30 pm – 4:00 pm	TAB Practical Teach-the-Examiner Session
9:45 am – 3:45 pm	Technical Sessions
11:15 am – 12:30 pm	Networking Luncheon (for registered attendees only)
4:00 pm – 5:00 pm	Closing Session (for registered attendees and registered guests)
5:00 pm – 5:30 pm	Vendor Recognition and Adjournment (for registered attendees and registered guests)

Sunday, April 2

8:00 am – 5:00 pm	Board of Directors Meeting - OPEN
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2017 NEBB Annual Conference Orlando FLORIDA

*The Science of Buildings:
Operations, Performance and Testing*

Sessions and Speakers

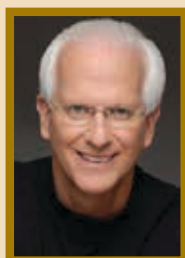
Thursday, March 30

5:45 pm – 6:45 pm

Keynote Opening Session: How the Best Get Better

Speaker: Robert Stevenson

This program is a roadmap to business success. It's the perfect combination of proven business tactics solidly grounded in years' of research. Robert Stevenson is an expert at building high-performance business cultures. During this program, based on his book *Raise Your Line*, he will share winning strategies, techniques, methods, thoughts, principles and key habits for success that will empower attendees toward a better future. Stevenson will walk you step-by-step through how to improve business performance, leadership skills, and reach career goals.



Robert Stevenson is one of the nation's top business speakers, excelling at blending humor, facts, inspiration, conviction and audience participation. Robert delivers high-energy programs that can help any company or person achieve higher levels of excellence. He

has spoken to over 2,500 companies throughout the world and his research in the area of corporate and entrepreneurial success is extensive.

Friday, March 31

8:00 am – 9:30 am

Track 1: BSC & TAB

Fan Balance and Vibration

Speaker: Ron Michael

This session will be valuable to all field vibration specialists dealing with air moving equipment. Fans require two critical processes to maintain proper vibration levels in the field: understanding how air moving products are tested prior to shipment, and the field requirements for structural support bases and isolation in the field. Because the worst vibration issues typically can't be solved with simple wheel balancing in the field, the proper support structure and isolation should be reviewed as part of the solution.



Ron Michael is the north-east regional applications manager specializing in fan engineering and field application management for Loren Cook Company where he has worked since 1993. He holds a bachelor's degree in environmental design

from the College of Architecture at the University of Oklahoma. He is a member of ASHRAE and has served on several AMCA committees.

8:00 am – 9:30 am

Track 2: CPT & IAQ

Environmental Microorganisms: Challenges in Pharmacies, Cleanrooms and Indoor Environments

Speaker: Patrick M. O'Donnell

This presentation will provide a basic understanding of airborne and waterborne bacteria and fungi, and the challenges they pose in both controlled environments and general indoor environments. Environmental conditions resulting in the amplification and dispersal of microorganisms, transitional organisms, and the risk of humans and their tasks to serve as vectors resulting in contaminating aseptic and sterile environments will be among the topics discussed.



Patrick O'Donnell is president of Enviro Team North America, a firm specializing in healthcare environmental infection control, USP 797 environmental conformance and diagnostics, environmental assessments, forensic investigations, diagnostic/forensic air

test and balance, building and building envelope assessments, and water intrusion diagnostics. He has been involved in the control of indoor environments since 1973. He is a nationally known lecturer and has presented education seminars and case studies at national, regional and local indoor air quality conferences.

8:00 am – 9:30 am

Track 3: Business

Just Because You Are Right Doesn't Mean You Will Win

Speaker: Roy Cohen

This seminar will focus on how attendees can better negotiate subcontracts drafted by the GC/CM; protect their companies by sending the right notice

letters, qualifying partial lien releases and change orders and; improve their understanding of their rights going forward with regard to recovering delay and inefficiency damages. Each attendee will receive a thumb drive containing notice letters for delay and constructive acceleration; marked up partial releases of liens and change orders, reserving their rights to seek damages for delay disruption and inefficiency; checklists for review before signing construction contracts and before submitting monthly payment applications; and sample purchase orders and subcontract forms.



Roy S. Cohen is the founder and president of Cohen Seglias Pallas Greenhall & Furman PC. In his practice, Cohen represents clients involved in every facet of the construction industry, including construction managers, general contractors, municipal author-

ities, private developers, major trade contractors, architects, engineers and sureties. He also acts as counsel to more than 200 clients and counts more than 120 electrical contractors as clients. His firm represents more than 1,000 construction and construction-related clients nationwide.

9:45 am – 11:15 am

Track 1: BSC & TAB

Rethinking Operating and Balancing Terminal Equipment

Speaker: Gus Faris

Attendees will learn about how components of a system can work together to form a more efficient system for the whole building. This includes how operating sequences will change in the future to better model operations and energy consumption in the building. Terminal equipment such as fan-powered VAV terminals, fan coils and fan-powered chilled water terminals will be discussed. In addition, attendees will learn how electronically commutated motors work. Faris will also explain new and easy methods for balancing series fan-powered terminal units with electronically commutated motors to make jobs easier and more profitable.



Gus Faris has over 40 years' of experience in the air conditioning and air distribution business, including 21 years with Nailor Industries, Inc. He is vice president of engineering for Nailor with direct responsibility for product design and development, quality assurance, field service and IT. Faris is active in a number of HVAC industry associations and is a past chairman of AHRI Heat Transfer Products.

9:45 am – 11:15 am
Track 2: CPT & IAQ

Key Factors for Balancing a Containment Laboratory

Speaker: Theodore (Ted) Traum

Persons involved in the testing and air balancing (TAB) of critical environments need to be knowledgeable about key factors to successfully balance and fine tune negative air ventilation systems. During this session, the TAB contractor's role in validation testing of containment type facilities will be discussed. Attendees will also have the opportunity to theoretically balance a containment facility using a presented methodology. The discussion will focus on reasonable testing for commissioning and annual validation of containment facilities. At the session's conclusion, participants will have a better understanding of testing negative environment facilities, troubleshooting non-performing facilities, and substantiating their findings in a TAB report.



Theodore Traum, PE, CCP, DGCP, has over 30 years' of experience in engineering with a focus in high and maximum containment laboratories (BSL-3 and BSL-4), biomedical facilities, hospitals and research facilities. In this role, he consults with clients and oversees laboratory planning, programming, commissioning, validation and third-party certification activities for significant critical environment facilities such as biocontainment, laboratory, vivarium, safety, and

healthcare projects. He is sought worldwide for his expertise in design, construction, third-party certification and maintenance of such facilities.

9:45 am – 11:15 am
Track 3: Business

Growing on Purpose

Speaker: David Molenda

This session will share the formula to strengthening your team and improving each customer's experience by providing leaders with tactics they can immediately incorporate into day-to-day activities to engage their employees, build meaningful and lasting business relationships, and grow their business. Presentation topics will include Tactics to Strengthen Your Team; Personality Assessments; Communication Skills; Building Trust, Compassion, Stability, and Hope, and Tactics to Improve Your Customer's Experience.



As a strategic sales and business development consultant, Dave Molenda works with CEOs, CFOs, CMOs, and sales teams to help them better develop meaningful relationships with customers, motivate employees, and nail sales quotas. After almost 30 years of running his own company, Molenda realized his passion was helping companies thrive by overcoming their natural tendencies to retreat, not talk about the hard stuff, and spin their wheels on the wrong things.

12:30 pm – 2:00 pm
Track 1: BSC & TAB

Fan Testing and System Effect

Speaker: Ron Michael

This presentation is designed for attendees at all levels—from the beginner to the experienced balance professional. The basics of how fans and other system components are tested with an emphasis on laminar conditions in controlled test environments

will be discussed. The session will also include a review of calculated data and reading fan curves. Attendees will also learn how to apply the equipment to a system and explain the importance of laminar flow as well as "system effect factors" during design and when they should be applied during air balance testing. Examples of poor systems will be reviewed followed by an open forum discussion on how performance could be improved.



Ron Michael is the northeast regional applications manager specializing in fan engineering and field application management for Loren Cook Company where he has worked since 1993. He holds a bachelor's degree in environmental design from the College of Architecture at the University of Oklahoma. He is a member of ASHRAE and has served on several AMCA committees.

12:30 pm – 2:00 pm
Track 2: CPT & IAQ

Environmental Health for Sustainable LEED Green Buildings

Speakers: Francisco Aguirre and Rajiv R. Sahay

Leadership in Energy and Environmental Design (LEED) ensures design, optimization and resource efficiency for sustainable green buildings, both for residential and commercial purposes. However, environmental health relates to the comfort, safety and health of the occupants. Due to recent technological advancements, a number of factors have been identified that can influence building health and hygiene. Biological, chemical and environmental contaminants emitted from internal sources or that infiltrate from the ambient environment impact both inhibitors and the built environment. Apart from various chemicals, a number of biological entities such as bio allergens, microbes and others are identified as some common obstacles in building planning, construction, maintenance and operations. Partic-

ipants will enjoy an effective outline on LEED certification procedures and challenges for maintaining the environmental health of green buildings.



Francisco Aguirre is director of diagnostics and building sciences at Pure Air Control Services, Inc. in Clearwater, Fla., and has over 34 years of experience with the company. A few of the IAQ projects he has managed include the University of South Florida Medical Center, Collier County Public Schools, Lakeland Regional Medical Center, Broward Medical Center, Florida Power (Meter Department), City of Boynton Beach Complex, Collier County Government Complex, and the Sam M. Gibbons Federal Building and Courthouse in Tampa, Fla.



Dr. Rajiv R. Sahay is laboratory director, senior microbiologist – environmental diagnostics laboratory at Pure Air Control Services, Inc., in Clearwater, Fla. He has more than 20 years of experience at doctoral and postdoctoral level in experimental and analytical research pertaining to the biological and environmental sciences. His area of expertise for particle identification from the environment makes by using microscopic and other techniques make a unique individual in indoor environment/air industry. He has successfully managed to test and publish project reports by enumerating various contaminants isolated and identified from environmental samples.

12:30 pm – 2:00 pm
Track 3: Business

Mergers, Acquisitions and Generational Transfers in the Construction Industry

Speaker: Roy Cohen

The focus of this seminar is to explore exit strategy options plus the topic of liquidation. The seminar will discuss what entices third-party buyers to consid-

er buying a company, and what type of experts to use in cultivating a third-party sale. It will also address how to approach existing management about ownership possibilities, protect the company while divulging the finances of the company and structure an agreement which will allow sellers to cash out and transfer their interest. In addition, it will also focus on how to school the next generation to continue and improve the company through the use of an outside board of advisors, comprised of construction professionals familiar with the industry and your company. Attendees will receive a thumb drive with all of the information necessary to allow them to have a more sophisticated discussion with their personal and professional consultants as well as their family.



Roy S. Cohen is the founder and president of Cohen Seglias Pallas Greenhall & Furman PC. In his practice, Cohen represents clients involved in every facet of the construction industry, including construction managers, general contractors, municipal author-

ities, private developers, major trade contractors, architects, engineers and sureties. He also acts as counsel to more than 200 clients and counts more than 120 electrical contractors as clients. His firm represents more than 1,000 construction and construction-related clients nationwide.



Kent Maune began his tenure at Ruskin Company in 1985 and for more than 31 years, has held positions in engineering, R & D, operations and sales. For the last 14 years, he has been responsible for the development and marketing of Ruskin's life safety product

lines, including testing, manufacturing and field application of underwriters lab classified and listed products.



Glenn Esser is an applications engineer at Ruskin. He holds a bachelor's degree in electrical engineering from the University of Missouri Columbia. He serves as a member of the ANCA review committee responsible for AMCA 600-16-Application Manual

for AMS. In addition, he is a member of the organization's review committee responsible for AMCA 611-15 Certified Ratings Program, Product Rating Manual for Airflow Measurement stations.

2:15 pm – 3:45 pm
Track 1: BSC & TAB

Applications of Life Safety Products in Air Systems

Speakers: Kent Maune and Glenn Esser

Learn about new and innovative products available within the damper industry that allow non-standard balancing dampers to be used in the testing and balancing of systems. The speakers will also discuss products not traditionally used for TAB systems, including combination fire smoke dampers that utilize modulating controls allowing the damper to also be used in balancing damper applications.

2:15 pm – 3:45 pm
Track 2: CPT & IAQ

Healthcare and Laboratory Negative Pressure and Environment Ventilation Systems

Speaker: Theodore (Ted) Traum

The objective of this session is to equip attendees with the basic knowledge to understand negative pressure environment ventilation systems in healthcare, research laboratories, animal facilities and Pharma GMP/BSL2-3. Attendees will learn about regulations, guidelines and industry expectations that drive owner's liabilities. Initial and requalification testing requirements will be presented. Attendees will learn about pressure gradients for containing aerosols, and the removal of potentially contaminated HVAC devices. Rationale for filtration and the decontamination of filters and using schematics,

negative ventilation system constructability will also be discussed. At the presentation's conclusion, attendees will better understand issues in the design, commissioning and post occupancy validation testing of negative environment facilities, be able to formulate informed questions, and improve their interaction with owners and operators.



Theodore Traum, PE, CCP, DGCP, has over 30 years' of experience in engineering with a focus in high and maximum containment laboratories (BSL-3 and BSL-4), bio-medical facilities, hospitals and research facilities. In this role, he consults with clients

and oversees laboratory planning, programming, commissioning, validation and third-party certification activities for significant critical environment facilities such as biocontainment, laboratory, vivarium, safety, and healthcare projects. He is sought worldwide for his expertise in design, construction, third-party certification and maintenance of such facilities.

2:15 pm – 3:45 pm
Track 3: Business

Going Deeper with DISC

Speaker: Dave Molenda

DISC is the most widely used behavioral assessment tool by organizations. Dave Molenda will present ways to leverage DISC assessments to help teams uncover their hidden talents to improve performance and engagement. Attendees will learn how to apply this behavioral knowledge to create results in the real world to strengthen communication skills, build leadership abilities, diffuse interpersonal conflict, choose attainable goals, boost performance and productivity, increase motivation, strengthen workplace skills, and construct strong teams.

As a strategic sales and business development consultant, Dave Molenda works with CEOs, CFOs, CMOs, and sales teams to help them better develop meaningful relationships with customers, motivate employees, and nail sales quotas. After almost 30



years of running his own company, Molenda realized his passion was helping companies thrive by overcoming their natural tendencies to retreat, not talk about the hard stuff, and spin their wheels on the wrong things.

Saturday, April 1

9:45 am – 11:15 am
Track 1: BSC & TAB

NFPA 70E: Educating Parties on Shared Responsibilities (Employers/Contractors)

Speaker: Wes Wheeler

This session will examine management's responsibilities in ensuring compliance with OSHA Regulations and other regulatory consensus standards such as "NFPA 70E, The Standard for Electrical Safety in the Workplace." At the conclusion of this session, attendees will have an understanding of the NFPA 70E layout and scope including:

- Identifying regulatory and consensus requirements pertaining to electrical work.
- Understanding the requirements for Justified Energized Electrical Work.
- Identifying how to create an electrically safe work condition.
- Understanding PPE necessary for Arc Flash and Shock protection.
- Understanding the importance of company policies and how to create and enforce them.



Wesley L. Wheeler is the director of safety at the National Electrical Contractors Association (NECA). He joined NECA in 2014 and has over 36 years' of electrical experience. Prior to working for NECA, he was a safety consultant with his own business, Wheeler Safety

Services, Inc., and a safety director for a large industrial-based electrical contractor in Florida. Wheeler is a qualified OSHA construction outreach Instructor and has assisted in OSHA instructor classes for the Electrical Training ALLIANCE, (etA formerly known as the NJATC).

9:45 am – 11:15 am
Track 2: CPT & IAQ

The Cornerstone of Risk Reduction: Biosafety Training at MATC

Speaker: Barbara Wenger

A key to future success of biotechnology industries and other critical environments is a sustainable and qualified workforce that can support industry goals. To meet future industry needs, the Manhattan Area Technical College (MATC) in Manhattan, Kan, is developing a Critical Environments Engineering Technician training program that will prepare graduates for NEBB certification. This session will describe and explain these training opportunities, MATC's goals for providing employers knowledgeable and skilled workers, and provide an opportunity for attendees to share input regarding content and skill development.



Barbara Wenger is the Director of Bioscience at Manhattan Area Technical College (MATC). Her responsibilities include oversight of direct general science education (biology, anatomy and physiology, physical science, and chemistry), the surgical

technology, medical laboratory technician and biotechnology programs. In addition to oversight and teaching, she manages labs for all science courses, ensures MATC's programs comply with accrediting agencies, and is heavily involved with creating workforce development partnerships with local industries and related professional groups such as NEBB.

9:45 am – 11:15 am
Track 3: Business

How NEBB Professionals Can Work with Consulting Engineers to Enhance Business

Speaker: Amara Rozgus

Panelists: David Kirkham and Olaf Zwickau

This panel of NEBB professionals will explore how NEBB firms can best position themselves to work with engineers, engineering firms, and other related building professionals. With a basis in research conducted by *Consulting-Specifying Engineer*, the panel will explore options for owners and business development professionals to expand their business. This session will explore how NEBB as a whole can help professionals build their business base.



Amara Rozgus is editor-in-chief and content manager of Consulting-Specifying Engineer and its complimentary publications, including Pure Power and www.csemag.com. She has more than 20 years' of experience in business-to-business publishing, including several engineering,

research, and construction publications. She is a graduate of the University of Illinois at Urbana-Champaign, and holds two bachelors of science degrees.

12:30 pm – 2:00 pm
Track 1: BSC & TAB

Energy Recovery Technology

Speaker: Anthony Moffett

The purpose of this session is to communicate the various types of Energy Recovery Ventilator (ERV) technologies available, describe how those technologies work, and how ERVs can be used to save

energy costs. ERVs are products that capture the sensible and latent energy from exhaust air and use that energy to pre-condition intake air. ERVs can relieve 25 percent of an HVAC system load and generally pay back in less than two years. Find out how some of the largest companies in America are using ERVs to keep them on the cutting edge of energy-efficient HVAC systems.



Anthony Moffett is executive vice president and general manager of Ruskin Rooftop Systems in Carrollton, Texas where he manages the sales, marketing, engineering, finance, and production departments. During his tenure, he developed and executed plans

to successfully acquire a complementary HVAC accessory company. He holds an MBA from Wright University in Dayton, Ohio.

12:30 pm – 2:00 pm
Track 2: CPT & IAQ

Web-based Cleanroom Design and Energy Optimization with a Comparison of Filtration Medias for Cleanroom High-efficiency Filtration

Speaker: Christian Hicks

This presentation will include a discussion of the history of PTFE medias in filtration in life science as microelectronics markets and the potential advantages it presents in energy savings and durability along with a comparison and contrast with fiberglass media. Also on tap is a demonstration and discussion of a web-based clean room design software package for energy optimization in the filtration system for renovations of existing facilities and design on new controlled environments.

Christian Hicks has been involved in high efficiency filtration for over 15 years in the biocontainment and nuclear fields. In addition to his extensive back-



ground in containment system sales and design, he serves as life science segment manager for Camfil. He travels throughout the United States educating the engineering community and end users on energy in critical airspaces. Hicks has a B.S. in biology from The

Ohio State University and is a member of ASHRAE, CETA, ASME, and ISPE.

12:30 pm – 2:00 pm
Track 3: Business

The Power of Telling Your Story: Marketing Your NEBB Certifications into a Profitable Bottom Line

Moderator: Don Hill

Panelists: Jim Huber, Bill Neudorfer, Rodney Hinton and Eric Jenison

This panel will focus on the power of telling your personal story as it relates to your NEBB certification and how you can leverage that story to enhance a profitable bottom line for your business. Panelists will share their experiences and will pose the questions, "What was your first discipline in NEBB and why did you select that discipline?", "Did work in that discipline open other opportunities that motivated you to go after additional disciplines?", and "How does you use NEBB Certification in your company's marketing efforts?"



Don Hill is president of AccuTec Services, Inc., based in Lee's Summit, MO. Hill has a BSME from the University of Missouri, Kansas City and is a registered professional engineer. He began his career as a design engineer and has leveraged that experience into providing

TAB-, Commissioning-, and Cleanroom-related services and creative solutions for critical

environment facilities across the United States. Hill is president-elect of NEBB and has served on the organization's board of directors for many years and also as chair of the Cleanroom Performance Testing Committee.

2:15 pm – 3:45 pm
Track 1: BSC & TAB

Acoustics Overview and Application

Speaker: Alex Michaud

This session will provide attendees with acoustics fundamentals and how to apply this knowledge in the field. Basic fundamentals are important for quickly spotting potential issues or if proposed solutions are worth pursuing. A strong understanding of how testing and real world applications differ helps to reduce common project issues. Design criteria and specifications have little value when the project team is not informed and this presentation will review many of the important considerations needed to achieve desirable acoustics. Ever wonder why mechanical rooms are placed next to conference rooms or how fiberglass can be used to reduce noise? If so, this is the presentation for you!



As director of the noise control products group at Price Industries, Alex Michaud oversees the application and development of various solutions to address noise concerns within the built environment. He also assists other product groups with relevant noise-related concerns and product development initiatives.

Michaud holds bachelor's and master's degrees in mechanical engineering (acoustics) from the Georgia Institute of Technology in Atlanta. He is actively engaged in industry organizations related to acoustics and noise control including ASA, INCEUSA and is a member of ASHRAE TC 2.6 Noise and Vibration Control.

2:15 pm – 3:45 pm
Track 2: CPT & IAQ

Clean Agent Enclosure Tests Are a Lucrative New Market

Speaker: Colin Genge

Many buildings have computer rooms and other areas protected by a gaseous suppression system. Each one must be tested for airtightness to ensure it can hold the agent for the required time but is leaky enough to prevent damage upon the rapid discharge of the compressed agent. Installers of these systems normally perform this test but are seldom equipped to provide or monitor the air sealing process or the pressure relief vent installation testing and adjustment. This session will explain how attendees can acquire these lucrative jobs, what test equipment is needed, what services to provide, and how much to charge for them.



Colin Genge is CEO of Retrotec, a Washington State-based company that has been designing, selling and training users of blower door-fans, precision pressure gauges and analytical software since 1980. He has made major contributions to door-fan energy

standards such as US Army Corps of Engineers, Canada's CGSB 149 and fire suppression standards such as NFPA 2001 and ISO14520 for the containment of clean agent fire suppressants in protected rooms and buildings. Genge has conducted considerable research on testing methods for high-rise buildings and has consulted and tested hundreds of the world's most exotic high-value facilities.

2:15 pm – 3:45 pm
Track 3: Business

Young Professionals Network: An Open Forum Event

**Speaker: Jean-Paul Leblanc and
NEBB's Young Professionals**

The generational divide at work can be daunting if professionals from all age groups can't clearly communicate and understand one another. This open forum session, facilitated by NEBB past president Jean-Paul Leblanc, will offer young professionals an opportunity to talk, network, discuss, inspire and interact with each other to leverage their strengths and experiences and find ways to create a unique environment within NEBB where young professionals can seamlessly collaborate and grow.



Jean-Paul Leblanc is the President of Hydrauliques R&O Services in Mont-Royal, Quebec. He has over 30 years' of experience in the commercial HVAC field including HVAC systems installation, testing and balancing, commissioning, and vibration

troubleshooting in office buildings, hospitals, government facilities, research laboratories, and GMP Clean room. LeBlanc has been a NEBB Certified Professional since 1988 and holds certifications in Testing, Adjusting and Balancing and Whole Building Systems Technical Commissioning. He serves on NEBB's Board of Directors and Executive Finance Committee and is the current NEBB past president. LeBlanc has served two terms as NEBB Canada's chapter president since 1988 and is currently the chapter's director.

4:00 pm – 5:00 pm

Closing Session: Keys to Engaging the Multi- Generational Workplace

Speaker: Ryan Jenkins

The conference's closing session will have a Millennial focus but the true message will be about the future of work and how organizations must adapt to maintain a competitive advantage in today's digital age. The Millennial Generation serves as a good example of the coming changes we can expect to see in the workplace and marketplace. Strategies discussed will truly enable organizations and leaders to face the future workplace with confidence.



Ryan Jenkins has been speaking professionally as a Millennial keynote speaker for over five years for clients big and small, nationally and internationally. His top-ranked generational insights have been featured in Forbes, Fast Company, Inc. and SUCCESS

magazine. His internationally recognized blog, podcast, and Inc.com column inspire and equip thousands of people every week. His passion and experience as a Millennial himself, as well as his fresh and forward-thinking approach to generations have made him one of the most highly sought after generational and future-of-work keynote speakers.



Hotel Information

Hilton Lake Buena Vista

1751 Hotel Plaza Blvd.
Lake Buena Vista, FL 32830
Tel: 407.827.4000

Standard/Double Group Rate: \$189 (use code NEBB)

To ensure the discounted room rate, reservations must be made before March 3, 2017. Group rooms may sell out, so don't delay. Rooms are subject to availability.

All reservations made after March 3 will be on a space-available-and-prevailing-rate basis.

**Children under 18 stay free and are not counted in occupancy.*



Fee Breakdown

All fees are in U.S. Dollars.

Register Early & Save!	Early Bird: Before March 3, 2017	After March 3, 2017
Conference Registration	\$850	\$1,000
Thursday One-Day Registration	\$175	\$175
Friday One-Day Registration	\$450	\$450
Saturday One-Day Registration	\$450	\$450
Guest Registration	\$150 (under 18 is \$50)	\$250 (under 18 is \$150)

Included Items

Full Conference Registration fee:

- Opening Session on March 30
- Get Acquainted Reception on March 30
- Technical Sessions on March 31 and April 1
- Breakfast, Lunch, Breaks on March 31 and April 1
- Closing Session/Vendor Recognition and Adjournment on April 1

Guest Registration fee:

- Opening Session on March 30
- Get Acquainted Reception on March 30
- Closing Session/Vendor Recognition and Adjournment on April 1

Guest – Morning Breakfast Session

9:00 am – 10:30 am Thursday, March 30, 2017

All registered guests are invited to join us for a delightful and delicious morning breakfast on Thursday, March 30 at 9:00 am. This session will be just the boost you need to kick-start your day. Enjoy a heavenly array of breakfast treats and a short presentation by the hotel's concierge who will highlight Orlando's MUST SEE restaurants, shops and local attractions! Don't miss out! Pre-registration is required at **nebb.cvent.com**.

Payment Information

Online registration is payable by credit cards (American Express, MasterCard, Visa and Discover) or check. If you select to pay by check, please make your check payable to NEBB, and mail the check along with a 2017 NEBB Annual Conference Paper Registration Form.

Note: Paper Registrations must be received and confirmed by NEBB Headquarters by March 27, 2017.

Mail check to: NEBB Attn: Meeting Registrar

8575 Grovemont Circle, Gaithersburg, MD 20877

Note: NEBB's taxpayer ID# is 23-7180848

Registration Changes

All conference registration changes should be emailed to **tori@nebb.org**.

Please contact the hotel and airline directly for travel updates.

Cancellation Policy

Written Request Received by March 3, 2017	Full cancellation less a 25% administrative fee
Written Request Received after March 3, 2017	Nonrefundable
No-show for any reason	Nonrefundable

Optional Items

Activity	Date/Time	Cost
20th Annual Golf Tournament	March 30, 8:00 am - 3:00 pm	\$135
Golf Club Rental	March 30 - pick up at golf course	\$20
NEBB Conference Shirt	Pick up at conference registration	\$35
BET Seminar	March 27-28	\$800 Seminar Fee (Exam requires additional fee)
Sound Measurement Seminar	March 28	\$400 Seminar Fee (Exam requires additional fee)
Optional NEBB Exam Day	March 29	Contact certification@nebb.org for pricing.

Continuing Education Credits (CECs)

NEBB Certificants registered for the 2017 Annual Conference can receive up to a total of **12.5** Continuing Education Credits (CECs) for the technical and educational sessions they attend.

1. Sign-in is required for each session in order to verify attendance and allocate the appropriate number of CECs to each Certificant.
2. CECs are calculated by the number of actual educational hours per session:
 - a. 60 minutes = 1 CEC
 - b. 90 minutes = 1.5 CECs
3. CECs obtained by attending sessions at the Annual Conference can be used for submission of the NEBB recertification requirements.
4. CECs are only awarded for educational or technical sessions.
5. Certificates of Attendance will be issued approximately 2-3 weeks following the 2017 Annual Conference.

*For more information about CECs, contact **certification@nebb.org**.*

NEBB 20th Annual Golf Tournament sponsored by TSI, Inc.

Thursday, March 30

Disney's Lake Buena Vista Golf Course

<http://golfwdw.com/lake-buena-vista-golf-course/>

NEBB Annual Conference attendees and guests are invited to join their colleagues for the 20th year of the Annual Golf Tournament. The tournament is being held at the Lake Buena Vista Golf Course, an Arnold Palmer Golf Management course, on Thursday, March 30, 2017. Shotgun start is 8 a.m.

The Lake Buena Vista Golf Course is a classic country-club style course that winds through pastel villas, pine forests, palmettos and sparkling lakes. Certified by Audubon International as a Cooperative Wildlife Sanctuary and rated an impressive 4 stars by *Golf Digest*, the 18-hole course was conceived by Joe Lee and most notably features elevated bunkered greens that put a premium on accurate approach shots. Test your skills and fortitude at the demanding 7th hole with its challenging island green.

Golf registration is \$135.00 and includes round-trip transportation from the hotel to the course, greens fees, cart fees, personalized scorecards, locker room access with amenities, contest holes, and pre-round practice range balls. Continental breakfast will be provided at the course at 6:30 am.



Contests will include prizes for a hole-in-one at all par 3's, two closest to the pin and longest drive. Golf club rentals are available for \$20.00 and arrangements must be made in advance.

Lunch will be delivered during Round. Award presentation and scoring will be held following play at the outdoor grass patio adjacent to the clubhouse

If golf registration is canceled by February 1, 2017, we will issue a refund (less admin fee). No golf registration refunds will be extended after March 1, 2017.

Be sure to support ASHRAE Research by sponsoring a golf hole at this tournament! E-mail tori@nebb.org for more information.

Thank You to our Conference Sponsors! (as of 1/26/2017)

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TSI, Inc.



Gold:
Dwyer Instruments, Inc.



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Clipboard



Bronze:
Instruments Direct, Inc.



Building Start



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- Dwyer Instruments, Inc.
- The Energy Conservatory
- IMI Hydronic Engineering, Inc.
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- Kanomax
- Red-White Valve Corp.
- Retrotec
- Ruskin
- Shortridge Instruments, Inc.
- Technical Maintenance, Inc.
- TSI, Inc.



2017 NEBB Annual Conference Registration Form

Thursday, March 30 - Saturday, April 1, 2017
 Orlando, Florida

To explore event details and register online, please visit **nebb.cvent.com**

- Send this form to NEBB by **Monday, March 3, 2017** to receive early bird rate of \$850.00.
- Each attendee must fill out a separate registration form.
- Completed registration form and payment must be received and confirmed by NEBB before **Monday, March 3, 2017**. Please send to **tori@nebb.org**.
- After March 3, 2017, please register online.

☐

New/changed address?

☐

First-time Attendee?

Full Name _____

Name on Badge (if different than above) _____

Company _____

Address _____

City _____ State _____ ZIP _____ Country _____

Telephone _____ Chapter _____

E-mail _____ ADA or Special Dietary Needs? _____

Options/Fee Listing	Quantity	Amount
Full Registration (Thursday-Saturday) \$850 (Price after March 3 - \$1,000)	One per sheet	
Thursday Only One Day Registration \$175		
Friday Only One Day Registration \$450		
Saturday Only One Day Registration \$450		
Additional Options:		
Guest Registration (regular) \$150 (Price after March 3 - \$250)		
Guest Registration (under 18 years old) \$50 (Price after March 3 - \$150)		
NEBB Conference Shirt, <i>Please indicate size:</i> \$35 per shirt <input type="checkbox"/> Small <input type="checkbox"/> Medium <input type="checkbox"/> Large <input type="checkbox"/> X-Large <input type="checkbox"/> XX-Large		
Golf Tournament Registration \$135 (no clubs) \$155 (with clubs)		
Golf Polo Shirt (included with fee): <input type="checkbox"/> Small <input type="checkbox"/> Medium <input type="checkbox"/> Large <input type="checkbox"/> X-Large <input type="checkbox"/> XX-Large		

Total Amount Due: _____

Payment Method: ☐ Visa ☐ MasterCard ☐ American Express

☐ **CREDIT CARD #** _____ Exp: _____

Signature _____ Date: _____

☐ **CHECK:** Payable to "NEBB." Registration is not confirmed until payment is received by NEBB.

Annual Conference Cancellation Policy: A 25% Administrative Fee will be deducted if written cancellation request is approved by March 3, 2017. Written requests received after the deadline are nonrefundable.

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NEBB Committee Reports

BET Committee



Phil Emory, Chairman

The Committee has been busy working on completing the development of its Body of Knowledge. In addition, a BET seminar will be held in March 27-28 just prior to NEBB's annual conference. The practical exam day is March 29. BET Committee chairman Phil Emory will be teaching the course. Scheduling of a fall BET seminar is in progress.

Exam Development Committee



Brian Keller, Chairman

The Exam Development Committee has worked on or is completing the following initiatives:

CPT CT Exam completed its final review and is going through the Angoff scoring process. Next steps include entering the refreshed exam into Kryterion for online access with a completion deadline of February 2017, and then sending the exam to the Metrication Committee for translation into metric. The TAB CP Form 1 Exam is in the process of metrication and is anticipated to be completed by Q3. A new TAB CP Exam is being written with an expected rollout date of Q2.

Creating a Body of Knowledge (BoK) for each of the disciplines has been a top priority for many of the Committees, with TAB CP and TAB CT, CxPP, and CxCT being completed. Cleanroom Performance Testing, Retro Commissioning, Building Enclosure Testing, and Fume Hood disciplines are in the beginning stages of developing their respective BoKs.

Exam Development Committee members are Brian Keller, EDC Chair; Rick Farrington; Terry Townsend; and Stan Fleischer.

Marketing Committee



Eric Jenison, Chairman

NEBB's participation in the AHR EXPO in Las Vegas at the end of January helped increase exposure of the organization with staff and volunteers catching up with peers and forging new relationships with others. The booth featured new banner stand graphics, samples of each discipline standard for visitor perusal, and a variety of collateral about the

organization and its activities. The Committee is currently planning specifics of NEBB's attendance at the BOMA conference in June to be held in Nashville. Members continue to provide guidance and input to *The NEBB Professional*. Content for the Q2 2017 issue of the magazine is now in development.

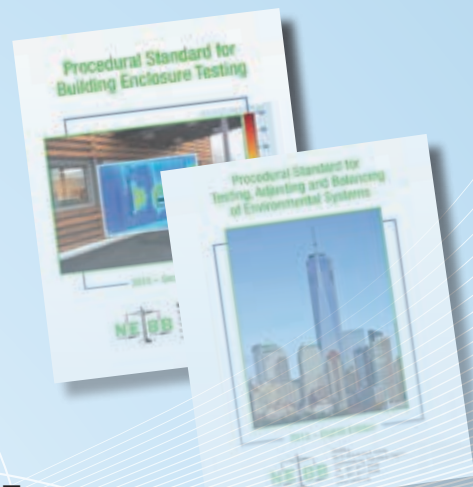
T24 Committee



Amber Ryman, Chairperson

The Title 24 (T24) program went live in October 2016. NEBB is currently accepting applications and has begun certifying both individuals as well as employers. The Committee has updated the application with the California Energy Commissions in regards to the changes in NEBB's program from the 2013 and 2016 Code. In addition, the Committee is currently working on a Candidate Handbook for T24 which should be available in early 2017 as well as the approval of potential candidates. Once the T24 program is mandated by the California Energy Commissions the Committee will be busy addressing audit requirements.

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Certification Board Update

Stan Fleisher, Chairperson

Over the past six months, NEBB's Certification Board (CB) completed a number of initiatives dealing with compliance, exam overview, policy review, and other issues. The CB updated the Continuing Education Credit Submission forms for the CP, CT and CxPP and all discipline Application for Candidacy forms and the Application for Certification forms for 2017. In addition, the CB is in the final stages of updating its 2017 version of the CB Policy and Procedure Manual. Once completed, the following policies will be posted on the NEBB website: Impartiality Policy; Complaints and Appeals Policy; Eligibility Policy (eligibility requirements for all NEBB certifications) and Code of Ethics. Work continues on compliance issues and the ANSI CxPP application process. The 2017 updated version of the Certification Candidate Handbook and related discipline Appendices are in progress and should be completed in February 2017. The Committee is also working on standardizing the program as it relates to the TAB Practical Exam, working with a team to complete that process which is now under the CB's auspices.

The CB is operating at full capacity. Members are Stan Fleischer, chairman; Rick Farrington, vice chairperson; Ted Salkin, CB compliance committee chairperson; Brian Keller, CB exam development committee chairperson; Marty Loft, member-at-large; Jim Whorton, NEBB board of directors liaison; Darryl Boyce, industry stakeholder; Andrew Boyd, industry stakeholder; and Cynthia Hereth, director of certification and staff liaison.

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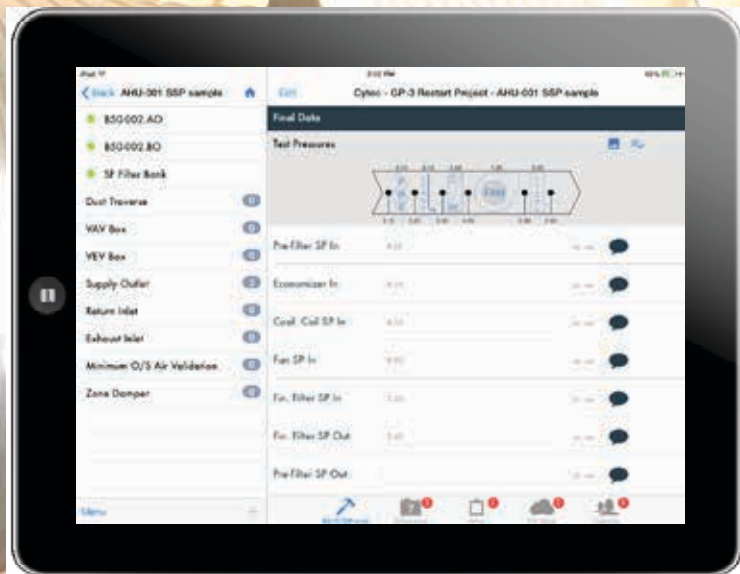
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NEBB 2017 Spring and Fall Seminar Schedule

- March** **BET Seminar: Monday & Tuesday, March 27 & 28, 2017**
 Registration Deadline: Monday, March 13, 2017
 Optional BET CP Written and Practical Exam Date: Wednesday, March 29, 2017
 Hilton Lake Buena Vista @ Walt Disney World Resort, Orlando, FL
- **Sound Measurement Seminar for Technicians: Tuesday, March 28, 2017**
 Registration Deadline: Monday, February 20, 2017
 Optional Sound Measurement Certified Technician Exam Date: Wednesday, March 29, 2017
 Hilton Lake Buena Vista @ Walt Disney World Resort, Orlando, FL
- April** **BSC CxCT Seminar: Thursday – Saturday, April 27-29, 2017**
 Registration Deadline: Monday, April 10, 2017
 Exam Day: To be announced
 Brandt, Dallas, TX
- May** **TAB Seminar: Monday – Wednesday, May 1-3, 2017**
 Registration Deadline: Monday, April 17, 2017
 Optional TAB CP & CT Exam Day: Thursday, May 4, 2017
 Boland Training Center, Gaithersburg, MD
- **Sound and Vibration Measurement Seminar: Monday – Friday, May 1-5, 2017**
 Registration Deadline: Monday, April 24, 2017
 Optional Sound CP Written & Practical Exam Date: Wednesday, May 3, 2017
 Optional Vibration CP Written & Practical Exam Date: Friday, May 5, 2017
 Total Dynamic Balance Training Facility, Deerfield Beach, FL
- **Cleanroom Performance Testing Seminar: Tuesday – Thursday, May 9-11, 2017**
 Registration Deadline: Monday, April 21, 2017
 Optional CPT CT Written and CPT CP Written Exam Date: Thursday, May 11, 2017
 Optional CPT CP Written Practical Exam Date: Friday, May 12, 2017
 Facilities at IND Engineering Solutions, Vancouver, WA
- June** **Fume Hood Seminar: Monday & Tuesday, June 5 & 6, 2017**
 Registration Deadline: Monday, May 22, 2017
 Optional Fume Hood CP Written Exam Date: Wednesday, June 7, 2017
 Optional Fume Hood CP Practical Exam Dates: Wednesday & Thursday, June 7 & 8, 2017
 Labconco, Kansas City, MO
- August** **Cleanroom Performance Testing Seminar: Monday – Wednesday, August 28-30, 2017**
 Registration Deadline: Monday, August 14, 2017
 Optional CPT CT Written and CPT CP Written Exam Date: Wednesday, August 30, 2017
 Optional CPT CP Written Practical Exam Date: Thursday, August 31, 2017
 Bass Lake Retreat Center, Holly Springs, NC
- October** **TAB Seminar: Monday – Wednesday, October 9-11, 2017**
 Registration Deadline: Monday, September 25, 2017
 Optional TAB CP & CT Exam Day: Thursday, October 12, 2017
 IMI Training Facility, Roswell, GA
- November** **Fume Hood Seminar: Monday & Tuesday, November 13 & 14, 2017**
 Registration Deadline: Monday, October 30, 2017
 Optional Fume Hood CP Written Exam Date: Wednesday, November 15, 2017
 Optional Fume Hood CP Practical Exam Dates: Wednesday & Thursday, November 15 & 16, 2017
 Labconco, Kansas City, MO

For complete details and informational brochures, visit www.nebb.org or email training@nebb.org.

How to Attract Millennial Workers in Two Simple Steps

Ryan Jenkins



A recent LinkedIn survey of over 13,000 Millennials explored how they approach job seeking and how companies must adapt to attract Millennial talent.

What are Millennials looking for when considering a job?

- The No. 1 thing Millennials want to know about a company is its “culture and values,” followed by “perks and benefits,” and “employee perspectives of the company.”
- Sixty-four percent of Millennials care about company perks and benefits (compared to 54 percent of Generation X and 51 percent of Baby Boomers).
- The top obstacle to Millennials accepting a job is “not knowing what the company is like.”

How do Millennials learn more about a company and job opportunities?

- Twenty-four percent of Millennials report they didn’t know about a company when hearing about a job opportunity (compared to 18 percent of Generation X and 16 percent of Baby Boomers).
- Twenty-two percent of Millennials are likely to follow a company on social media to find out more about the company.
- One out of three Millennials said they have used social media to find a job.

Considering the above data, how to attract Millennial workers becomes clear.

Step 1: Authentically showcase what your company is like.

Help Millennials experience what it’s like to work at your company by having employees share their authentic perspectives of the company.

Matthew Jeffery, VP head of global sourcing and employment branding at SAP, a software and technology solutions firm, recently hired a videographer and created 40 compelling videos of real employees sharing their perspectives of the

company’s culture, values, perks, benefits, and some of the unique hobbies they enjoy outside of work, like surfing, ice hockey, and building bamboo bicycles.

“The true, authentic voice is the employee,” says Jeffery. “They don’t speak to a marketing script, and that’s what makes them the best advertisement your company could ever have.”

This approach satisfies the top three things Millennials want to know about a company—culture and values, perks and benefits, and employee perspectives of the company—and eliminates the top obstacle they have for accepting a job, which is “not knowing what the company is like.”

Step 2: Strategically position your company on social media.

Use social media to consistently and broadly communicate your company’s values, perks, etc. Since Millennials are most likely to turn to social media to find a job and learn more about a company, it’s imperative that your company have a strong social media presence.

“[SAP is] predominantly a business to business company, but we’re competing for talent with companies like Apple, Facebook, and Google. So we have to work harder to get our information out,” says Jeffery.

“#SAPCulture,” “Life at SAP,” “What can you do at SAP?,” “Work...anywhere,” and “All work and no play? Not here!” are all SAP YouTube playlist titles that satisfy Millennials’ job seeking questions while being accessible and searchable on the second largest search engine, YouTube. SAP even has a video specifically for Millennials.

@LifeatSAP is the social-media handle that SAP uses to showcase company culture, values, perks, and benefits via employee perspectives on Twitter, Facebook, and Instagram.

SAP also has a lively and informative LinkedIn page where they are one of the top followed companies, with over 834,800 followers. This is an important community to be in because 65 percent of Millennials say that LinkedIn has had a positive impact on their career. ■

NEBB Certified Firms, Professionals and Technicians

NEBB congratulates the following Firms, Professional and Technicians who achieved NEBB Certification between August and December 2016. To learn more about NEBB certification, contact certification@nebb.org.

Firms Certified August-December 2016

Name	Country	Discipline
CDML Consulting Ltd.	Canada	BSC
C.L. Linfoot Company	US	TAB
Earl Hagood, Inc.	US	TAB
a2b Accurate Air Balancing	US	TAB

Professionals Certified August-December 2016

Name	Country	Discipline
Tahir Mazi	Turkey	BSC
Douglas Hill	US	CxPP
Samuel Blosser	US	CxPP
Dane Richards	US	CxPP
James Hall	US	CxPP
Luis Chinchilla Rodriguez	Costa Rica	CxPP
Alexander Boucher	US	CxPP
Oguzhan Ardic	Turkey	CxPP
James Whorton	US	CxPP
Fred Foan	US	CxPP
Kyle Hertenstein	US	CxPP
Wade Saxton	US	CxPP
Mohammad Shouib	Pakistan	FHT
Glenn Putnam	US	RCx-EB
Jim Kelleher	US	RCx-EB
John McLaughlin	US	RCx-EB
Matthew Bond	US	TAB
Christopher Goff	US	TAB
Billy Robbins	US	TAB
G. Stuck	US	TAB
Shaun Carhahan	US	TAB
Charles Culbertson	US	TAB
Brad Nolte	US	TAB
Eric Desentis	Mexico	TAB
Firas Hakim	United Arab Emirates	TAB
Ramon Rosa	Puerto Rico	TAB
Yoon Seok Chi	Republic of Korea	TAB

Technicians Certified August-December 2016

Name	Country	Discipline
Mohamed Hossam El Deen Mahmoud	Egypt	TAB
Colby Nugent	US	TAB
Johnathan Dickinson	US	TAB
Kane DeSouza	US	TAB
Nicholas Panas	US	TAB
Shawn Applebee	US	TAB
Jay-R Sumibcay	United Arab Emirates	TAB
John Walker	US	TAB
Michael Watson	US	TAB
Elias Huebner	US	TAB
Steven Rodriguez	US	TAB
Dwayne Koskela	US	TAB
Rand Fisher	US	TAB
Roddy Quinones	US	TAB
Waverly Wooding	US	TAB
Andrew Alkire	US	TAB
John Bryan	US	TAB
Todd Howe	US	TAB
Clinton Ramlow	US	TAB
Mazin Abdelkariem	Qatar	TAB
Dennis Lininger	US	TAB
Joel Wiget	US	TAB
Colby Griggs	US	TAB
Ahmed Mostafa	Saudi Arabia	TAB
Nicholas Krynski	US	TAB

In Memoriam



It is with great sadness that we report the passing of Leonard Maiani, former NEBB technical director and long-time NEBB Certificant, on December 3, 2016.

Maiani began his career in the Testing, Adjusting & Balancing business in Cleveland, Ohio in 1966. He then spent 15 years working in Texas as a construction administrator, service manager for a large mechanical contractor and TAB professional in various organizations. After moving to the Pacific Northwest, he started Maiani Construction Services, Inc. in 1989 and operated as an independent TAB & Commissioning firm until 2013.

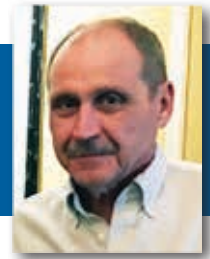
Leonard Maiani joined NEBB as technical director in January 2014 and served in the position for two years. Leonard is survived by his wife of 47 years, Janice Maiani and a number of other family members. His son Tony is following in his father's footsteps and is a NEBB Certified Professional also.

Said NEBB executive vice president Tiffany Suite, "Upon meeting Leonard Maiani in 2009 I quickly learned that he had a warm and welcoming personality and he had this amazing ability to make people feel appreciated. Leonard was a highly valuable and respected professional in the NEBB community and I was privileged, indeed, favored, to have worked with him. Leonard, a caring and beloved family man, a cherished colleague, and a friend will be missed by many, but never forgotten by those who were fortunate enough to have known him."

"Leonard will be remembered for his generous nature to his profession and our organization and his common sense approach to solving problems," said Andrew Nolfo, former NEBB technical director. "He will also be remembered for his large laugh which was infectious. He was a great mentor and friend and his passing is a loss for NEBB."

Improved Efficiency in Laboratory Ventilation Systems

Bohdan Fedyk | NEBB Technical Director



A number of years ago, I had the opportunity to be part of the renovation at the City University of New York (CUNY) Marshak Science Building, a facility constructed in 1971 with more than 200 research and teaching laboratories. As with all research facilities, these laboratories were very energy intensive due to the strict ventilation and safety requirements associated with these types of buildings. The key project objectives included attaining substantial energy reductions, renewing old and obsolete systems, and improving the overall reliability and safety of the laboratories.

This was one of the first fume hood conversion projects ever conducted on such a large scale, with over 180 fewer energy hoods refurbished to perform more efficiently and not be thrown away. Under CUNY's Green Initiative, the existing hoods were converted into today's high performance low volume safer hoods. The joint effort between CUNY, the fume hood manufacturer/designer, mechanical contractor, the NEBB-Certified TAB contractor, and the firm at which I was employed at the time, a NEBB multiple discipline testing firm, provided ecological savings of 5,000 metric tons CO₂ equivalent GHG reduction. The previous year, Marshak Science Building fume hoods con-

sumed over \$1.4 million worth of energy prior to the "Greening the Lab," which saved \$790,000 yearly.

The combination of these upgrades produced a laboratory space with safer conditions and increased functionality in line with the university's mission. The realized savings after the fume hood upgrades were complete prompted the utility company to contact CUNY to determine if its meters were working correctly as the load had dropped so substantially.

By upgrading the fume hoods, the total volume of exhaust air was reduced by more than 50 percent while maintaining a clean and safe environment for the students and teaching staff. The modified fume hoods made use of a patented technology based on the principles of a stable vortex that captures the chemical vapors inside the hood. This new technology is considerably more efficient than the old fume hoods which simply maintained a constant volume and face velocity and required more than twice the air volume to operate effectively. An added benefit to the hood conversion strategy is minimal disruption to the laboratories' operations.

A project of this magnitude required very precise coordination between all involved parties and, most importantly, qualified NEBB-Certified Test and Balance Technicians and Professionals as well as NEBB-Certified Fume Hood Performance Testing Professionals. Since I became involved with laboratory environments, beginning with years in chemistry to eventual design and testing of these critical settings, I have seen an evolution of the instrumentation and equipment in both safety and efficiency. While some of the daily research may seem mundane to the casual observer, even lackadaisical, safety is of the utmost importance. Some of the earlier research into the so-called "high-performance, low-flow fume hoods" has provided the momentum to find safer, environmentally friendly, and more efficient units. New York City, as with many major metropolitan areas with its multiple university and hospital systems, has relied on an "old standard" of 100 feet per minute of face velocity in a hood. To this day no one will take credit or can even explain where this magical number came from but research has shown that the velocity is largely irrelevant to the containment of the unit. Velocity may provide a very good baseline once the hood has been tested and certified for future verification, but that is all! An item very easily overlooked when considering energy-efficient



exhaust enclosures, you are also reducing supply air thereby reducing heating/cooling requirements for the spaces. In existing spaces or buildings such as the Marshak Science Building, a major constraint was lack of supply (make-up) thereby reducing expansion possibilities and well as causing pressurization issues – could not open some doors into the building. More efficient exhaust vessels allowed for expansion of research facilities without the need for increased make-up air, maintaining safety, and allowing entry to the building.

Nearly every one of the manufacturers of exhaust containment devices offer safer and more efficient designs, not just in fume hoods but other equipment such as Biological Safety Cabinets. During a recent educational seminar, I had the opportunity to survey some of the new technology firsthand: A Purifier Axiom Class II, Type C1 is the first biological safety cabinet that can be used in a recirculating Type A-mode for standard microbiological work, or can be connected to an exhaust system to function in Type B-mode for handling hazardous chemical vapors or radionuclides. The Axiom is a finalist for the 2016 R&D 100 Awards for Innovation.

While the manufacturers have stepped up their game, lab designers and engineers also need to become more aware of the changes taking place in the research and technology-based industry. Laboratories are critical spaces that may contain toxic substances, require a clean space to protect product, or some combination but even the best technology requires proper adjustment and verification. The NEBB-Certified TAB Firm and personnel are knowledgeable, not just on the piece of equipment but the complete environment, placement of all exhaust, supply, and yes, return outlets or devices and interactions. NEBB-Certified TAB firms working with the NEBB-Certified FHT firm to validate the performance of each fume hood. Various other exhaust containment devices, whether in a clean space or chemical laboratory, require the proper adjustments and validation by experienced NEBB-Certified Technicians and Professionals. With these energy savings comes a realization of requirements for proper lab layout and coordination of all processes such as airflow, pressurization, temperature control, just to name a few.

NEBB is leading source of industry information in its Procedural Standards, study guides, publications, and specifications; a premier international association of Certified Firms in the Building Environ; an ANSI Accredited Provider; and provider of personnel accreditations for Certified Technicians and Professionals in various technical disciplines. The concerted effort by government and industry to provide a safe and efficient environment in the research community is an ongoing evolution and requires all parties keep up or fall by the wayside. I am proud of the knowledge and work ethic I have observed in NEBB-Certified Firms, Professionals, Technicians, and staff through the years. NEBB plays its part in this important effort by providing education and resources to its stakeholders to help ensure their clients protect the environment by reducing their carbon footprint without sacrificing safety. ■

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International News

NEBB Canada:

Janice O'Neill, Chapter Coordinator

NEBB Canada celebrated its 30th year in the fall of 2016 with a two-day event held in Niagara Falls, ON Canada. We would like to thank our speakers and vendors for their generous donations for door prizes and the Crack Pops band for the live entertainment.

Presentations included:

- GE PT878 Portable Ultrasonic Flow Meter by Dave Mohony, Veronics
- CSA Fume Hood updates by Rob Chopowick, Contest
- Cleanroom Testing Compound Pharmacies and NAPRA by Bruce Peat, H.E.P.A. Filter Services
- Pressure Independence Systems & VSP Pumps vs Authority by Bart Decker, IMI Hydronics
- Wireless Tab & CX by Pete Secor, Evergeen Telemetry
- Modern HVAC Reporting by Jean-Francois Arseneault, Propulsif, Inc.

Vendor Displays also provided by:

- Michael Aleksich – Kanomax
- Jamie Dudley - Victaulic



NEBB Canada president Dave Lipsit of Air Audit Inc. cuts the 30th anniversary cake.

Chapter News

Ohio-Kentucky Chapter:

Ron Powell

The Ohio-Kentucky chapter board has selected Jack Bertoli as its new coordinator. Jack replaces Robert Tiemann, long-time chapter coordinator, who retired to the sunshine of Florida at the end of December. Bob did a wonderful job and will be missed by all our members.

Jack Bertoli was a member of the first local Ohio-Kentucky NEBB class and a NEBB Certified Professional. He has extensive experience in dust collection systems along many other systems. Jack has a mechanical engineering degree from the University of Cincinnati. After graduation, he joined Kirk and Blum of Cincinnati, Ohio, rising to senior vice president over his 42-year career with the company.

Jack's contact information is:

mailing address: 1579 Summit Room, Room 131
Cincinnati, Ohio 45237-1916; phone: 513.761.5220;
fax: 513.761.5733; email: Jbertoli@fuse.net.

In other news, the chapter's annual seminar and meeting are scheduled for Friday, November 17, 2017.

Agenda

AEGIS (controlling electro static current)

John M. Shepard, Midwest Regional Sales Manager
Electro Static Technology

NEBB sound and vibration certification and requirements

Nick McDonald of Four Seasons Environmental, Inc.
Commissioning Project Manager and TAB Department Manager
Cell: 513.335.4013

Duct leakage testing and methods of duct sealing

Rick Papetti, CEM of AeroSeal Product
AeroSeal Product and Application Manager

Florida Chapter:

Terry T. Wichlenski, Chapter Coordinator

The chapter will be holding its 36th Annual Recertification Seminars at the Wyndham Grand - Clearwater Beach on May 18 and 19, 2017. We are also planning our annual golf tournament and this year, we will be organizing a fishing tournament as well. The proceeds from both tournaments will go to our chapter's scholarship fund that provides financial assistance to a junior or senior in a Florida college pursuing an undergraduate degree or master's degree in mechanical or electrical engineering.

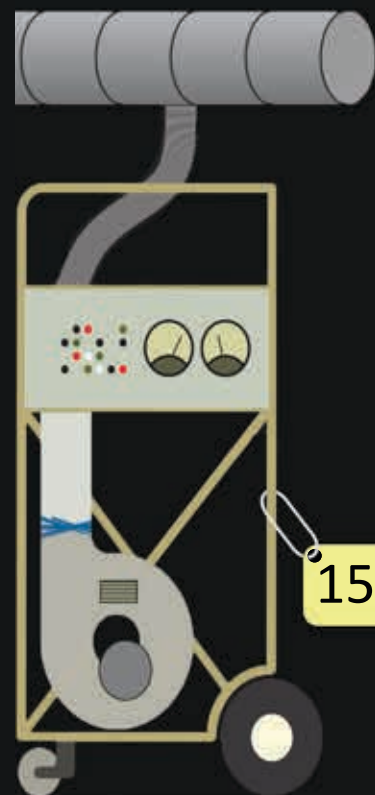
Capital MarVa International Chapter:

Jim Kelleher, Board Chairman

The chapter is pleased to announce that Barbara Huber has joined the organization as its new chapter coordinator. Barbara replaces Tiffany Suite who recently accepted the position of executive vice president for the NEBB headquarters.

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